

Non-communicable diseases are also commonly known as chronic diseases. These diseases are not the results of pathogens or parasites, but instead, result from a number of risk factors including an individual's age and their lifestyle.⁵³ Non-communicable diseases have become the leading causes of mortality and morbidity in developed countries worldwide and Alberta is no exception. While the incidence of communicable diseases has declined, the prevalence of chronic diseases has been increasing.

This section reviews the history of non-communicable diseases and focuses on the most common: cancer, cardiovascular disease (heart disease), cerebrovascular disease (stroke), hypertension, chronic respiratory disorders, diabetes, chronic renal failure, and arthritis.

Historical Context

The first recorded chronic diseases were those associated primarily with poor nutrition. The lack of essential vitamins and nutrients lead to goitre, scurvy, and rickets. These historically common diseases are virtually non-existent in modern Alberta. Modern chronic diseases, however, are primarily the function of poor nutrition and lifestyle choices. Additionally, these diseases are now the leading causes of death and disease in Alberta.

Major health concerns before World War II were predominantly pneumonia and tuberculosis. Diseases such as goitre, scurvy, and rickets were frequent and Albertans died at a younger age, and in greater numbers. However, antibiotics and vaccines, along with improved living standards, sanitation, nutrition and safe water, brought a reduction in mortality rates from infectious diseases and an increase in life expectancy.

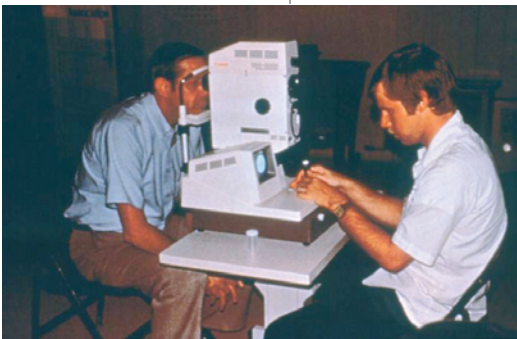
An improved understanding of amines vital to the function of the body brought the discovery of vitamins (vital amines). A number of vitamins were identified within the early 1900s: vitamin D (1911), vitamin A (1916), vitamin B (1916), and vitamin C (1932). The identification of vitamin D (1922) in cod-liver oil resulted in its use as a staple in childcare for decades. Additional substances were also included in the daily lives of Albertans; between 1931 and 1937 the fluoridation of water was implemented to reduce tooth decay, in 1976 the ionization of salt became mandatory in order to prevent goitre. The mineral and vitamin fortification of bread also became mandatory. In the 1950s the fortification of milk with vitamin D served to prevent rickets.



Provincial Archives of Alberta, J1940/4
Cross Cancer Institute - 1975

Due to the improvements in lifestyle, communicable and low-nutrient diseases have nearly vanished, and this has given chronic diseases the opportunity to surface. Although chronic diseases have always existed in human history (diabetes was initially recorded in 1500 BC), the frequencies with which these diseases are occurring have never been higher. These diseases are a product of lifestyle choices such as smoking, a lack of exercise, diets rich in unhealthy fats and sugars, and risk-taking behaviour.⁵⁴

Diabetes – eye exam



Improved living conditions and medical advancements have led to Albertans living longer lives; achieving ages where the propensity for acquiring chronic disease increases.

Some chronic diseases are incurable, and all have an impact on quality of life. However, chronic diseases may be reduced with proper nutrition, exercise and other healthy lifestyle choices.



Lung – emphysema

Cancer

Cervical Cancer

Cervical cancer refers to the cancer of the cervix, the lower, narrow end of the uterus. The cervix leads from the uterus to the vagina (birth canal).⁵⁵ The most common type of cervical cancer starts in the cells that line the surface of the cervix⁵⁶ and is called squamous cell cancer. Adenocarcinoma starts in the mucous secreting glandular tissue of the cervix and is less common.⁵⁷ Cervical cancer has a very good prognosis when detected and treated early.⁵⁸

A number of risk factors have been associated with cervical cancer. Almost all individuals with cervical cancer had been previously infected with HPV (human papilloma virus). However, not all HPV infected women will develop cervical cancer.^{59,60,61,62} Additional risk factors associated with cervical cancer are infection with other sexually transmitted diseases,⁶³ smoking,^{64,65,66} sexual intercourse at a young age,^{67,68} multiple sex partners,^{69,70} suppression of the immune system by drugs after an organ transplant or AIDS,^{71,72} giving birth to many children,⁷³ a diet lacking in vitamins A and C,⁷⁴ and oral contraceptive use.⁷⁵

Cervical cancer is highly preventable. With a combination of a healthy lifestyle and preventive testing, the risk of cervical cancer is reduced and the chance of successfully treating the disease increased. Screening can prevent the incidence of invasive cervical cancer by detecting and treating pre-cancers and treating early stages before they develop into cancer.⁷⁶

Hospital separation rates for cervical cancer have shown a steady decline between the early 1980s and the late 1990s. Current hospital separation rates (**Figure 56**) are one-third of what they were more than 20 years ago. Many factors help to contribute to this decrease and include screening for early detection, a general move to community-based care, and the provision of treatments on an outpatient basis.

Figure 56 Age-standardized hospital separation rates for cervical cancer, Alberta 1979/1980 to 2002/2003

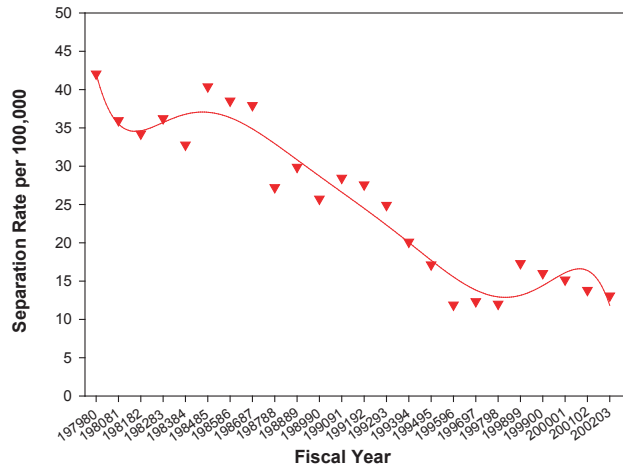
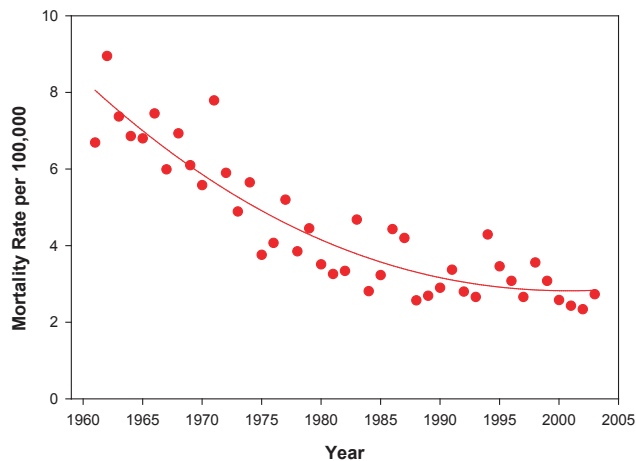


Figure 57 displays the age-standardized mortality rate for cervical cancer. A significant decrease has occurred since the early 1960s with rates falling by nearly 50 per cent. While this pattern has been encouraging, there appears to be a leveling of the mortality rate in the past decade. A total of 41 deaths in 2003 were attributed to cervical cancer.

Figure 57 Age standardized mortality rate for cervical cancer, Alberta 1960 to 2003



Lung Cancer

Lung cancer causes more fatalities and death than any other form of cancer in men and women.⁷⁷ In Alberta, lung cancer accounts for 27 per cent of cancer-related mortalities among men, and 22 per cent among women.⁷⁸ This cancer begins in the lungs, and may spread to other areas of the body. Cancers occurring in the lungs can be divided into four types, small cell lung cancer, squamous cell carcinoma, adenocarcinoma, and large cell carcinoma. Of all of the lung cancers, small cell lung cancer is the least common, but most prone to migrating to other areas of the body.

A number of risk factors have been shown to cause lung cancer. The 1980 U.S. Surgeon General's report states: "smoking is causally associated with cancer of the lung...in women as well as in men".⁷⁹ It has been shown that more than four out of five lung cancers are linked to cigarette smoking and second-hand smoke.^{80,81} Risk factors that also predispose an individual to lung cancer, but to a lesser extent than cigarette smoking, include: cigar and pipe smoking,^{82,83} and environmental factors including carcinogens such as radon gas, asbestos, arsenic, and some forms of silica, nickel and chromium.⁸⁴

Due to the severity of lung cancer, the number of deaths per year is almost as high as the number of new cases. Lung cancer has the highest mortality rate of any other cancer. Still, given the high causality of risk factors such as smoking, lung cancer is almost entirely preventable. By ceasing to smoke, an individual immediately lowers their chance of getting lung cancer. However, those who quit smoking will never have as low of a risk of developing lung cancer as those who have never smoked. Subsequently, the most effective means of preventing lung cancer is to never begin smoking. Lowering the risk of exposure to environmental factors also contributes to lowering the chances of developing lung cancer. Testing the work and home environments for carcinogens and, if found, removing them, will aid in preventing cancer. By removing risk factors, the chance of lung cancer is greatly lowered; however it is never zero, especially for those who are genetically predisposed to lung cancer.

Figure 58 shows the hospital separation rates for lung cancer for males and females for the years 1979/1980 to 2002/2003. During this period male and female separation rates have converged with males showing a marked decline in hospitalizations related to lung cancer. While females have also shown a moderate decrease over the same period, it is not nearly as pronounced as for males.

Figure 58 Age standardized hospital separation rates per 100,000 for lung cancer, Alberta 1979/1980 to 2002/2003

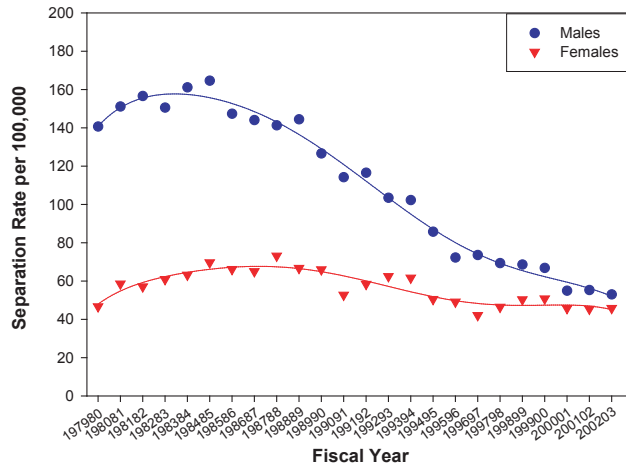
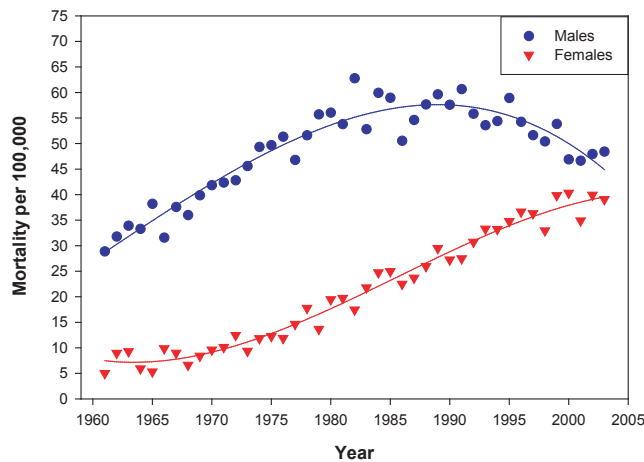


Figure 59 shows the age-standardized mortality rates attributed to lung cancer from 1961 to 2003. Males showed a steady increase in mortality until the mid-1980s when the rate began to fall. During the general decline, there was a fair amount of variability from year to year. Females followed a very different pattern with a general increasing trend over 40 years. The decrease among males and increase among females has nearly closed the gap between the sexes on risk of death due to lung cancer.

Figure 59 Age-standardized lung cancer mortality rates, Alberta 1961 to 2003



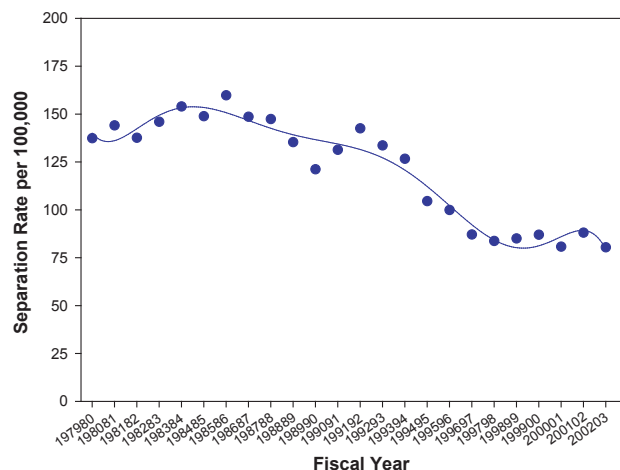
Prostate Cancer

Prostate cancer is the most commonly diagnosed cancer in men, and is one of leading causes of death for men in Canada.^{85,86} Prostate cancer is the cancer of the prostate gland found only in men. Due to the disease's tendency to remain latent, autopsy studies have found that between 60 and 70 per cent of men over the age of 80 have evidence of prostate cancer, although they had no clinical symptoms.⁸⁷

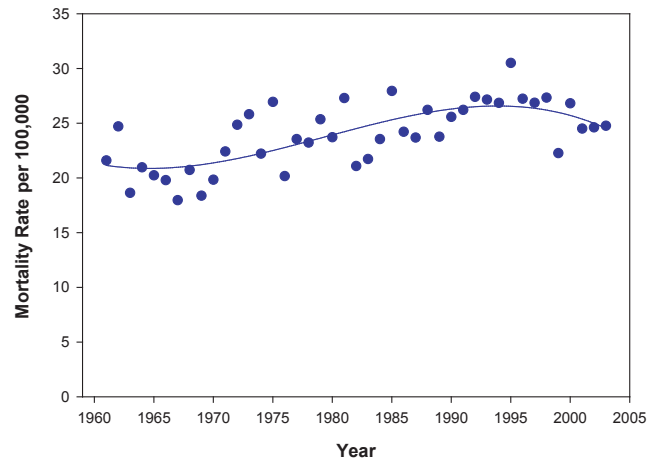
A number of risk factors have been associated with prostate cancer. The most prominent risk factor is being a male over the age of 70. Furthermore, a family history of prostate cancer in a close relative, African-Canadian ancestry, and long term exposure to testosterone, all significantly increase the risk of prostate cancer. Some risk factors with a weaker association with developing prostate cancer include: a diet high in animal fats and low in vegetables and fruit, and occupational exposure to cadmium in the battery or smelting industry.^{88,89}

Prostate cancer hospital separation rates per 100,000 population are displayed in **Figure 60**. A general decline in hospitalizations was observed over the period of observation. Recently, hospital separation rates appear to have leveled off with minimal differences recorded over the past seven years. The general decrease may be attributed to a move from inpatient care to outpatient care and management within the community setting.

Figure 60 Age-standardized hospital separation rates for prostate cancer, Alberta 1979/1980 to 2002/2003



Mortality rates for prostate cancer have increased slightly over the past 40 years, stabilizing in the 1990s. In 2003, there were 362 deaths attributed to prostate cancer for an age-standardized mortality rate of 24.8 per 100,000 males.

Figure 61 Age-standardized mortality rates attributed to prostate cancer, Alberta 1961 to 2003

HISTORICAL EVENTS

- 1961** Alberta's population passes the one million mark at 1,331,944. Life expectancy is 74.2 years for females and 68.4 years for males.
- 1962** Canada's last case of smallpox is diagnosed in a young boy traveling from Brazil with a falsified smallpox vaccination certificate. No secondary infections were reported. To this point Canada had been smallpox free since the 1940s.
- 1963** The first pace maker operation is performed at the University of Alberta Hospital.
- 1964** The U.S. Surgeon General warns that cigarette smoking may be hazardous to health.
- 1964** The *Nursing Homes Act* is passed.
- 1966** Edmonton adds fluoride to drinking water.
- 1967** The Provincial Cancer Hospitals Board is formed to operate cancer treatment and research programs.
- 1968** The Criminal Code of Canada is amended making therapeutic abortions legal.
- 1969** The *Alberta Health Care Insurance Act* is passed providing comprehensive health services.
- 1969** Measles vaccine made available.
- 1969** The Blair Report on Mental Health Services in Alberta recommends a number of changes to the mental health system that included a movement from institutional care to community care.

Cardiovascular Disease

Cardiovascular disease (CVD) is a general name given to a number of diseases that affect the heart and the network of veins and arteries, which feed blood to all parts of the body. While CVDs affect the heart in a variety of ways; each results in reducing the functioning of the heart. The major CVDs include coronary (or ischaemic) heart disease (including heart attack), cerebrovascular disease (stroke), hypertension (high blood pressure), heart failure, and rheumatic heart disease. Although some of the risk factors associated with the diseases are non-modifiable, many are modifiable, especially in reducing the risk in those less than 65 years of age.⁹⁰

The treated prevalence for cardiovascular disease has been rising in recent years. Approximately, 15 per cent of men and 12 per cent of women visited a physician for services related to cardiovascular disease in 2003 (**Figure 62**). The treated prevalence increases with increasing age (**Figure 63**). Between 1986 and 2003 there was approximately a 50 per cent increase in the treated prevalence for both males and females with approximately 65 per cent of all Albertans over the age of 75 having been treated compare to about 45 per cent in 1986.

Figure 62 Age-standardized treated prevalence per 100 population for cardiovascular disease, Alberta 1983 to 2003

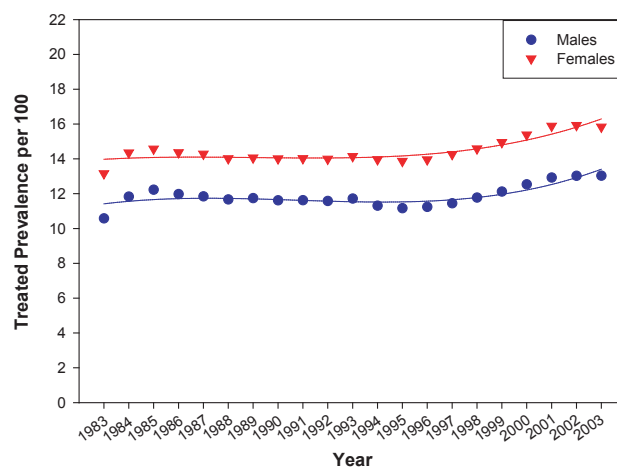
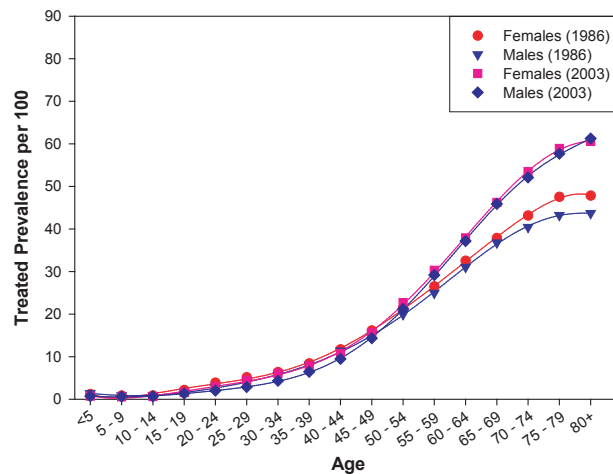


Figure 63 Age-specific treated prevalence per 100 population for cardiovascular disease, Alberta 1986 and 2003



Ischaemic Heart Disease

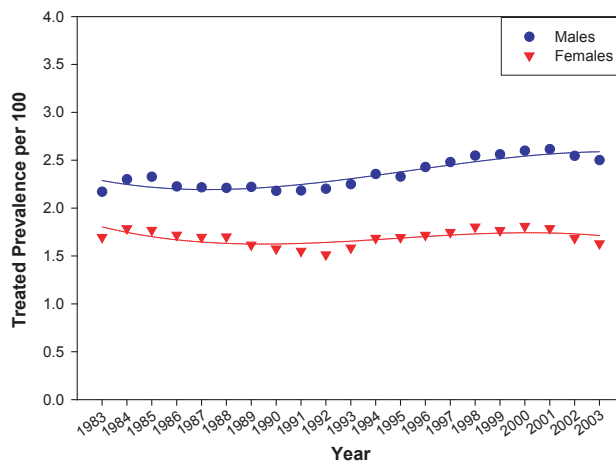
Ischaemic heart disease is also known as coronary heart disease, and often is a precursor to a heart attack. Ischaemic heart disease refers to a condition where there is a lack of blood and oxygen being delivered to the heart muscles.⁹¹ This condition is caused by cholesterol deposits⁹² which block arteries, and is one of the main causes of death in Canada. Clogged arteries cannot deliver enough blood to the muscles of the heart, resulting in the death of heart-muscle cells, and the loss of elasticity of the heart muscle.⁹³ Typically, this causes angina pectoris, or chest pain. Should a blood clot form and the artery become completely blocked, a heart attack, and possibly sudden death, will result.⁹⁴ Although the number of deaths due to coronary heart disease has dropped in the past decade among men and women, it remains a leading cause of death among Albertans.⁹⁵

A number of risk factors have been associated with ischaemic heart disease, and include both modifiable and non-modifiable factors. Non-modifiable factors are those that are not affected by lifestyle changes. In the case of ischaemic heart disease these include increasing age, being male, and a family history of heart disease.^{96,97} However, some major risk factors can be modified or controlled by changes in lifestyle including cigarette smoking, high cholesterol, high blood pressure, physical inactivity, being obese and/or overweight, and having diabetes mellitus.^{98,99}

Figure 64 displays the age-standardized treated prevalence for ischaemic heart disease from 1983 to 2003. Approximately two and half per cent of males and one and a half per cent of females were treated for ischaemic heart disease in 2003.

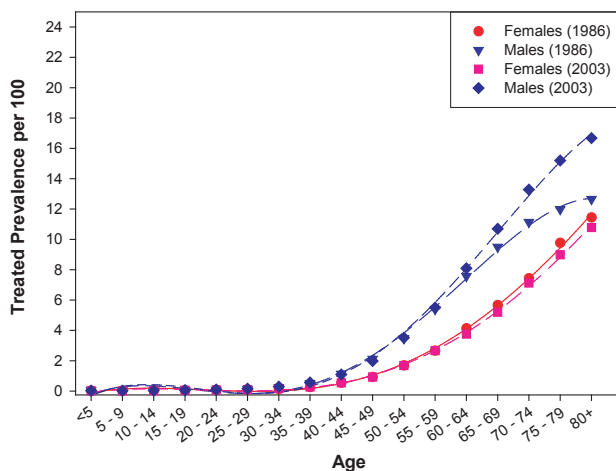
For males, there has been a slight increase in the proportion being treated while female rates were stable. Males had consistently higher treated prevalence rates than females.

Figure 64 Age-standardized treated prevalence per 100 population for ischaemic heart disease, Alberta 1983 to 2003



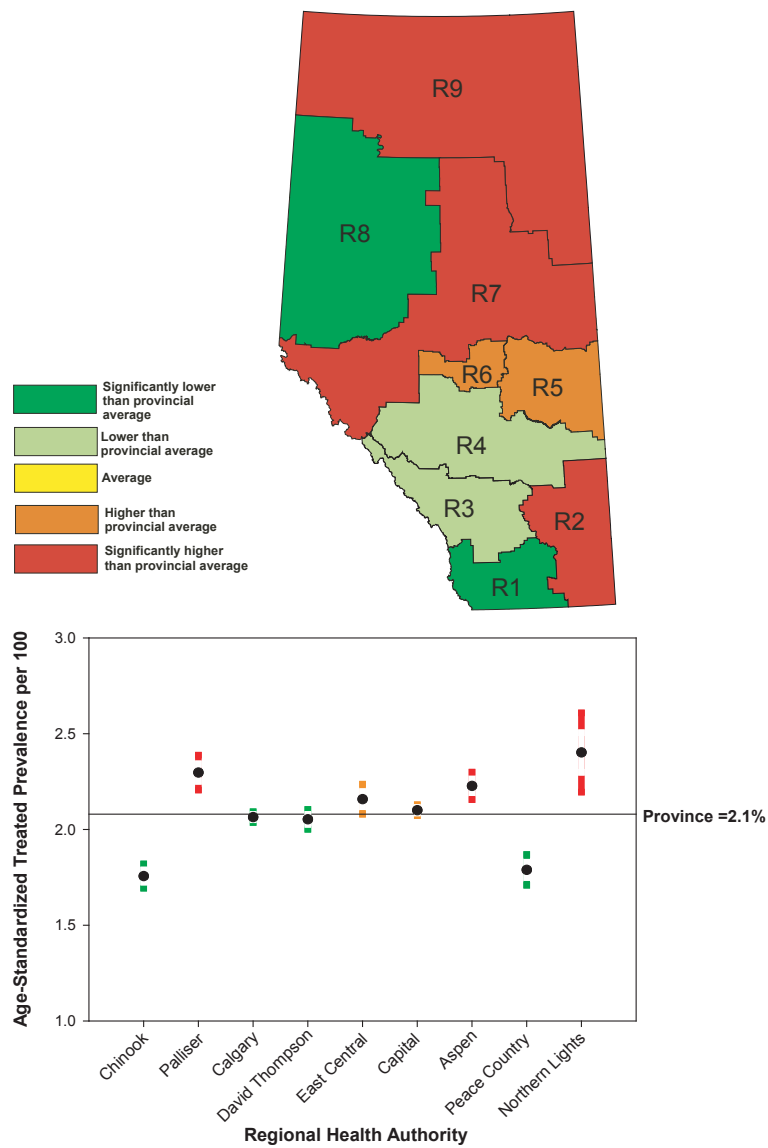
Ischaemic heart disease treated prevalence increases with age beginning in the fourth decade of life. The treated prevalence for males is higher than females throughout all ages older than 45 years. No significant difference was noted for females in their age distribution when comparing 1986 treated prevalence to 2003 (Figure 65). For males, the pattern was also similar with the exception of an increase in treated prevalence at the oldest age groups (age greater than 75 years) in 2003.

Figure 65 Age-specific treated prevalence per 100 population for ischaemic heart disease, Alberta 1983 to 2003



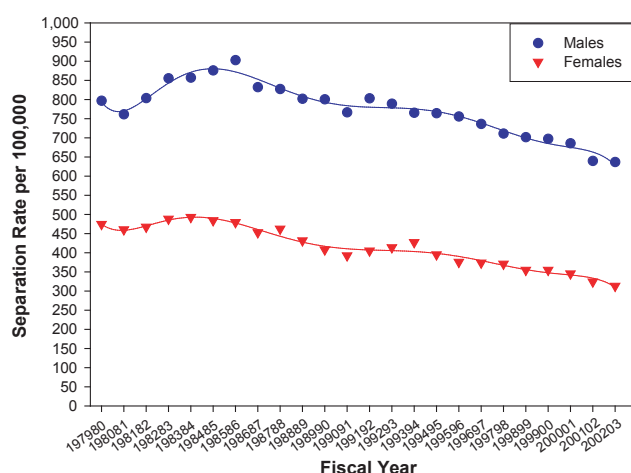
A significant difference exists in the treated prevalence of ischaemic heart disease across Alberta's nine regional health authorities. Palliser, Aspen, and Northern Lights health authorities had treated prevalence estimates significantly higher than the provincial average of 2.1 per cent while both Chinook and Peace Country health authorities had rates significantly below the provincial average.

Figure 66 Regional differences in the treated prevalence of ischaemic heart disease, Alberta 2003



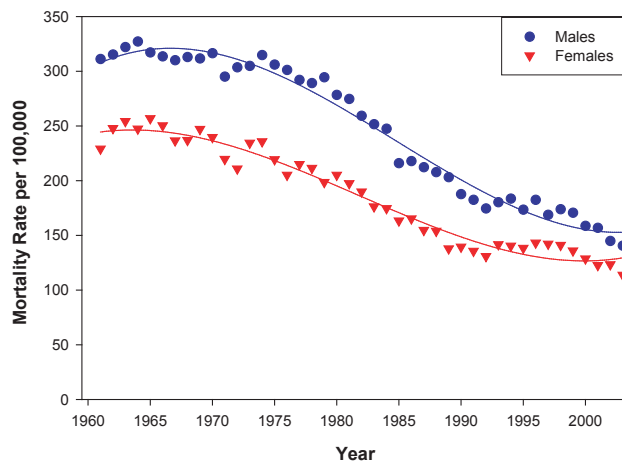
Hospital separation rates per 100,000 population are displayed in **Figure 67**. A general decreasing pattern is seen for both males and females. The higher treated prevalence for ischaemic heart disease in males is also evident in hospital separation rates. Given that the ischaemic heart disease treated prevalence was slightly increasing for males and stable for females, decreasing hospital separation rates would seem to imply that more individuals are being managed more successfully in the community reducing the need for inpatient services for this group.

Figure 67 Age-standardized hospital separation rates per 100,000 population for ischaemic heart disease, Alberta 1979/1980 to 2002/2003



Age-standardized mortality rates per 100,000 population attributed to ischaemic heart disease are displayed in **Figure 68**. A decreasing mortality rate is evident for both males and females. However, the male mortality rate appears to be decreasing more rapidly than the female rate, thus narrowing the gap between the sexes.

Figure 68 Age-standardized mortality rate per 100,000 population for ischaemic heart disease, Alberta 1961 to 2003

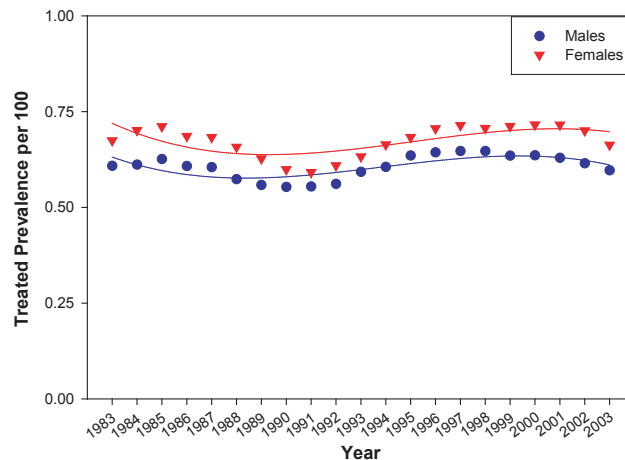


Cerebrovascular Disease

Cerebrovascular disease is also referred to as stroke or brain attack. A stroke occurs when blood flow to the brain is suddenly interrupted. The resulting damage may occur due to bleeding in the brain, or in approximately 70 to 80 per cent of cases¹⁰⁰ because of a clot blocking blood from entering the brain. In both cases massive brain-cell death may occur, and the functions that those brain cells performed may become hindered or paralyzed. Strokes often lead to paralysis, limb weakness, mental problems, pain in the hands and feet, and death.¹⁰¹ Stroke survivors may never recover from the brain damage inflicted by the stroke, and the rehabilitation and lifestyle management associated with having a stroke lasts a lifetime. Furthermore, recurrent strokes are frequent and about 25 per cent of people who recover from the first stroke will have another stroke within five years.¹⁰²

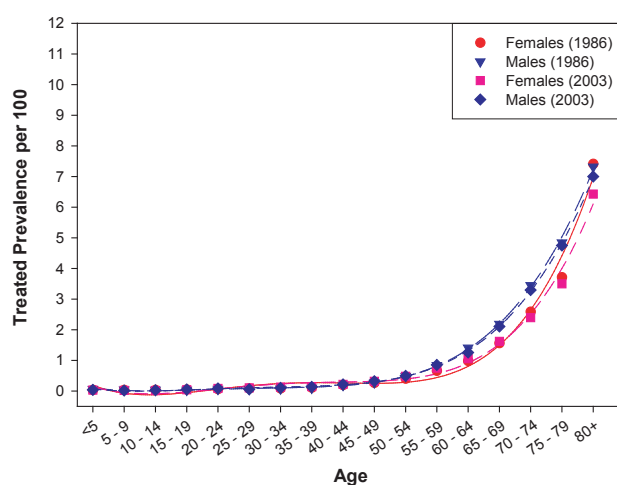
A number of risk factors have been associated with getting a stroke, and include both modifiable and non-modifiable factors. Non-modifiable factors are those that lifestyle modifications cannot change; in the case of a stroke these include being over 55 years of age, being male, having atrial fibrillation,¹⁰³ and having a family history of heart disease.^{104,105} Those factors that can be modified include: high blood pressure, cigarette smoking, heart diseases such as ischaemic heart disease, and diabetes.¹⁰⁶

Figure 69 Age-standardized treated prevalence per 100 population for cerebrovascular disease, Alberta 1983 to 2003



The treated prevalence rate for cerebrovascular disease shows a general decline during the 1980s followed by an increase and then stabilizing in the 1990s; recent rates show a possible decline. Little difference exists between the sexes and no difference between age-specific treatment rates could be seen for the years 1986 and 2003. Cerebrovascular disease appears later in life rising rapidly after age 65 years (Figure 70).

Figure 70 Age-specific treated prevalence per 100 for cerebrovascular disease, Alberta 1986 and 2003



HISTORICAL EVENTS

- 1971 Alberta's population is 1,627,874. Life expectancy is 76.4 years for females and 68.4 years for males.
- 1972 The *Mental Health Act* is passed shifting the focus of care from institutionally based to community based.
- 1973 The provincial government assumes responsibility for Health Unit funding. Dental and nutritional programming are added to health unit services.
- 1977 The United Nurses of Alberta is established.
- 1978 Home care programs introduced in Alberta's health units.
- 1979 Alberta reports its last case of polio.

Cerebrovascular disease treated prevalence varied by regional health authority with Chinook, Palliser, and Aspen having rates significantly higher than the provincial average. Capital, Peace Country, and Northern Lights regional health authorities had treated prevalence rates significantly below the provincial average (Figure 71).

Figure 71 Regional differences in the treated prevalence of cerebrovascular disease, Alberta 2003

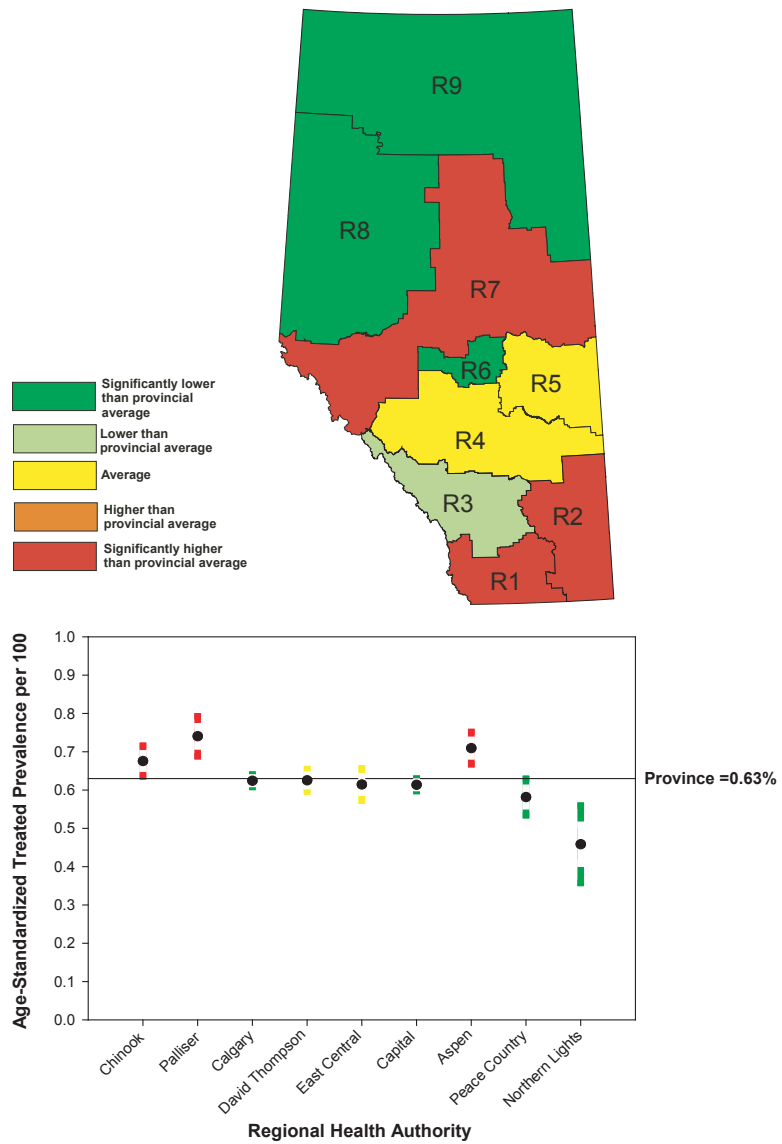
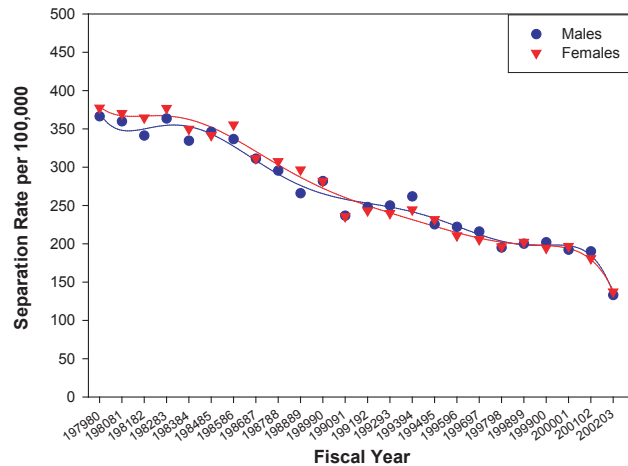


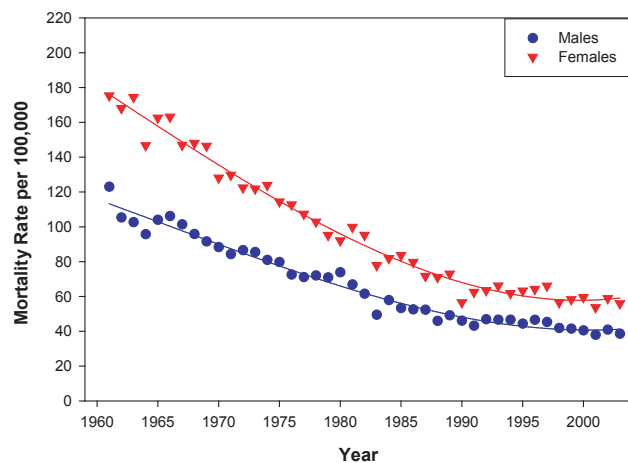
Figure 72 Age-standardized hospital separation rate per 100,000 population for cerebrovascular disease, Alberta 1979/1980 to 2002/2003



Both males and females show a significant decrease in hospital separation rates between the 1979/1980 and 2002/2003 fiscal years. There was no difference between males and females for hospitalizations. This decrease in hospitalizations was not seen in the overall treated prevalence suggesting that the increased treatment options and diagnostic imaging available to assess and treat individuals with cerebrovascular disease is leading to lower hospitalization rates.

Mortality rates for cerebrovascular disease also showed a decreasing trend over time for both sexes. Females were more likely to have cerebrovascular disease listed as a cause of death than males over the past 40 years with the gap decreasing during the 1990s. (Figure 73)

Figure 73 Age-standardized mortality rates per 100,000 for cerebrovascular disease, Alberta 1961 to 2003



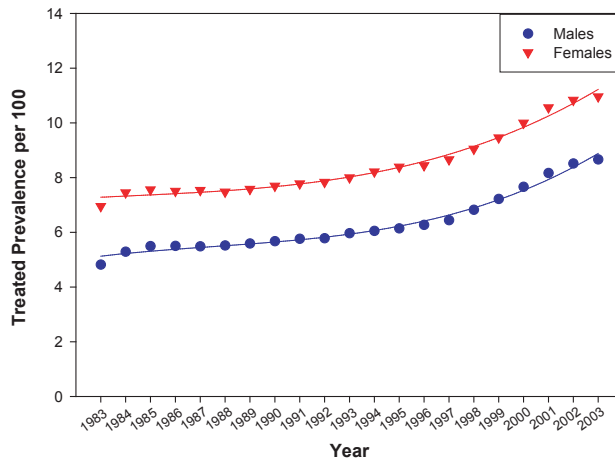
Hypertension

Hypertension is commonly known as high blood pressure. There are differing criteria for classifying an individual as having hypertension. These criteria generally refer to either an elevated systolic or diastolic pressure, or both. The *1999 Canadian Recommendations for the Management of Hypertension* suggest that systolic values consistently above 140 mm Hg or diastolic values above 90 mm Hg, or both can be considered sufficient evidence of hypertension.¹⁰⁷ Hypertension is associated with increased risk of cerebrovascular disease, other cardiovascular disease, and kidney failure. Diabetes can be considered a risk factor for hypertension and as such hypertension is an important health condition to monitor, particularly given its relationship to other diseases associated with diabetes.

A number of risk factors have been associated with hypertension and include both modifiable and non-modifiable factors. Non-modifiable factors are those that modifications to lifestyle cannot change. In the case of hypertension, these include being over 50 years of age and having a family history of high blood pressure.¹⁰⁸ Those factors that can be modified include: being overweight, too much salt in the diet, cigarette smoking, too much alcohol, lack of physical activity, and stress.¹⁰⁹ Furthermore, women who take oral contraceptives and smoke are at increased risk of high blood pressure.¹¹⁰

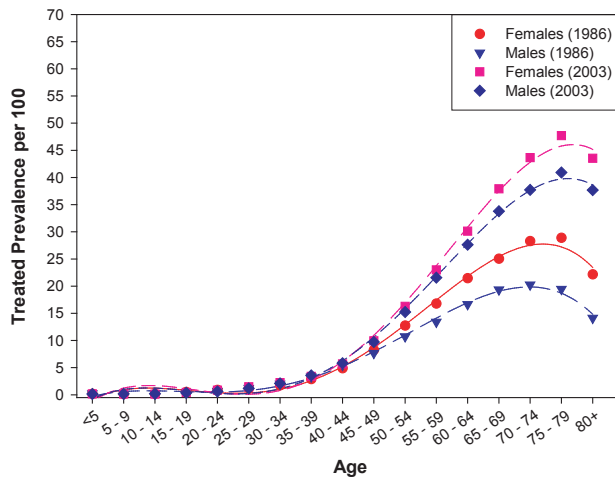
The proportion of the population seeking care for hypertension has been increasing for both males and females. Females have had consistently higher treated prevalence rates than males (**Figure 74**).

Figure 74 Age-standardized treated prevalence per 100 population for hypertension, Alberta 1983 to 2003



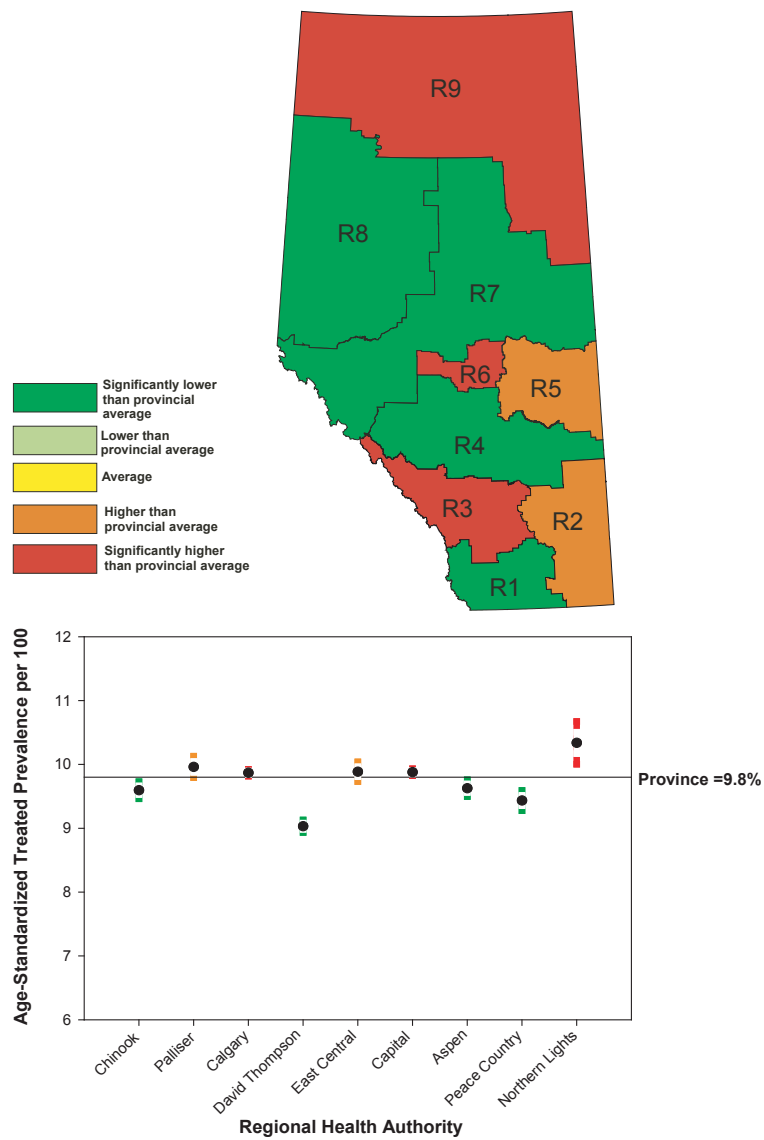
The treated prevalence of hypertension increases with increasing age (**Figure 75**). It is more commonly treated among females after age 55. Between 1986 and 2003 there was a substantial increase in the proportion of the population being treated for hypertension among those aged 50 and older. For those over age 65, the proportion being treated doubled.

Figure 75 Age-specific treated prevalence per 100 for hypertension, Alberta 1986 and 2003



The treated prevalence of hypertension varied significantly by regional health authority. The Calgary, Capital, and Northern Lights regional health authorities had rates significantly higher than the provincial average. Chinook, David Thompson, Aspen, and Peace Country all had rates significantly below the provincial average (Figure 76).

Figure 76 Regional differences in the treated prevalence of hypertension, Alberta 2003



Chronic Respiratory Disease

Asthma

Asthma is one of the most prevalent chronic conditions in Canadian children and is also a serious problem for adults.¹¹¹ Asthma is a chronic respiratory disorder that causes inflammation and muscle tightening of the airways, restricting airflow into the lungs. Subsequently, not enough air gets into the body, starving cells of air, and in extreme cases, causing cell death.¹¹²

Although the exact cause of asthma is unknown, a number of risk factors interact to either cause or exacerbate asthma. These factors include predisposition factors, causal factors, and contributing factors. Predisposition factors include a tendency to have allergic reactions to foreign substances.^{113,114} Causal factors may sensitize the airways and include aggravators such as: cat dander, dust mites, and workplace contaminants.^{115,116} Finally, contributing factors increase the chance that an individual will get asthma, and include: cigarette smoke experienced during pregnancy and childhood, respiratory infections, and indoor and outdoor air quality.^{117,118}

Asthma cannot be cured but it can almost always be controlled.¹¹⁹ More than 80 per cent of asthma deaths could be prevented with proper asthma education¹²⁰ and treatment. Controlling asthma includes taking a variety of medications to maintain or possibly increase the air capacity of the lung's airways. With a proper and consistent maintenance schedule, asthma has minimal impact on daily life. Asthma is considered under control when daytime symptoms happen less than four times per week, night-time symptoms happen less than once a week, asthma does not limit physical activity, the affected individual does not miss school or work because of asthma, and asthma "attacks" are mild and infrequent.¹²¹

The proportion of the population seeking care for asthma within a year rose steadily from 1983 to 1995 before stabilizing (**Figure 77**). A sex difference was not noted in the treated prevalence. **Figure 78** displays the treated prevalence by age and sex comparing the years 1986 and 2003. Both males and females showed an increase in overall prevalence during this time. The youngest age groups showed the most pronounced changes with children under 10 years of age nearly doubling over this time period. Among the elderly, the increase in treated prevalence was less. However, the general pattern of higher treated prevalence in the young and elderly was consistent between the comparison years.

Figure 77 Age-standardized asthma treated prevalence per 100, Alberta 1983 to 2003

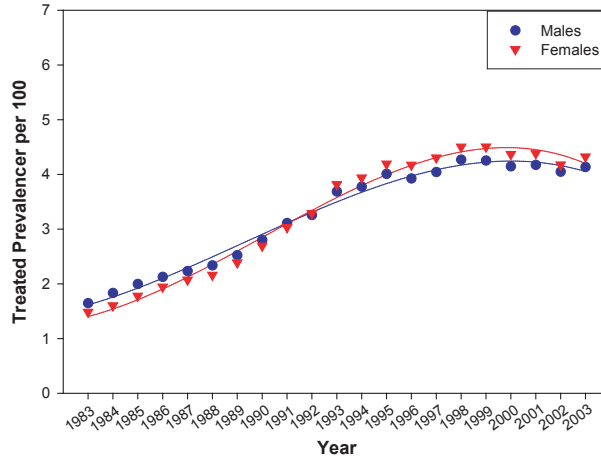


Figure 78 Age-specific treated prevalence of asthma per 100 population, Alberta 1986 and 2003

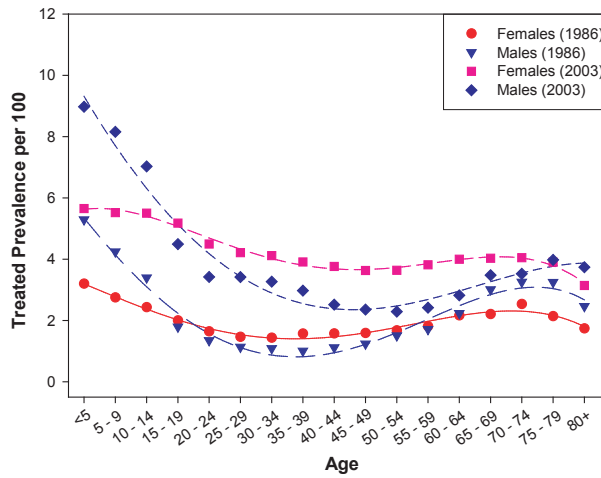


Figure 79 displays the age-standardized treated prevalence per 100 population for asthma by regional health authority of the patient. Treated prevalence was highest in the two largest health regions (Capital and Calgary) which also have the highest proportion of population living in an urban setting. While the Capital Health Authority did not differ from the provincial value, the Calgary Health Region was significantly higher. Six of the health regions had treated prevalence estimates significantly lower than the provincial average.

Figure 79 Regional differences in the treated prevalence of asthma, Alberta 2003

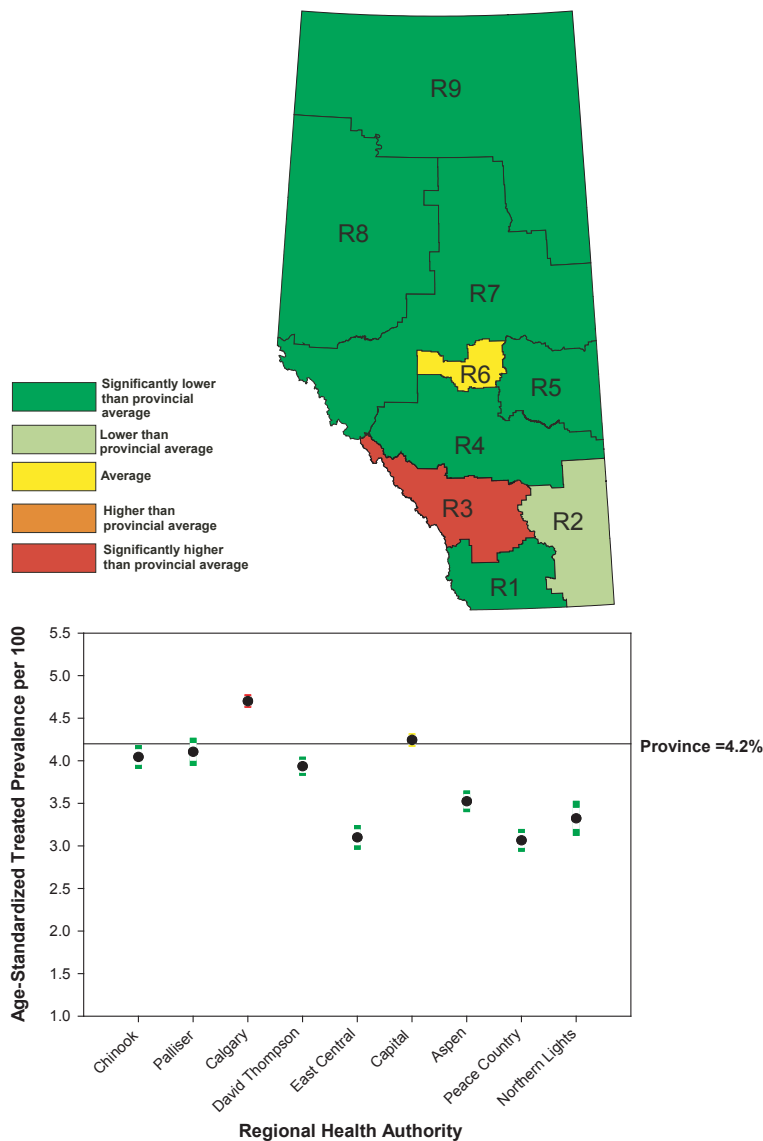
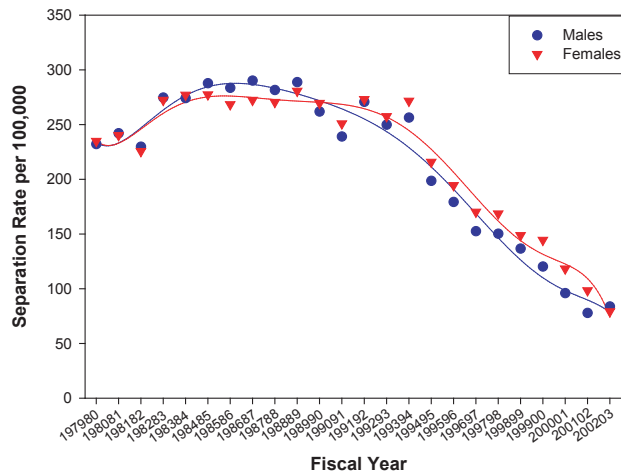


Figure 80 Age-standardized hospital separation rates per 100,000 population attributed to asthma, Alberta 1979/1980 to 2002/2003



Hospitalizations attributed to asthma have shown a steady decline since the 1989/1990 fiscal year for both males and females. The need for inpatient hospitalization for asthma is minimized if asthma is well managed by patients and their family physicians.

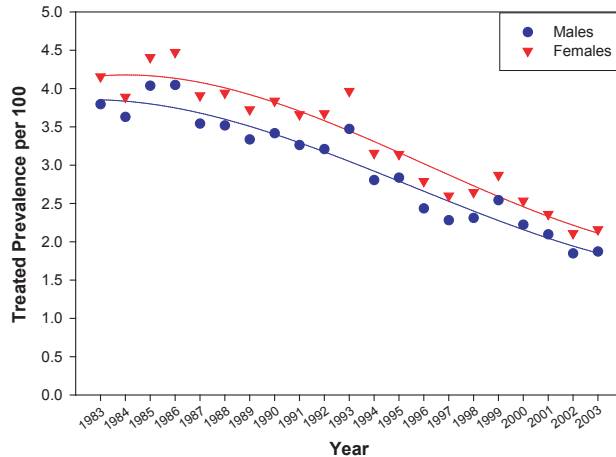
Chronic Bronchitis

Chronic bronchitis results from the production of excess mucus in the lungs and results in problems absorbing oxygen. The excess mucus impairs breathing and is usually associated with constant coughing.¹²² Chronic bronchitis affects people of all ages, but has an increased prevalence among those over 45 years of age. This disease is one of the principal manifestations of chronic obstructive pulmonary disease.¹²³

Cigarette smoking is the most important cause of chronic bronchitis.¹²⁴ The longer and heavier a person smokes, the more likely it becomes that the person will develop chronic bronchitis.¹²⁵ Second-hand smoke may also cause chronic bronchitis,¹²⁶ especially in young children whose mother smokes heavily.¹²⁷ The disease rarely occurs in non-smokers;¹²⁸ however, exposure to irritants such as pollution and chemicals will have an exaggerating effect. Furthermore, females are more than twice as likely to be diagnosed with chronic bronchitis as males.¹²⁹

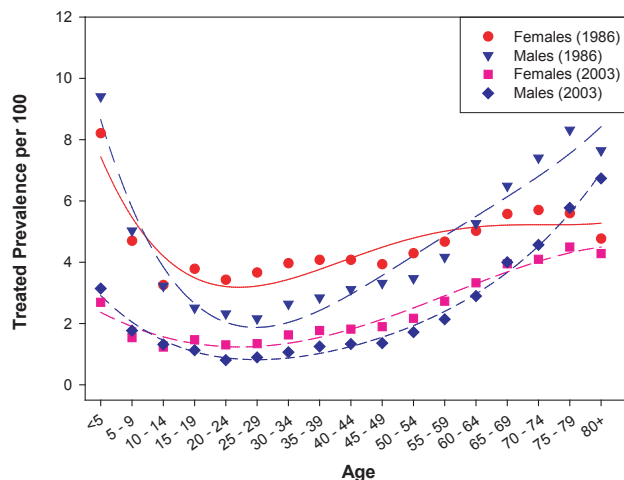
Because the primary cause of chronic bronchitis is smoking, the most effective manner to prevent this disease is to stop smoking. By ceasing to smoke an individual immediately lowers their chance of getting bronchitis. However, those who quit smoking will never have as low of a risk of developing bronchitis as those who have never smoked.

Figure 81 Age-standardized treated prevalence for chronic bronchitis per 100 population, Alberta 1983 to 2003



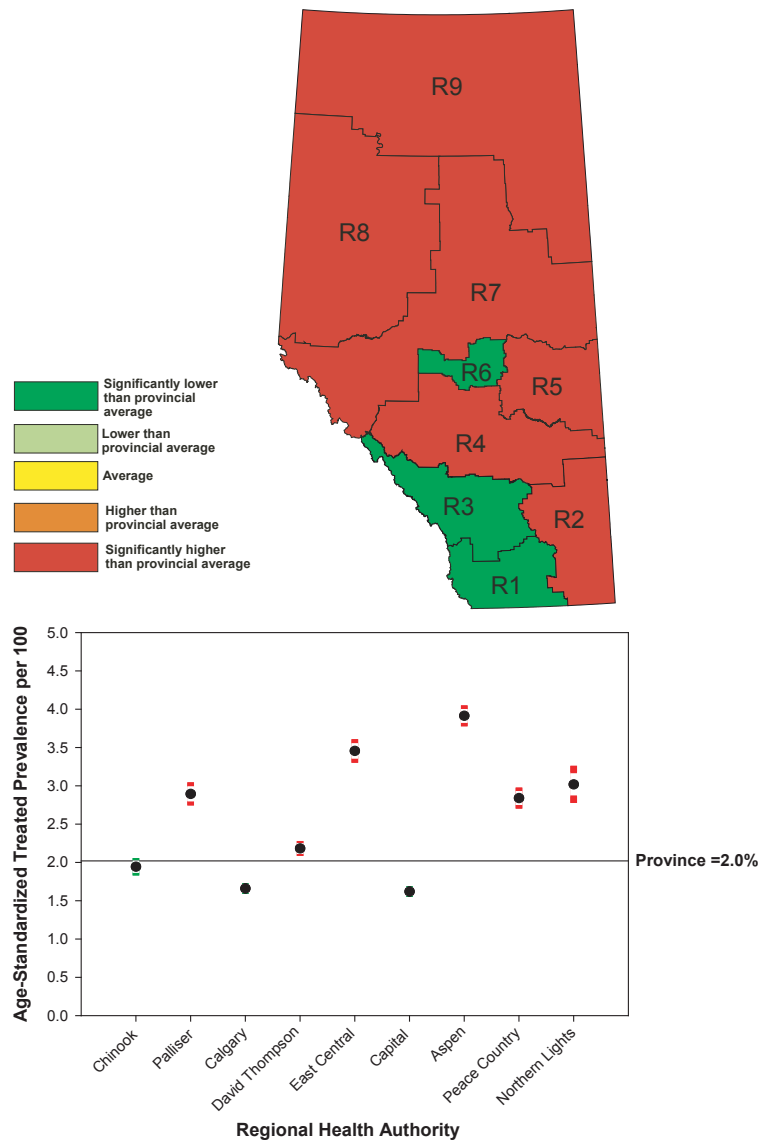
Unlike asthma that saw an increase and leveling in the treated prevalence, chronic bronchitis has shown a general decreasing trend (Figure 81). This trend is consistent between the sexes with females more likely to receive care. Age-specific treated prevalence of chronic bronchitis shows a bimodal distribution with the highest rates among the very young and the elderly (Figure 82). Between 1986 and 2003, there has been an overall decrease in treated prevalence for all ages, but most pronounced for the youngest age groups. By 2003, the bimodal nature of the distribution has become less obvious with most cases among the older age groups.

Figure 82 Age-specific treated prevalence for chronic bronchitis, Alberta 1986 and 2003



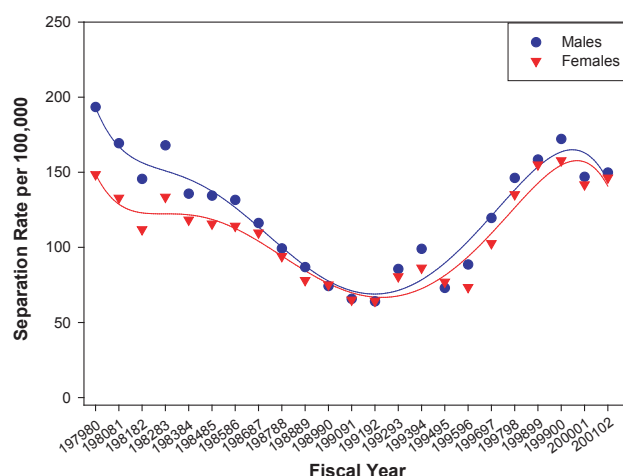
Six of nine health regions had treated prevalence estimates significantly above the provincial average of approximately two per cent of the population (Figure 83). Three health regions (Chinook, Capital and Calgary) had significantly lower treated prevalence rates. A two and a half fold difference in the rate can be seen between the highest (Aspen) and lowest (Capital) health regions.

Figure 83 Regional differences in the treated prevalence of chronic bronchitis, Alberta 2003



Hospitalizations attributed to chronic bronchitis had been declining until the 1992/1993 fiscal year where hospital separation rates began to rise before leveling in 2000/2001. It is not clear why hospitalizations are increasing for chronic bronchitis, but it may be possible that improvements in differentiating between asthma and bronchitis have attributed to the increase. Significant diagnostic uncertainty can exist, particularly in older age groups, between asthma and chronic bronchitis.

Figure 84 Age-standardized hospital separation rates per 100,000 population for chronic bronchitis, 1979/1980 to 2002/2003



Chronic Obstructive Pulmonary Disease (COPD)

Chronic Obstructive Pulmonary Disease (COPD) refers to a group of diseases that cause airflow blockage, non-reversible pulmonary function impairment,¹³⁰ and breathing-related problems.¹³¹ COPD is one of North America's most rapidly growing health problems¹³² and is a common and important health problem among seniors in Canada.¹³³ Often, the damage to the lungs from COPD gets progressively worse until the agents that trigger the attacks are removed, or treatment is started.¹³⁴ Furthermore, unless the progressive degeneration of the lungs is lessened, individuals with COPD experience a lower quality of life.¹³⁵

A number of agents and aggravating substances interact to either cause or exaggerate COPD. The most prominent agent that increases the risk of developing COPD is smoking, which is known to irritate the lungs and interfere with their normal functioning.¹³⁶ Additional aggravating agents include asthma, exposure to air pollutants in the home and workplace, genetic factors, and respiratory infections.¹³⁷

Reductions in the risk of COPD can be achieved through the cessation of smoking, and early detection through pulmonary function testing.¹³⁸ Early testing helps identify COPD before it lowers the infected individual's quality of life, and increases the effectiveness of treatment. Most effective, however, is stopping the disease where it starts which includes avoiding indoor and outdoor pollutants, and most importantly ceasing to smoke and lowering exposure to cigarette smoke. However, those who quit smoking will never have as low of a risk of developing COPD as those who have never smoked.

Treated prevalence rates for COPD have shown a general decreasing trend over time with approximately three per cent of the population seeking care in 2003 (Figure 85). Females had slightly higher treated prevalence estimates; however, both sexes showed the decrease. Similar to chronic bronchitis, COPD appears to have a bimodal distribution (Figure 86) with the youngest and the elderly having the highest prevalence. A decrease in the treated prevalence can be seen for both sexes and across all ages under 70 years. Children currently have a treated prevalence rate similar with other age groups and the rate remains stable until the fifth decade of life, when the treated prevalence for COPD begins to rise.

Figure 85 Age-standardized treated prevalence of COPD per 100, Alberta 1983 to 2003

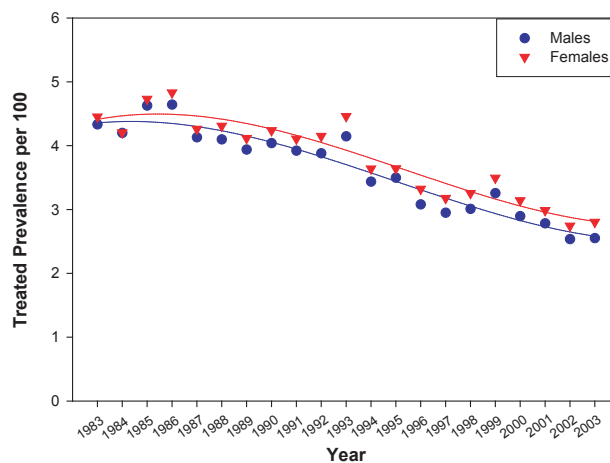
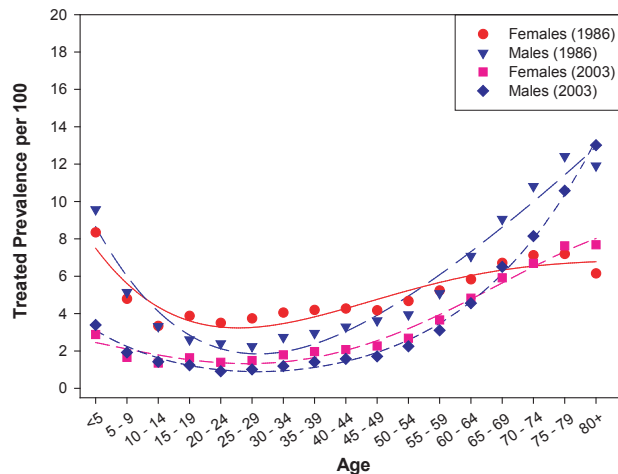


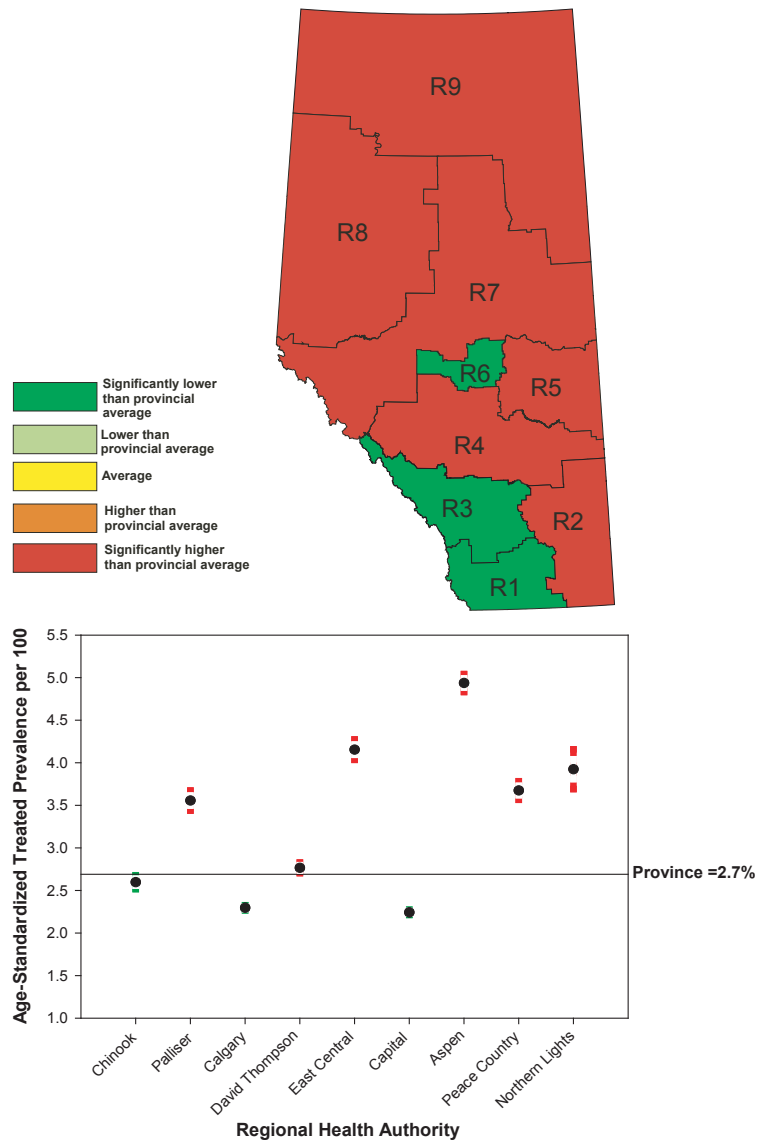
Figure 86 Age-specific treated prevalence per 100 for COPD, Alberta 1986 and 2003

HISTORICAL EVENTS

- 1980** The Alberta Heritage Foundation for Medical Research is established.
- 1981** Alberta's population is 2,213,650. Life expectancy is 79.2 years for females and 72.3 years for males.
- 1982** Explosion at a sour gas well in Lodgepole causes a 67 day sour gas leak. Two people die and the gas plume extends over 400 km.
- 1983** AIDS becomes a reportable condition in Alberta.
- 1984** The *Canada Health Act* is passed.
- 1986** Agreement is reached with the Alberta Medical Association to end extra billing by physicians.
- 1986** An increased incidence of measles throughout the province is noted with 810 cases reported. Predominantly affected those 1-4 yrs (176/810 cases) and high school aged children (212/810).
- 1987** Fifteen cases of measles are identified in the first week in March. These cases are linked to a student at the University of Alberta, resulting in a mass vaccination program at the University of Alberta
- 1987** A tornado strikes Edmonton killing 27 and leaving 400 homeless.

Consistent with chronic bronchitis, six of nine health regions (Figure 87) had COPD treated prevalence estimates significantly above the provincial average (2.7 per cent). Three health regions (Chinook, Capital and Calgary) had significantly lower treated prevalence rates. A two and a half fold difference can be seen between the highest (Aspen) and lowest (Capital) health regions.

Figure 87 Regional differences in the treated prevalence of COPD, Alberta 2003



Diabetes

Diabetes is a serious, chronic health condition and is viewed as a major cause of and contributor to extensive morbidity and mortality among Albertans.¹³⁹ Diabetes is a disease in which the body has difficulty in making insulin or using insulin produced, or both. As a result, blood glucose levels rise above normal. Glucose levels refer to the amount of sugar found in an individual's blood.¹⁴⁰

Three types of diabetes are possible:

- Type 1 diabetes—typically occurs in childhood or adolescence and is characterized by the inability of the pancreas to produce insulin. It accounts for 5-10 per cent of all diagnosed cases of diabetes.¹⁴¹
- Type 2 diabetes—typically begins after age 40, as a result of resistance to insulin's action followed by the pancreas failing to produce insulin. It accounts for 90-95 per cent of all diagnosed diabetes.¹⁴²
- Gestational diabetes—a form of glucose intolerance that appears during pregnancy. Usually this form of diabetes is transient, disappearing by six weeks postpartum. Some evidence indicates that women with gestational diabetes are at increased risk of developing type 2 diabetes.¹⁴³

This section focuses on type 2 diabetes – the form of diabetes where the evidence related to risk reduction is the strongest.

In a healthy individual, the pancreas creates insulin, which is used to help get glucose into cells. However, in people with diabetes, the body does not use the insulin efficiently. Eventually the pancreas cannot keep up with the body's demand for insulin, and sugar does not get moved into cells, and remains instead in the blood. Excessive sugar in the blood damages various organs that require blood to function.¹⁴⁴ Complications associated with diabetes include damage to nerve and blood vessels resulting in heart disease, stroke, blindness, kidney disease, nerve problems, and amputation.¹⁴⁵

Although the complications associated with diabetes are widespread, the effects of diabetes take time to develop. Subsequently many people have no visible signs or symptoms of diabetes. Symptoms can also be so mild that people might not even notice them. However, some visible symptoms include increased thirst, increased hunger, fatigue, increased urination, unexplained weight loss, blurred vision, and sores that do not heal.¹⁴⁶

Figure 88 Age-standardized treated prevalence per 100 for diabetes, Alberta 1986 to 2003

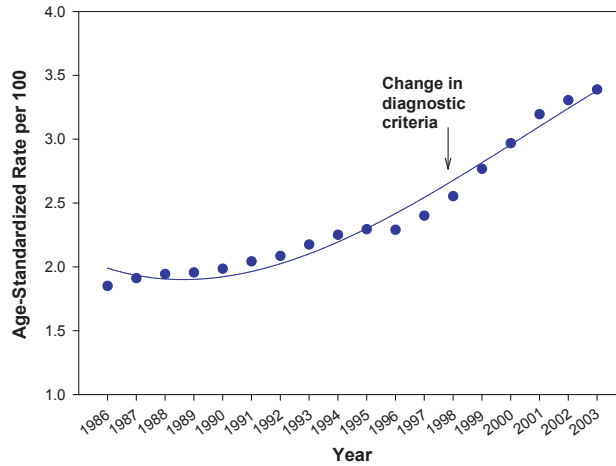
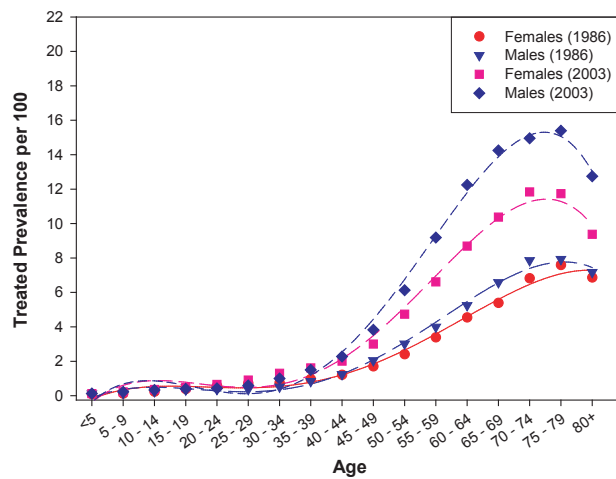


Figure 89 shows the age-specific treated prevalence per 100 population comparing the years 1986 and 2003. With both time periods, diabetes treated prevalence begins to increase after about age 45 and continues to rise until age 80 where there is a drop. Both males and females showed a significant increase from 1986 to 2003 with the male rate remaining higher. Between 1986 and 2003, the difference between males and females has increased creating a greater gap between the sexes than was present in 1986.

Figure 89 Age-specific treated prevalence per 100 population for diabetes, Alberta 1986 and 2003



Significant geographic variation exists in the treated prevalence of diabetes across Alberta's nine regional health authorities (Figure 90). The highest rates appear in the northern most and southern most regions of the province.

Figure 90 Regional differences in the treated prevalence of diabetes, Alberta 2003

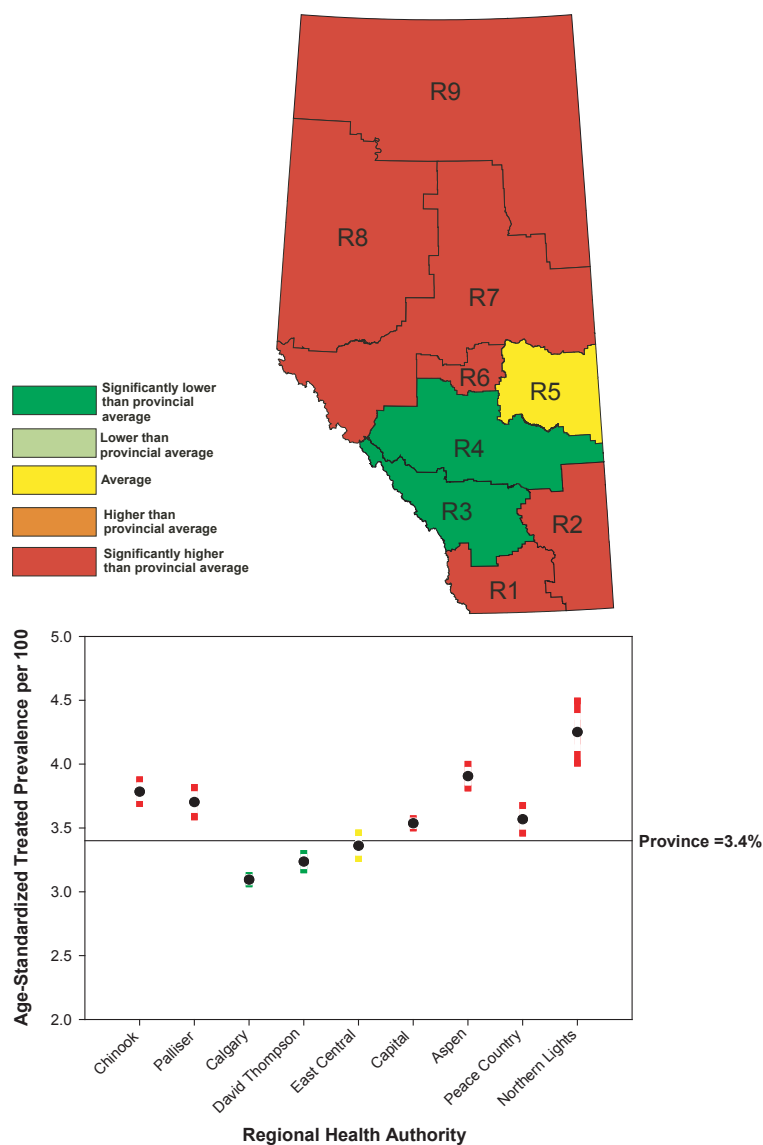
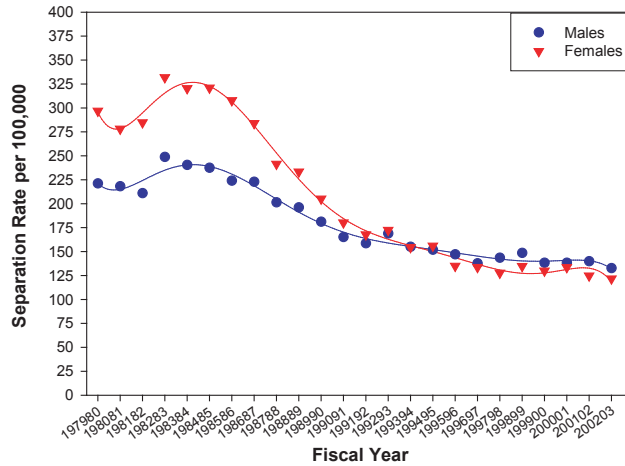


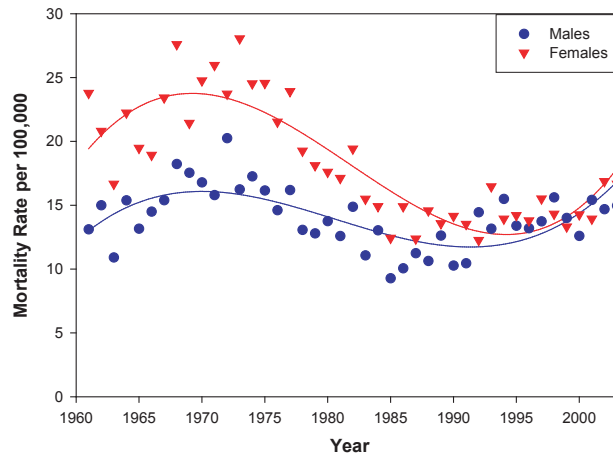
Figure 91 Age-standardized hospital separation rates per 100,000 population for diabetes, Alberta 1979/1980 to 2002/2003



Hospital separation rates for diabetes have decreased substantially from the early 1980s and have stabilized. Also, the sex difference has been reduced and reversed with males now slightly more likely to be hospitalized.

The age-standardized mortality rate per 100,000 population attributed to diabetes is displayed in **Figure 92**. Between 1960 and 1985, there was a general decline in diabetes mortality for both males and females. From 1985 to 2000, the mortality rate remained relatively stable and the sex difference evident in the 1960s and 1970s diminished. Since 2000, it appears that diabetes mortality may be increasing, however, more years of data will be needed to see if this trend continues.

Figure 92 Age-standardized mortality rate per 100,000 population for diabetes, Alberta 1960 to 2003



Chronic Renal Failure

Chronic renal (kidney) failure occurs when disease damages the kidneys so that they can no longer adequately remove fluids and wastes from the body or maintain proper levels of kidney-regulated chemicals in the bloodstream.¹⁴⁷ Because of the wide range of functions that kidneys perform, damaged kidneys affect nearly the whole body, and can lead to hypertension, the weakening of bones, anemia, and a shorter life span. Overall, patients with chronic kidney disease that leads to end-stage renal disease, have a life span that is 18 to 57 per cent that of the general population,¹⁴⁸ those on dialysis have a lifespan that is 16 to 37 per cent that of the general population.¹⁴⁹

A number of causal factors are associated with chronic kidney disease. The four most common causes are diabetes, hypertension, the inflammation of the filtering units of the kidney called glomerulonephritis, and polycystic kidney disease.¹⁵⁰ Additional risk factors include the sustained use of analgesics such as acetaminophen and ibuprofen, the clogging and hardening of arteries leading to the kidneys, obstruction of the flow of urine as caused by stones or an enlarged prostate, HIV infection, sickle cell disease, heroin abuse, amyloidosis, kidney stones, chronic kidney infection and certain cancers.¹⁵¹ Individuals at highest risk of developing chronic renal disease include those with diabetes mellitus type 1 or 2, high blood pressure, or high cholesterol.

Prevention of renal failure can be achieved by lifestyle modification. By maintaining a healthy diet, moderate exercise, and risk management, the various diseases that lead to kidney failure can be prevented. Prevention of these initial chronic diseases, such as hypertension, the hardening of the kidneys, and liver disease, will prevent kidney failure.

The treated prevalence of chronic renal failure has been increasing since 1983 (**Figure 93**). Treated prevalence rates have seen a nearly four fold increase for both males and females. When comparing chronic renal failure treated prevalence in the years 1986 and 2003, the main increase is among individuals over the age of 60 years (**Figure 94**). Also, the gap between males and females has increased over this time period with males having the higher rate.

Figure 93 Age-standardized treated prevalence per 100 population for chronic renal failure, Alberta 1983 to 2003

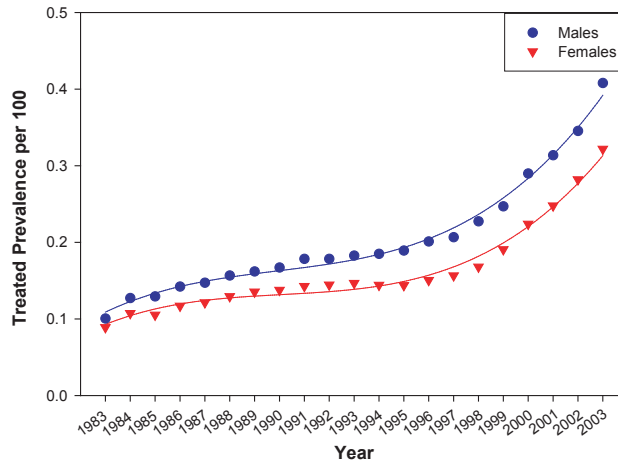
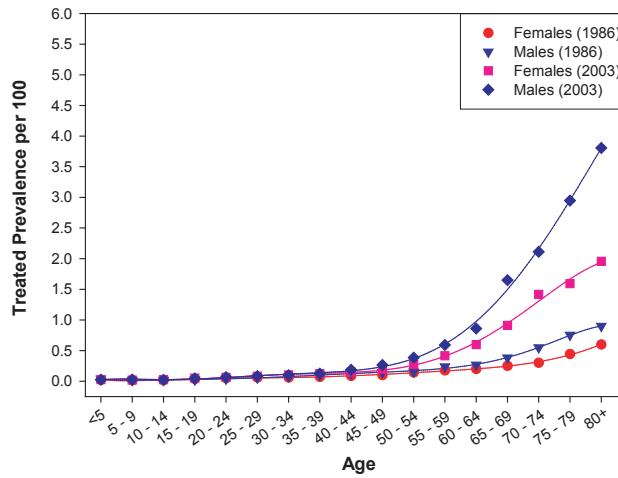
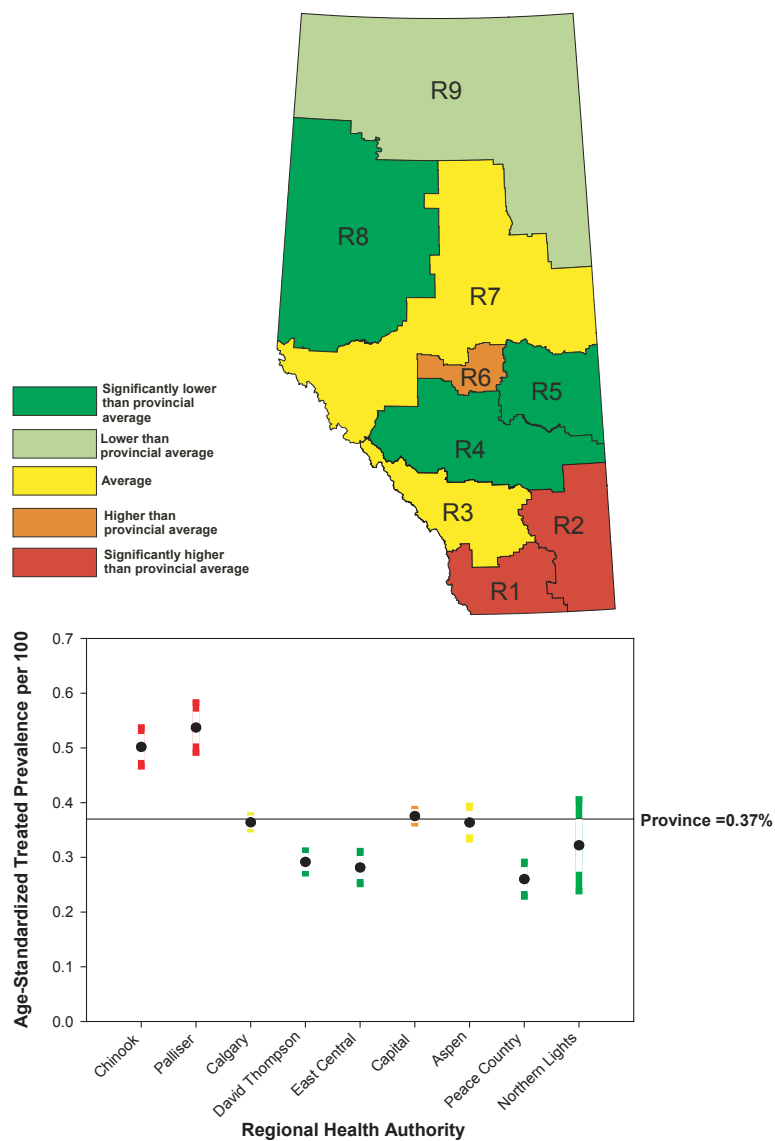


Figure 94 Age-specific treated prevalence per 100 population for chronic renal failure, Alberta 1986 and 2003



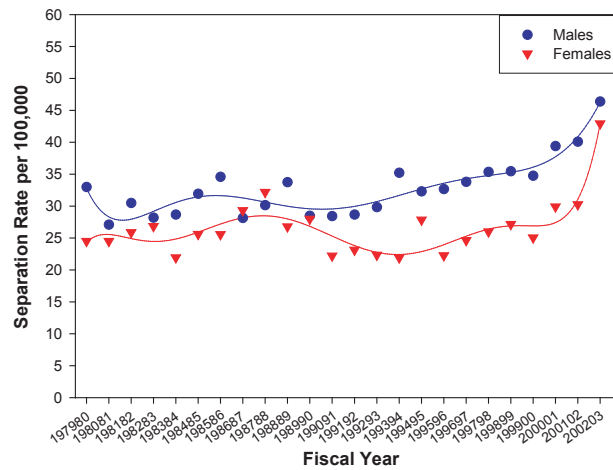
Treated prevalence of chronic renal failure varied across health region with the two southern most regions (Palliser and Chinook) having rates significantly above the provincial average (Figure 95).

Figure 95 Regional differences in the treated prevalence of chronic renal failure, Alberta 2003



Hospital separation rates attributed to chronic renal failure are shown in **Figure 96**. Males have consistently had higher rates than females. In recent years, there appears to be an increasing trend for hospitalization for both sexes. This is consistent with the pattern seen in treated prevalence over time.

Figure 96 Age-standardized hospital separation rates per 100,000 population for chronic renal failure, Alberta 1979/1980 and 2002/2003



Arthritis

The term arthritis does not refer to a single disease but to over a hundred different conditions.¹⁵² These can be anything from relatively mild forms of tendonitis to crippling disorders such as rheumatoid arthritis.¹⁵³ Arthritis includes diseases that affect joints, bones, and supporting tissue such as bursa, tendons, and muscles and ligaments.¹⁵⁴ Arthritis causes pain and loss of movement.¹⁵⁵ Chronic forms of arthritis can last for life and often involve some inflammation of joints. The most common form of arthritis is osteoarthritis. This arthritis is known as the “wear and tear” arthritis and affects 1 in 10 Canadians.¹⁵⁶ This form of arthritis involves the loss of cartilage on bone joints.¹⁵⁷ Without cartilage the bones are neither cushioned nor lubricated, and pain results when the joints stop functioning smoothly and instead grind together.¹⁵⁸

Although there is no known way to prevent arthritis, lifestyle changes may reduce or limit symptoms.¹⁵⁹ Risk reducing methods include: drinking alcohol only in moderation, maintaining a healthy body weight, protecting joints by performing activities in the correct manner, avoiding activities which may injure joints, and avoiding activities that place excessive strain on joints.¹⁶⁰

The treated prevalence of arthritis in Alberta has remained relatively stable (**Figure 97**). Females are more likely to be diagnosed with arthritis. In comparing the treated prevalence for arthritis in 1986 with that of 2003, the general pattern of increasing prevalence with increasing age remained (**Figure 98**).

Figure 97 Age standardized treated prevalence per 100 for arthritis in Alberta, 1983 to 2003

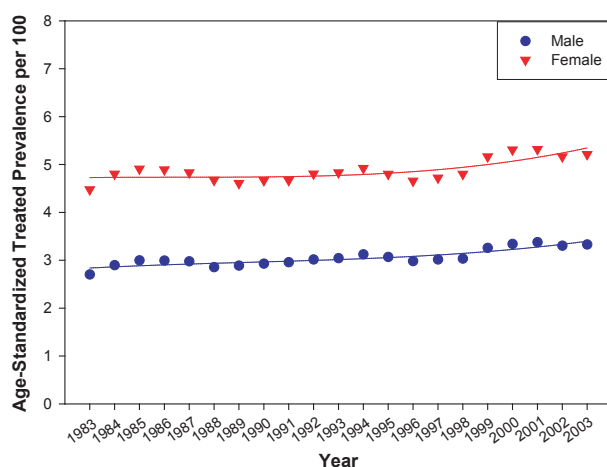
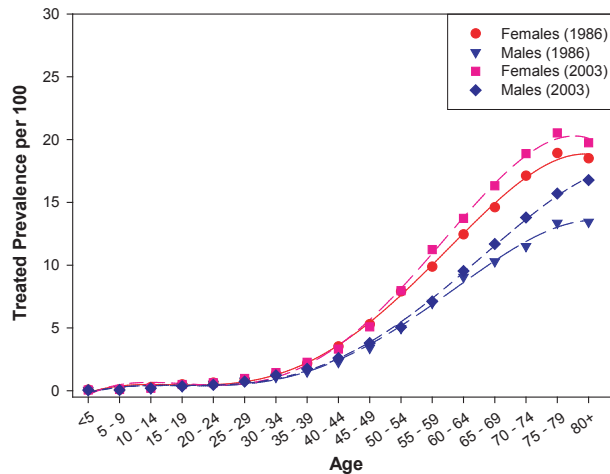


Figure 98 Age-specific treated prevalence per 100 population for arthritis, Alberta 1986 and 2003

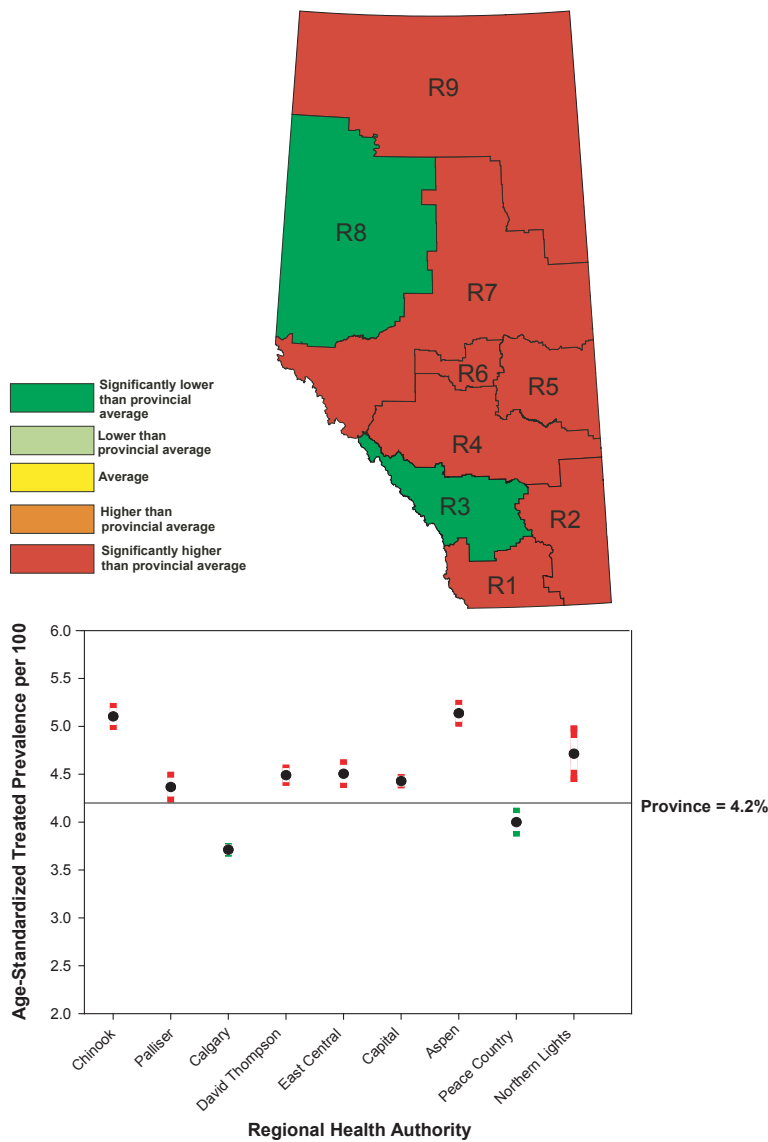


HISTORICAL EVENTS

- 1990** Midwifery is legally recognized. Alberta appoints its first Mental Health Patient Advocate.
- 1990** "The Rainbow Report: Our Vision for Health" report is released by the Premier's Commission on Future Health Care for Albertans.
- 1991** Alberta's population is 2,519,180. Life expectancy is 81.2 years for females and 75 years for males.
- 1994** Alberta establishes 17 regional health authorities, replacing over 200 separate boards and administrations. Hepatitis A vaccine introduced in Alberta.
- 1994** Canada is declared polio free.
- 1995** Alberta launches its Aboriginal Health Strategy. Universal hepatitis B vaccine is introduced.
- 1998** HIV infection becomes reportable. The Alberta Centre for Injury Control and Research is established.

Approximately 4.2 per cent of the population received care related to arthritis in Alberta in 2003. The treated prevalence varied significantly across health regions with seven of the nine having treated prevalence rates above the provincial average and two below. There was nearly a 50 per cent difference in the rates between the highest and lowest regions (Figure 99).

Figure 99 Regional differences in the treated prevalence of arthritis, Alberta 2003



Hospital separation rates for arthritis have declined significantly since 1979/1980. Females have consistently had higher separation rates than males. Arthritis is a condition that can be well managed in the community and the decreasing hospital separation rates demonstrate that there has been a move away from inpatient care.

Figure 100 Age standardized hospital separation rates per 100,000 population for arthritis, Alberta 1979/1980 to 2002/2003

