Burden of Illness

in

Capital District Health Authority

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Executive Summary

The Capital District Health Authority (CDHA) has recognized the importance of informing their strategic planning activities with current evidence about the burden of illness within the district. They partnered with the Population Health Research Unit to compile a report about trends in chronic disease prevalence, hospitalization rates, and procedure rates for residents of CDHA in the years 2002-2004 as well as to project the future burden on the system that will result from the aging population.

Data from administrative health records were used to determine the number of CDHA residents eligible to receive healthcare services in fiscal years 2002-2004; the number of residents who were treated for each of nine chronic health conditions, mental health problems, and/or injury; the rate of all-cause hospital admissions, and the rate of specific surgical procedures among CDHA residents. The FY2004 rates were applied to the projected population for 2011, 2016, 2021, and 2026 to determine the overall rate of treatment, hospitalizations, and procedures assuming constant prevalence for each of six age groups.

Prevalence of Chronic Disease, Mental Health Problems, and Injury

Overall, cardiovascular disease (CVD) and mental health (MH) problems had the highest treatment prevalence in the population, each affecting about 1 in 5 CDHA residents (CVD=20.5%, MH=19.9%). More than 13.7% of the CDHA population was identified as having received treatment for injury. Other commonly treated health conditions were chronic lower respiratory disease (10.6%), arthritis (6.9%), diabetes (6.2%), and invasive cancer (3.8%). More rare conditions included in situ cancer, stroke, renal failure, chronic disease of the liver, and HIV/AIDS (all <1.2%).

The overall treatment prevalence for cancer, CVD, and injury was similar between females and males; however, there were differences between the sexes when age was taken into account. The treatment prevalence among females was consistently higher than that of males for arthritis and mental health problems and was consistently lower than that of males for HIV/AIDS and chronic renal failure. The overall treatment prevalence for diabetes and chronic liver disease was lower for females than for males; however, there were some age-specific exceptions. The treatment prevalence for chronic lower respiratory disease among females was higher than among males up to 69 years of age, and then the pattern reversed.

The treatment prevalence for most health conditions increased with age but remained stable across the three year study period. The exceptions were chronic liver disease, MH problems, and injury. For chronic liver disease, the treatment prevalence was stable across

time, but peaked at 60-69 years for females and 50-59 years for males. The treatment prevalence of MH problems also was consistent across time but did not increase steadily across the age spectrum; however, the highest rates for both sexes were observed among those 80 years of age and older. For injury, there was a slight decline in the treatment prevalence across time; the treatment prevalence was quite stable up to 70 years of age, and then began to increase.

Projected Prevalence of Chronic Disease, Mental Health Problems, and Injury

The treatment prevalence for all but two conditions is expected to rise over the next 20 years; however, the rank order of the conditions will stay the same. In 2026, CVD still will be the most prevalent chronic condition with a treatment prevalence of 26.2%. The treatment prevalence for MH problems and injury will remain relatively constant; these two conditions are projected to be the second and third most prevalent health problems in 2026 (MH=19.8%, Injury=13.9%). By 2026, more than one in ten CDHA residents will be receiving treatment for chronic lower respiratory disease (11.5%). The treatment prevalence for arthritis will increase to 8.7%, the treatment prevalence of diabetes will increase to 7.9%, and the treatment prevalence of invasive cancer will increase to 5.2%. The treatment prevalence for the remaining conditions will be lower than 1.5%.

Hospitalizations Rates

The hospitalization rates for CDHA residents with treatment prevalent chronic health conditions, MH problems, and/or injury were much higher than the rate for residents with no chronic conditions. The highest rates (per 10,000 population) of all-cause hospitalization were observed among those with chronic renal failure (11,465.2), cancer (in situ: 10,945.0; invasive: 9,695.7), stroke (8,066.0), and chronic liver disease (6,609.8). The lowest rate of all-cause hospitalization was observed among those with MH problems (2,931.3 per 10,000). This rate was still 4.3 times greater than the all-cause hospitalization rate for CDHA residents with no chronic disease (689.2 per 10,000).

Regardless of condition, the all-cause hospitalization rate among females was generally higher than among males for the younger age groups and generally lower than among males for the older age groups. For all conditions except chronic liver disease and chronic renal failure, the all-cause hospitalization rate among males increased consistently with age. For females with treatment prevalent chronic lower respiratory disease and/or injury, the all-cause hospitalization rate increased steadily across the age groups. For females with treatment prevalent arthritis, invasive cancer, CVD, diabetes, and/or MH problem, the all-cause hospitalization rate increased steadily from age 40 onward.

Projected Hospitalizations Rates

By 2026, the all-cause hospitalization rates for CDHA residents with treatment prevalent chronic health conditions, MH problems, and/or injury are projected to increase over the FY2004 rates; however, the rank order will not change. Residents with chronic lower respiratory disease are projected to have the greatest increase in all-cause hospitalization rate (20.7% increase), followed by those with MH problems (17.7%), chronic liver disease (17.3%), and injury (16.9%).

Procedure Rates

Cataract surgery was by far the most common procedure among CDHA residents (104.0-110.2 per 10,000), followed by cardiac catheterization (45.3-53.3 per 10,000). Percutaneous transluminal coronary angioplasty (PTCA) was the third most common procedure (14.1-21.4 per 10,000). The remaining procedures, coronary artery bypass graft (CABG) surgery and orthopaedic surgery of the hip or knee, were relatively rare (<15 per 10,000 population). Rates for the three cardiovascular procedures were higher among male residents of CDHA than among female residents. Conversely, the overall rates for cataract surgery and hip and knee replacement were higher among females than males; however, this pattern did not always hold when age was taken into account.

The rates for PTCA, cardiac catheterization, and hip replacement surgery increased across the three study years. The rates for CABG, cataract surgery, and knee replacement surgery did not show a consistent pattern across time. For the most part, the rates for all procedures increased with age. In general, the rates for PTCA peaked at 60-69 years of age while the rates for cardiac catheterization, CABG surgery, and knee replacement surgery peaked at 70-79 years. The rates for cataract surgery and hip replacement surgery were more variable across the age spectrum.

Projected Procedure Rates

By 2026, the rate for all procedures is projected to increase; however, the rank order will remain unchanged. Cataract surgery had the greatest projected increase in rate (60.5%), followed by hip and knee replacement surgery (Hip: 49.4%, Knee 49.2%). The smallest increase in rate was projected for PTCA (26.5%), with the rate increasing from 21.4 to 27.1 per 10,000.

Chapter 1: Introduction

1.1 Statement of Need

The burden of illness associated with chronic disease, injury, and mental health problems is a serious concern for health planners and policy makers in Nova Scotia. The prevalence and mortality rates in Nova Scotia for specific chronic diseases exceed national averages (e.g., diabetes[1], cancer[2], chronic obstructive lung disease[3]). The Capital District Health Authority (CDHA) has recognized the importance of compiling information about burden of illness for the purpose of strategic planning. The information provided in this report examines trends in chronic disease prevalence, hospitalization rates, and procedure rates for residents of CDHA in the years 2002-2004. These rates are then projected out over a period of 20 years as a means of estimating the use of resources for chronic conditions in the coming years.

1.2 Role of the Population Health Research Unit

This report was compiled by the Population Health Research Unit (PHRU) housed within the Department of Community Health and Epidemiology, Faculty of Medicine, Dalhousie University. Preparing this type of report is directly in line with PHRU's mission to collaborate with others to conduct population and health services research and to inform and evaluate health policy. The Province of Nova Scotia supplies PHRU with complete Medicare, Pharmacare, and hospital discharge records that can be used alone or linked together for research purposes. PHRU can enhance these core datasets by establishing linkages to a number of unique population-based clinical registries as well as major population surveys. Together these resources constitute a comprehensive data system with exceptional opportunities for research.

PHRU has various structures and processes in place to ensure that the databases are secure and protected from unauthorized access or tampering. Maintaining the confidentiality and privacy of records is the highest priority for PHRU management and staff.

1. Health Canada. Responding to the challenge of diabetes in Canada: first report of the National Diabetes Surveillance System (NDSS) 2003. [Online]. Cat No. H39-4/21-2003E. Her Majesty the Queen in Right of Canada; 2003. Available from: URL: http://www.phac-aspc.gc.ca/ccdpc-cpcmc/ndss-snsd/english/pubs_reports/pdf/WEB_NDSS_English_Report-nocover.pdf
2. Public Health Agency of Canada. Major chronic diseases surveillance on-line. [Online]. Neoplasms, both sexes combined, all ages, 2001. Available from URL: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/cgi-bin/mcdchart?DATA_TYPE=R&CAUSE1=003&YEAR1=01&AGE1=0&SEX1=3&DATA_SET=MORT&CPROV1=View+Chart&CI=NO
3. Public Health Agency of Canada. Major chronic diseases surveillance on-line. [Online]. Chronic obstructive lung disease, both sexes combined, all ages, 2001. Available from URL: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/cgi-bin/ mcdchart?DATA_TYPE=R&CAUSE1=174&YEAR1=01&AGE1=0&SEX1=3&DATA_SET=MORT&CPROV1=View+Chart&CI=NO

1.3 What to Expect in This Report

The purpose of this report is to inform healthcare planners about the current burden of illness in the CDHA and to provide estimates of what the future burden of illness will be as the population ages (assuming a constant prevalence). The following topics will be addressed in the chapters that follow:

- Methods used to compile report (Chapter 2: Methodology)
- Basic demographic profile of CDHA (Chapter 3: Demographics)
- Current and projected rates of treatment and hospitalization for select chronic diseases (Chapter 4: Chronic Diseases)
- Current and projected rates of treatment and hospitalization for mental health problems (Chapter 5: Mental Health)
- Current and projected rates of treatment and hospitalization for injury (Chapter 6: Injury)
- Current and projected rates for select surgical procedures (Chapter 7: Procedures)

1.4 Target Population

The target population for this report is all adult (≥18 years) residents of CDHA who were eligible to receive health services in one or more of the three study years (2002, 2003, & 2004). For the purpose of this report, year is defined as a fiscal year (FY), beginning on April 1st of one calendar year and ending March 31st of the following calendar year (e.g., FY2002 covers the period of April 1, 2002 to March 31, 2003).

1.5 Key Variables

Two demographic variables, sex and age, were used to divide the target population into sub-groups. The age groups of interest were 18-39, 40-49, 50-59, 60-69, 70-79, and 80 years and over.

Variables related to burden of illness include the following nine chronic health conditions (arthritis, cancer [invasive and in situ], cardiovascular disease [including stroke], diabetes, HIV/AIDS, liver disease, lower respiratory disease, and renal failure) as well as mental health problems and injury.

Variables for procedures include: percutaneous transluminal coronary angioplasty (PTCA), cardiac catheterization, coronary artery bypass graft (CABG) surgery, cataract surgery, and orthopaedic surgery of the hip and knee.

1.6 Comparisons

Comparisons between males and females, between age groups, and between fiscal years were made for the current and projected rates of treatment and hospitalization among those with chronic disease, mental health problems, and/or injury as well as for the current and projected rates of procedures.

1.7 Projections

The 2004 rates for treatment prevalence, all-cause hospitalization, and procedures were used to calculate expected rates in 5, 10, 15, and 20 years time, **assuming constant prevalence**. Projected population growth rates for Nova Scotia[1] were applied to the current CDHA population to calculate the expected population size in 2011, 2016, 2021, and 2026. The 2004 treatment prevalence, hospitalization, and procedure rates were applied to the projected CDHA population to obtain the projected rates for 2011, 2016, 2021, and 2026.

1. Province of Nova Scotia. Community Counts. Demographics: Demographic Estimates and Projections Nova Scotia. 2004-2006. Available from URL: http://www.gov.ns.ca/ finance/communitycounts/table_d21_1.asp?gnum=pro9012&gname=Nova%20Scotia&gview=1&gtype=Province&ptype=geo&acctype=demographics

Chapter 2: Methodology

2.1 Databases

Four of the databases housed at PHRU were used for this report. A brief description of each database is given below.

2.1.1 Insured Patient Registry

The Insured Patient Registry contains longitudinal information about every resident of Nova Scotia who is registered as a beneficiary of provincial MSI healthcare services including demographic information, date of birth, and patient geography. Records for members of the Canadian Armed Forces, the RCMP, and their families are not captured in this database as their healthcare costs are covered federally. This registry was used to determine the CDHA population eligible for healthcare services in each year of the study.

2.1.2 MSI Physician Billing Database (MSI-PB)

The MSI-PB contains administrative records for each insured health service rendered by a physician and paid for by the Nova Scotia provincial healthcare system. Services that are provided by physicians using a fee-for-service payment structure are recorded on standardized data entry forms and submitted within three months of the date of service. Services provided by physicians with an alternative funding structure (e.g., sessional payments, alternative payment plans, and academic funding) are recorded and submitted using shadow billings forms; however, there is currently no mechanism in place to gauge the percentage of alternative payment services captured through shadow billing forms. Information captured in the MSI-PB includes patient demographics, date and location of services, and diagnostic codes. This database was used to determine the number of CDHA residents who were treated for specific chronic diseases, mental health problems, or injury in each year of study.

2.1.3 Canadian Institute of Health Information Discharge Abstract Database (CIHI-DAD)

The CIHI-DAD contains a comprehensive administrative transcription of each admission to a Nova Scotia hospital. This database contains individual patient-level information including patient demographics, diagnoses, and treatments. These data were used in concert with the MSI-PB to determine the number of CDHA residents treated for specific chronic diseases, mental health problems, or injury. The CIHI-DAD was also used to determine the all-cause hospitalization rate for CDHA residents.

2.1.4 Patient Geography Database

The Patient Geography Database contains geographic information derived from a patient's postal code for every patient in each of the other PHRU databases. In areas where postal codes do not map exactly to other geographic boundaries (e.g., in rural areas), the geographic code is assigned probabilistically using the relative population weights of the surrounding areas. This database was used to assign individual records from the MSI-PB and CIHI-DAD to a particular district health authority (DHA).

2.2 Study Population

The study population consisted of residents of CDHA, 18 years of age and older, who were eligible for healthcare services during one or more of the three study years (2002, 2003, & 2004). A total of 346,427 unique individuals were identified using the Insured Patient Registry across the three years of study. In any given year, between 310,000-320,000 individuals were eligible for healthcare services.

Individuals were identified as being residents of CDHA if Capital was listed in the DHA field of the Patient Geography Database. A small percentage of records was missing information in this field. For these records, the first three digits of the postal code (i.e., the FSA) were used to determine whether individual records should be assigned to CDHA. Only FSAs located solely within CDHA (27 of 30) were used to flag CDHA residents. The three FSAs that were not used to identify CDHA residents (BOJ, BON, and BOP) encompass rural areas within and adjacent to CDHA. The CDHA population captured using these combined methods was within a half percent of the Community Counts population projections[1] for 2002, 2003, and 2004 (Table 2.1).

Table 2.1 CDHA population size versus Community Counts (CC) population estimates

Fiscal Year	Source	Population Size†	% Difference
2002	PHRU	300,017	99.59%
	CC	301,260	
2003	PHRU	305,265	100.07%
	CC	305,048	
2004	PHRU	309,636	100.31%
	CC	308,693	

† Population aged ≥ 20 years

1. Province of Nova Scotia. Community Counts. Demographics: Demographic Estimates and Projections Nova Scotia. 2004-2006. Available from URL: http://www.gov.ns.ca/ finance/communitycounts/table_d21_1.asp?gnum=pro9012&gname=Nova%20Scotia&gview=1&gtype=Province&ptype=geo&acctype=demographics

2.3 Treatment Prevalence for Chronic Disease, Mental Health Problems, and Injury

A caveat of using administrative data such as the MSI-PB or the CIHI-DAD for research is that records exist only for those who have accessed healthcare services during the study period. Individuals who have a condition but do not use the healthcare system during the study period will not be represented in the administrative records for that time frame. For this reason, the term treatment prevalence, rather than disease prevalence, will be used throughout this report.

To ensure maximum sensitivity in detecting cases, all diagnostic codes listed on a MSI-PB or CIHI-DAD record were included in the case definition (Dx 1-3 and Dx 1-25, respectively). The treatment prevalence for each of the health conditions listed in Table 2.2 was calculated by dividing the number of unique individuals who had an MSI-PB or CIHI-DAD record with the corresponding diagnostic codes by the number of CDHA residents at risk.

Example:

In FY2004, a total of 65,614 CDHA residents had one or more MSI-PB or CIHI-DAD records with a diagnostic code for cardiovascular disease (CVD). The total number of CDHA residents at risk was 319,993; thus, the overall treatment prevalence for CVD in FY2004 was 20.5% (65,614/319,993*100).

Table 2.2 Diagnostic codes for chronic disease, mental health, and injury

Health Condition	ICD-9 Codes (MSI-PB)	ICD-10 Codes (CIHI-DAD)
Arthritis†	274, 712-716	M05-M19
Cancer (Invasive)	140-208	C00-C97
Cancer (In situ)	230-234	D00-D09
Cardiovascular Disease (including stroke)	390-448	I00-I78
Stroke	430-438	I60-I69
Diabetes	250	E10-E14
HIV/AIDS	042, V08	B24, Z21
Chronic Liver Disease	570-573	K70-K76
Chronic Lower Respiratory Diseases	490-496	J40-J46
Chronic Renal Failure	585, 586	N18-N19
Mental Health Problems	290-316	F00-F69
Injury‡	800-995	S00-S99, T00-T79, T90-T98

† Includes only inflammatory polyarthropathies and arthrosis

‡ Excludes medical and surgical complications

2.4 Hospitalization Rates

The total number of all-cause hospital admissions to CDHA facilities (excluding the IWK Health Centre) for both residents and non-residents of CDHA was identified using the CIHI-DAD. Hospitalization records for individuals identified as having a particular health condition (see Section 2.3) were flagged and the percentage of yearly hospitalizations accounted for by individuals with each of 12 health conditions (see Table 2.2) was calculated by dividing the number of hospitalizations with a given chronic condition flag by the total number of hospitalizations for the year. These percentages were calculated separately for residents and non-residents of CDHA.

Example:

In FY2004, there was a total of 57,252 hospitalizations among CDHA residents; 24,978 of these admissions were made by individuals identified as treatment prevalent for cardiovascular disease (CVD). Thus, 43.6% (24,978/57,252*100) of all hospitalizations within CDHA facilities were made by residents with treatment prevalent CVD.

Hospitalization rates were calculated for CDHA residents with each of 12 health conditions listed in Table 2.2 by dividing the number of hospitalizations with a given chronic condition flag by the number of people identified as treatment prevalent for that same condition. For the purpose of comparison, hospitalization rates also were calculated for CDHA residents with no chronic conditions.

Example:

In FY2004, there was a total of 24,978 hospitalizations among CDHA residents flagged as treatment prevalent for CVD. The total number of CDHA residents identified as treatment prevalent for CVD was 65,614; thus, the hospitalization rate among CDHA residents with treatment prevalent CVD was 3,806.8 hospitalizations per 10,000 population (24,978/65,614*10,000).

2.5 Procedure Rates

Specific procedures were identified from all procedure fields in the CIHI-DAD (Table 2.3). Procedure rates were calculated as the number of procedures in each year divided by the CDHA population at risk.

Example:

In FY2004, a total of 686 percutaneous transluminal coronary angioplasty procedures were performed in CDHA hospitals. The total number of CDHA residents at risk was 319,993; thus, the overall rate for PTCA procedures was 21.4 per 10,000 population (686/319,993*10,000).

Table 2.3 Surgical procedures

Procedure		CCI Code	
Percutaneous Transluminal Coronary Angioplasty (PTCA)		1.IJ.50 or 1.IJ.57	
Cardiac Catheterization		3.IP.10	
Coronary Artery Bypass Graft Surgery (CABG)		1.IJ.76	
Cataract Surgery		1.CL.89	
Orthopaedic Surgery (Arthroplasty)		Hip	Knee
	Replacement	1.VA.53†	1.VG.53‡
	Fixation	1.VA.74	1.VG.74
	Repair	1. VA.80	1. VG.80

† Excludes 1.VA.53.LA-SL-N: cement spacer

‡ Excludes 1.VG.53.LA-SL-N: cement spacer

2.6 Projections

Disease, hospitalization, and procedure rate projections were based on projected population trends by age and sex assuming constant prevalence (i.e., prevalence in FY2004). Projected population trends for Nova Scotia were obtained from the Nova Scotia Community Counts website[1] and used to estimate future CDHA population counts.

The estimated Nova Scotia population for 2006† was used as a proxy for the current population, and then the rate of change was calculated separately for males and females aged 18-39‡, 40-49, 50-59, 60-69, 70-79, ≥80 by dividing the projected population by the current population. This rate of change was then applied to the current CDHA population (FY2004) to derive population projections for 2011, 2016, 2021, and 2026. The FY2004 treatment, hospitalization, and procedure rates were applied to the projected population to determine the projected number of cases for 2011, 2016, 2021, and 2026. Finally, the projected number of cases was divided by the projected population to determine the projected treatment, hospitalization, and procedure rates. Table 2.4 contains the values used to calculate the projected rate of cardiovascular disease for females in 2026.

† Age groups for 2004 population estimates on the Community Counts website were divided into 5 years increments with the final age group being 75+; however, age groups for the population projections (2006, 2011, 2016, 2021, 2026) were divided into 5 years increments with the final age group being 85+. Age groups used for the projected population were consistent with the age groups for this study; thus, the projected population for 2006 was selected to represent the current population when calculating the rate of change in the NS population.

‡ Age groups on the Community Counts website were divided into 5 years increments; thus, population estimates for the 18-39 year age group were not available. Estimates for ages 20-39 years were used instead.

1. Province of Nova Scotia. Community Counts. Demographics: Demographic Estimates and Projections Nova Scotia. 2004-2006. Available from URL: http://www.gov.ns.ca/ finance/communitycounts/table_d21_1.asp?gnum=pro9012&gname=Nova%20Scotia&gview=1&gtype=Province&ptype=geo&acctype=demographics

Table 2.4 Values used to calculate the projected rate of cardiovascular disease among female residents of CDHA in 2026

Age group	FY2004 population count	Rate of change in population count[1]	2026 projected population count	FY2004 rate of CVD	Projected number of CVD cases
18–39	69,193	0.88018804	60,903	5.03%	3,063
40–49	36,402	0.77130974	28,077	13.81%	3,877
50–59	27,360	0.88522549	24,220	28.46%	6,893
60–69	15,693	1.65690187	26,002	47.11%	12,250
70–79	11,135	1.88390988	20,977	60.70%	12,733
≥80	8,050	1.40607589	11,319	62.98%	7,129
Total	167,833		171,498		45,945

Example:

In 2026, a total of 45,945 female residents of CDHA are projected to be treatment prevalent for cardiovascular disease (CVD). The total number of females at risk will be 171,498; thus, the overall treatment prevalence for CVD among female residents of CDHA will be 26.8% (45,945/171,498*100) in the year 2026 (vs 21.2% in FY2004).

1. Province of Nova Scotia. Community Counts. Demographics: Demographic Estimates and Projections Nova Scotia. 2004–2006. Available from URL: http://www.gov.ns.ca/ finance/communitycounts/table_d21_1.asp?gnum=pro9012&gname=Nova%20Scotia&gview=1&gtype=Province&ptype=geo&acctype=demographics

Chapter 3: Demographics

A total of 346,427 unique individuals (F=52.4%; M=47.6%) were eligible to receive healthcare services in CDHA across the three years of study; between 310,000-320,000 were eligible in any given year. Overall, the ratio of females to males was 1.1:1. However, this ratio increased with age (1.3:1 for 70-79 year-olds & 2.1:1 for those 80 years and older). Just over 40% of the population was between 18 and 39 years of age, slightly less than 40% was between 40 and 59 years, and the remaining 20% was 60 years of age or older.

The CDHA population is expected to increase from 319,993 in FY2004 to 327,020 by 2026.[1] All of this growth will occur in the older segment of the population (≥60 years). The population under 60 years of age is projected to decline.[1]

Figure 3.1 Number of CDHA residents eligible to receive healthcare services in FY2004 versus projected population for 2026

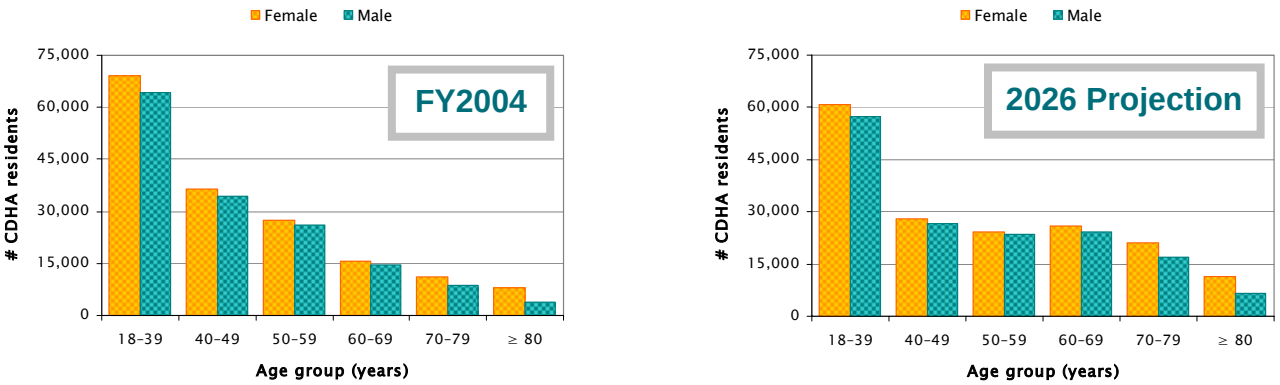


Table 3.1 Number of unique CDHA residents eligible to receive healthcare services

Fiscal Year	# of Females	# of Males	Total
2002	163,211	146,878	310,089
2003	165,785	149,642	315,427
2004	167,833	152,160	319,993
2002-2004	181,496	164,931	346,427

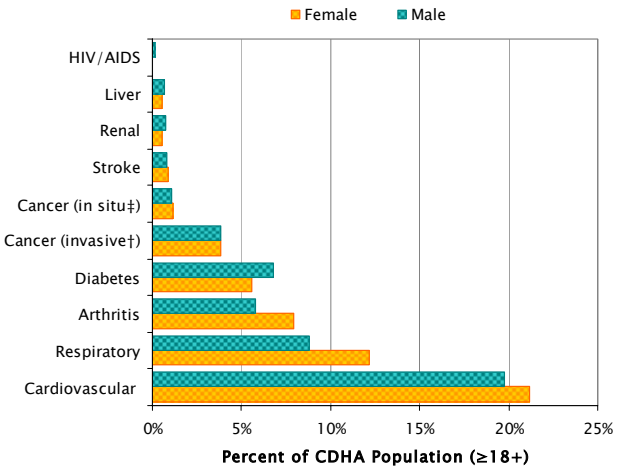
1. Province of Nova Scotia. Community Counts. Demographics: Demographic Estimates and Projections Nova Scotia. 2004-2006. Available from URL: http://www.gov.ns.ca/ finance/communitycounts/table_d21_1.asp?gnum=pro9012&gname=Nova%20Scotia&gview=1&gtype=Province&ptype=geo&acctype=demographics

Chapter 4: Chronic Disease

4.1 Overview

Cardiovascular disease was by far the most prevalent chronic disorder to be treated among female and male residents of CDHA (F=21.2%; M=19.8%). Disease of the lower respiratory system was the second most prevalent chronic condition; the treatment rate among females (12.2%) was almost 40% higher than that of males (8.8%). Arthritis was the third most prevalent chronic condition among females (4th among males), with almost 8% of the female population receiving treatment. Diabetes was the third most prevalent condition to be treated among males (4th among females) with 6.8% of the male population receiving treatment. Malignant cancer had the fifth highest treatment prevalence, with nearly 4% of female and male residents receiving treatment. In situ cancer, stroke, renal failure, chronic disease of the liver, and HIV/AIDS were the least prevalent chronic conditions among CDHA residents, with a treatment prevalence of 1.2% or less.

Figure 4.1 Treatment prevalence of chronic disease among CDHA residents in FY2004



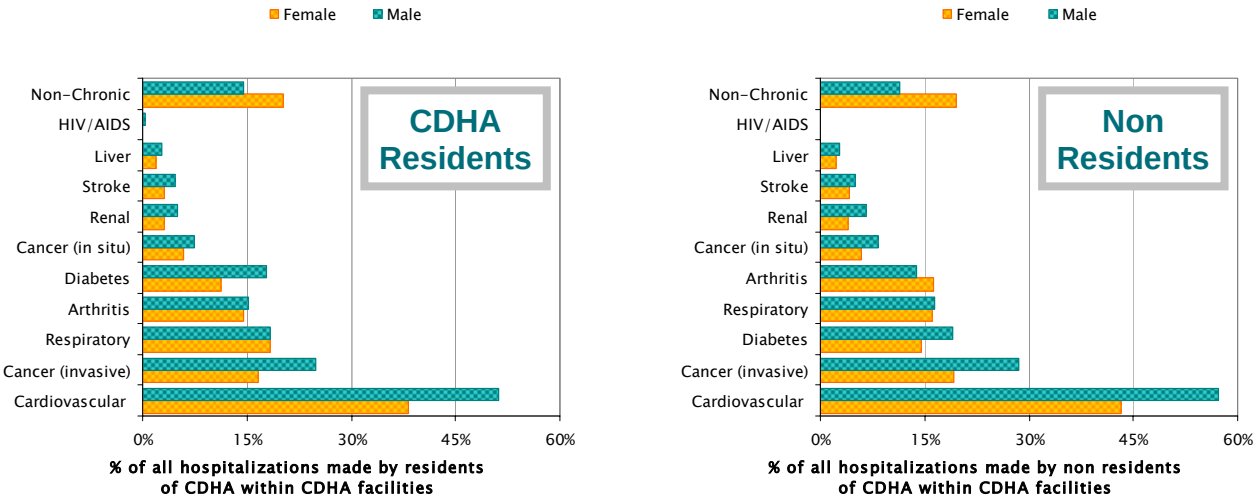
† Invasive cancer spreads from the site of origin into other tissues (see page 20)
‡ In situ cancer does not spread beyond the site of origin (see page 23)

During FY2004, there were 80,487 admissions to CDHA hospitals excluding the IWK Health Centre. About 71% of these admissions were made by CDHA residents. Of the 57,252 hospitalizations among CDHA residents, over 43.6% were made by individuals identified as treatment prevalent for cardiovascular disease (F=38.2%; M=51.2%). About 20.0% of all hospital admissions were made by CDHA residents flagged as treatment prevalent for invasive cancer (F=16.6%; M=24.9%). The percentage of hospitalizations made by females identified as treatment prevalent for CVD, invasive cancer, and diabetes

was lower than that of males. It is unlikely that this disparity is due to a high volume of pregnancy and childbirth related hospitalizations among females as hospitalizations for the IWK Health Centre were not included in this study. The percentage of hospitalizations made by CDHA residents without chronic disease was higher for females (20.3%) than for males (14.5%).

Non-residents of CDHA had 23,235 admissions (28.9%) to CDHA hospital facilities. About 50.5% of these hospitalizations were made by individuals identified as treatment prevalent for cardiovascular disease (F=43.2%; M=57.2%) – this percentage was slightly higher than that of CDHA residents. Nearly a quarter of the hospitalizations among non-residents was made by individuals with treatment prevalent invasive cancer (F=19.2%; M=28.5%). Again, this percentage was slightly higher than that observed among CDHA residents. A relatively large percentage of the non-resident admissions to CDHA hospitals was made by individuals identified as treatment prevalent for diabetes, chronic lower respiratory disease, and arthritis (≥15%).

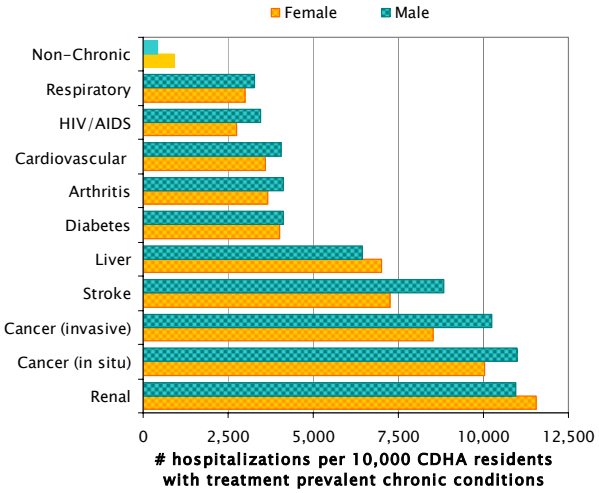
Figure 4.2 Percentage of hospitalizations made by CDHA residents and non-residents with treatment prevalent chronic disease (versus no chronic disease) during FY2004



Although the highest percentage of hospital admissions in FY2004 was made by CDHA residents identified as treatment prevalent for cardiovascular disease, the highest rate of hospitalization occurred among those with renal failure (F=11,552.7 per 10,000; M=10,964.0 per 10,000), followed closely by invasive cancer (F=8,537.9 per 10,000; M=10,257.0 per 10,000) and in situ cancer (F=10,025.5 per 10,000; M=10,979.5 per 10,000). There was a large disparity in the hospitalization rate between CDHA residents with and without chronic disease. The hospitalization rate among those with no chronic disease was 672.2 hospitalizations per 10,000 population (F=930.8; M=435.6). Residents with treatment prevalent chronic lower respiratory disease had the lowest hospitalization

rate (3,108.7 per 10,000) among those identified as having one or more chronic diseases, and this rate was 4.6 times higher than that of CDHA residents with no chronic disease.

Figure 4.3 Hospitalization rate for CDHA residents with treatment prevalent chronic disease (versus no chronic disease) during FY2004



4.2 Arthritis†

Definition: a chronic condition characterised by inflammation (swelling) of one or more joints that results in pain, restricted movement, and/or deformity[1]

Overall, 6.9% of the CDHA population aged 18 years and older accessed the healthcare system at least once in a 12-month period to receive treatment for arthritis. The treatment prevalence for arthritis increased with age but did not vary across time. A higher proportion of females received treatment for chronic arthritis than males. This difference was observed across all age groups and all years. The highest female:male ratio occurred among CDHA residents aged 50-59 years (1.4:1); this finding was consistent across all three years of study.

† Includes only inflammatory polyarthropathies and arthrosis

Figure 4.4 Treatment prevalence for arthritis by sex and year

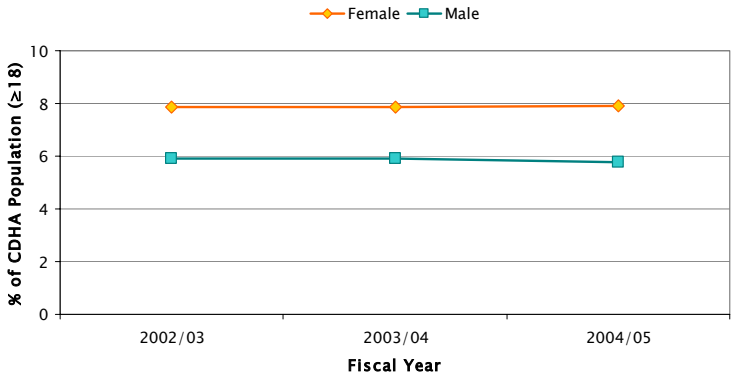
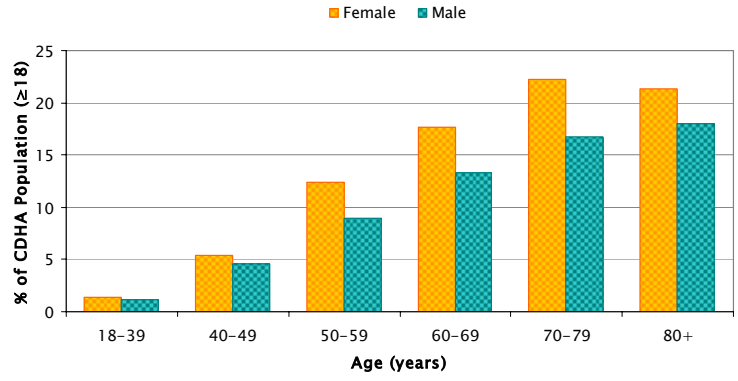


Figure 4.5 Treatment prevalence for arthritis by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: arthritis. [Online] 2005 Oct; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/001243.htm

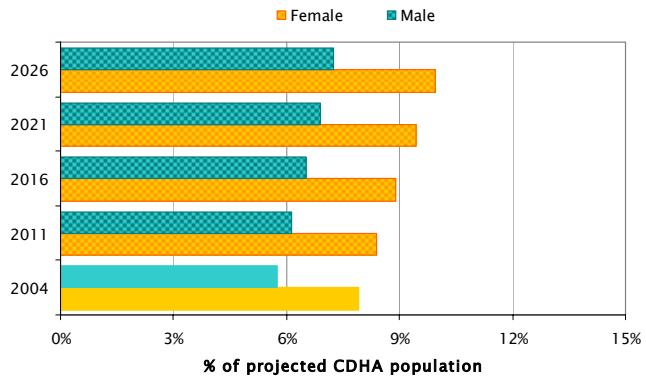
The treatment prevalence for arthritis increased with age; thus, as the CDHA population ages, the overall treatment prevalence rate for arthritis will increase. Assuming the FY2004 treatment prevalence for each of the six age groups does not change, 8.7% (vs 6.9% in FY2004) of the CDHA population will be receiving treatment for arthritis by 2026 (F=9.9%; M=7.3%), representing a 28% increase in the number of cases.

Table 4.1 Projected number of CDHA residents to receive treatment for arthritis by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	14,278	7.4%	9,501	8.4%
2016	15,296	15.1%	10,184	16.2%
2021	16,227	22.1%	10,784	23.0%
2026	17,043	28.2%	11,278	28.6%

FY2004 cases: Female = 13,290 Male = 8,767

Figure 4.6 Projected treatment prevalence for arthritis by sex and year



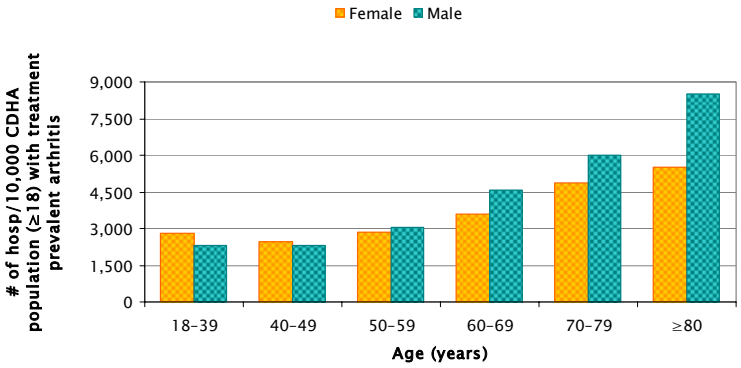
Overall, the annual rate of hospitalization (all-cause) among CDHA residents with treatment prevalent arthritis was 5.7 times higher than that of CDHA residents with no chronic disease. This disparity was much greater for males (9.6 times) than females (3.9 times).

Table 4.2 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent arthritis (versus no chronic condition)

Year	Female		Male	
	Arthritis	No chronic condition	Arthritis	No chronic condition
2002	3,796.6	971.5	4,276.2	462.7
2003	3,832.7	972.5	4,368.2	426.8
2004	3,659.1	930.8	4,125.7	435.6

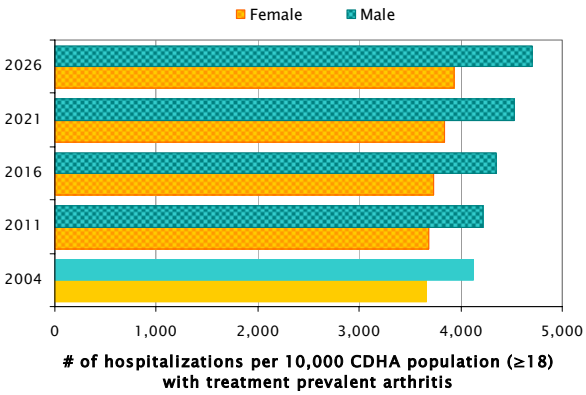
The all-cause hospitalization rate varied by age. For both females and males in FY2004, the lowest rates (<2,500 per 10,000 population) were observed among those aged 18-49. For this age range, the rate of hospitalization among females was slightly higher than among males. By age 50-59 years, the hospitalization rate began to increase steadily for both females and males, with the rate among males exceeding that of females.

Figure 4.7 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent arthritis in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups remain constant, the rate of hospitalization among CDHA residents receiving treatment for arthritis will increase by 10.3% by the year 2026 (F=7.6%; M=13.9%). Assuming both treatment prevalence and hospitalization rates remain stable, there will be approximately 4,240.7 hospitalizations for every 10,000 CDHA residents identified as treatment prevalent for arthritis (F=3,937.9; M=4,698.2).

Figure 4.8 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent arthritis



4.3 Cancer

4.3.1 Invasive Cancer

Definition: a condition marked by the uncontrolled growth of abnormal cells in almost any tissue or organ and the invasion of these cells into adjacent or more distal tissues[1]

Approximately, 3.8% of the CDHA population aged 18 years and older was treated at least once in a 12-month period for some form of invasive cancer. The yearly treatment prevalence increased with age but did not vary across time. When age was taken into account, however, substantial between sex differences became evident. The treatment prevalence among female residents of CDHA exceeded that of males for the younger age groups (18-59); the reverse was true for older age groups (≥60). At 40-49 years of age, the treatment prevalence among females was 1.8 times higher than among males across all years; at 80 or more years of age, treatment prevalence was twice as high among males as females.

Figure 4.9 Treatment prevalence for invasive cancer by sex and year

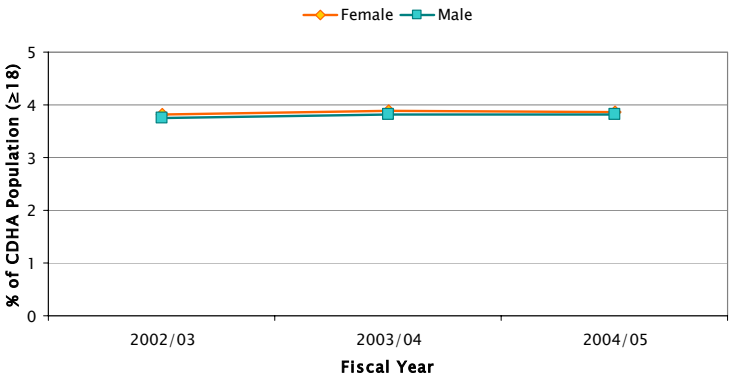
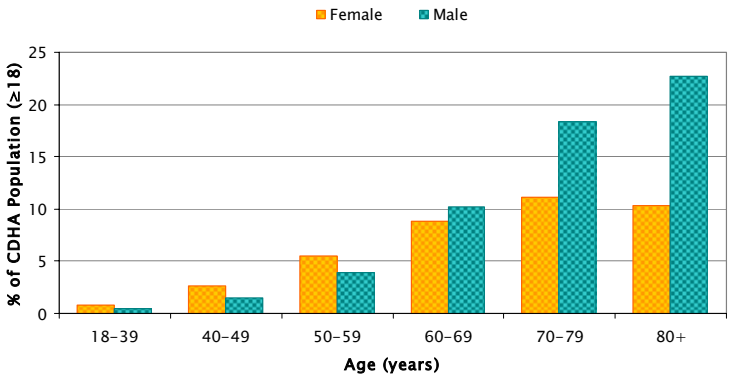


Figure 4.10 Treatment prevalence for invasive cancer by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: cancer. [Online] 2006 Sept; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/001289.htm

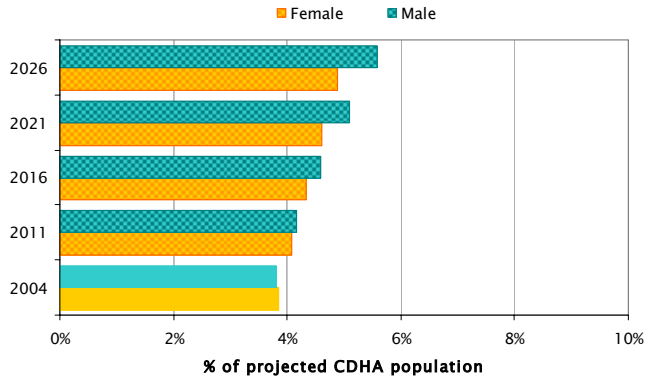
Treatment prevalence for invasive cancer rose with age; as such, the overall treatment prevalence rate will increase as the CDHA population ages. Assuming the FY2004 treatment prevalence rate holds for each of the six age groups, 5.2% (vs 3.8% in FY2004) of the CDHA population will receive one or more treatments in a 12-month period for invasive cancer by the year 2026 (F=4.9%; M=5.6%). Overall, there will be a 39% increase in the number of cases (F=29.2%; M=49.9%).

Table 4.3 Projected number of CDHA residents to receive treatment for invasive cancer by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	6,952	7.5%	6,452	11.3%
2016	7,455	15.2%	7,170	23.7%
2021	7,937	22.7%	7,975	37.6%
2026	8,360	29.2%	8,693	49.9%

FY2004 cases: Female = 6,470 Male = 5,798

Figure 4.11 Projected treatment prevalence for invasive cancer by sex and year



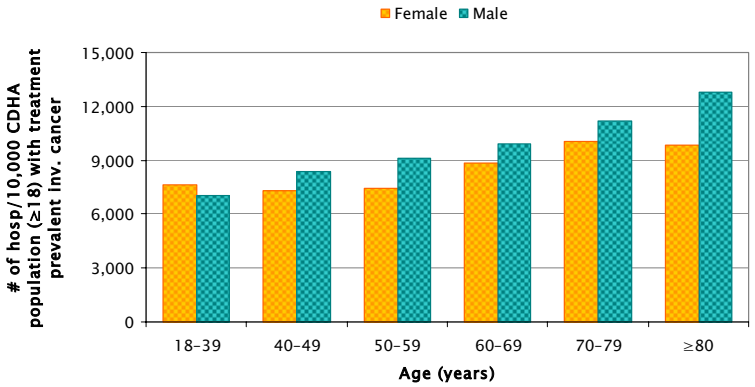
The all-cause hospitalization rate for CDHA residents with treatment prevalent invasive cancer was 14 times higher than for CDHA residents with no chronic disease. This difference was much greater for males (24.1 times) than females (9.3 times).

Table 4.4 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent invasive cancer (versus no chronic condition)

Year	Female		Male	
	Invasive cancer	No chronic condition	Invasive cancer	No chronic condition
2002	9,196.2	971.5	11,072.0	462.7
2003	8,887.3	972.5	10,564.9	426.8
2004	8,537.9	930.8	10,257.0	435.6

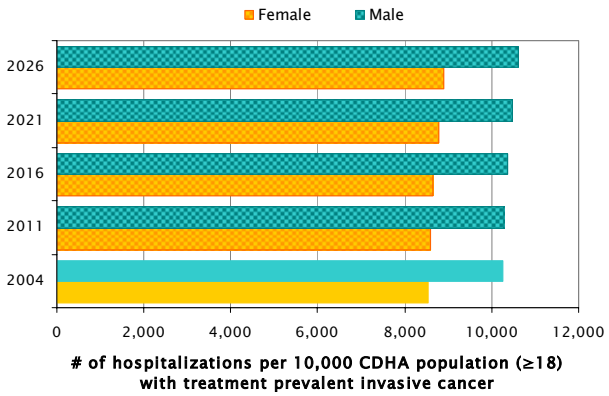
For females with treatment prevalent invasive cancer, there was no consistent age trend in hospitalization rates for FY2004. The lowest rates were observed among those aged 40-49 years (7,287.6 per 10,000), and the highest rates were observed among those aged 70-79 years (10,024.2 per 10,000). For males, the all-cause hospitalization rate increased steadily with age from 7,023.4 per 10,000 population at 18-39 years of age to 12,761.4 per 10,000 by 80 years of age. The rate of hospitalization among females was lower than among males for all but the youngest age group.

Figure 4.12 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent invasive cancer in FY2004



Assuming the FY2004 treatment prevalence and hospitalization rates for each of the six age groups hold constant, the overall rate of hospitalization among CDHA residents with treatment prevalent invasive cancer will increase by 4.4% by the year 2026 (F=4.1%; M=3.5%). There will be approximately 8,884.5 hospitalizations for every 10,000 females with treatment prevalent invasive cancer and 10,612.6 hospitalizations for every 10,000 males with treatment prevalent invasive cancer.

Figure 4.13 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent invasive cancer



4.3.2 In Situ Cancer

Definition: a condition marked by the uncontrolled growth of abnormal cells in almost any tissue or organ without invasion into adjacent or more distal tissues[1]

Just over 1% of the CDHA population aged 18 years and older was treated at least once in a 12-month period for in situ cancer. The yearly treatment prevalence increased with age but did not differ across time. Although the treatment prevalence did not appear to vary by sex, when age was taken into account, sizeable differences between the sexes became evident. The treatment prevalence among female residents of CDHA exceeded that of males for the younger age groups (18-59), while the reverse was true for older age groups (≥60). Although, the proportion of females between 18 and 39 years of age with treatment prevalent in situ cancer was nearly four times higher than the proportion of males in the same age group, the treatment prevalence was very low (<0.35%) for both sexes. For CDHA residents 80 or more years of age, treatment prevalence among males was twice as high as among females.

Figure 4.14 Treatment prevalence for in situ cancer by sex and year

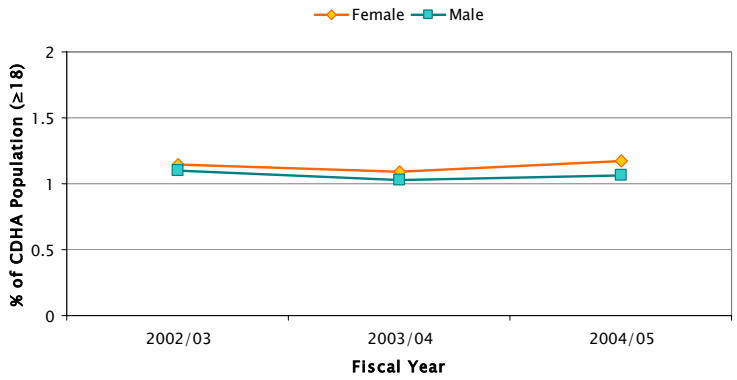
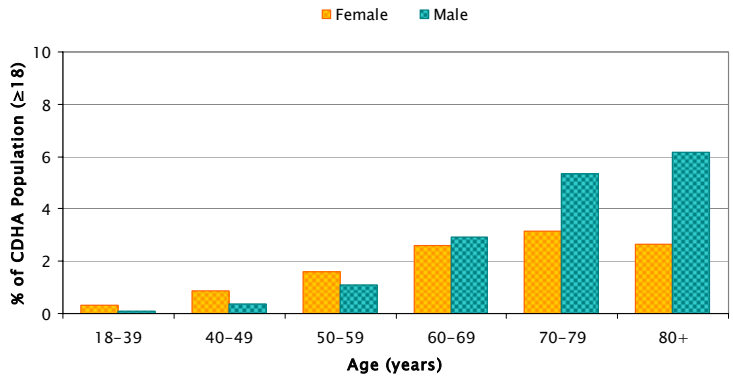


Figure 4.15 Treatment prevalence for in situ cancer by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: cancer. [Online] 2006 Sept; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/001289.htm

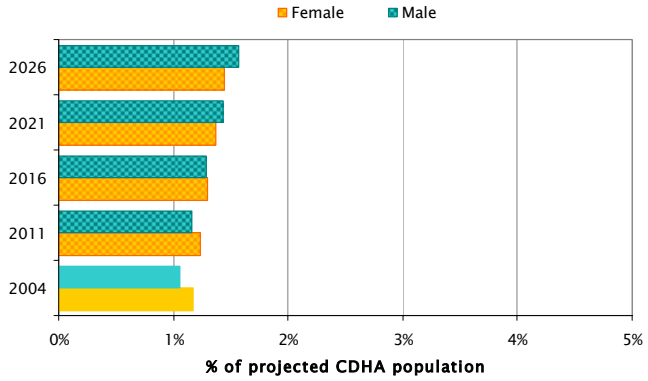
The yearly treatment prevalence for in situ cancer increased with age, which means the overall treatment prevalence rate will increase as the CDHA population ages. If the FY2004 treatment prevalence rate remains constant for each of the six age groups, 1.5% (vs 1.1% in FY2004) of the CDHA population will be treated for in situ cancer by 2026 (F=1.4%; M=1.6%). Overall, the number of cases will increase by 37.8% (F=26.4%; M=51.7%).

Table 4.5 Projected number of CDHA residents to receive treatment for in situ cancer by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	2,093	6.9%	1,800	11.6%
2016	2,234	14.1%	2,007	24.5%
2021	2,365	20.8%	2,241	38.9%
2026	2,475	26.4%	2,446	51.7%

FY2004 cases: Female = 1,958 Male = 1,613

Figure 4.16 Projected treatment prevalence for in situ cancer by sex and year



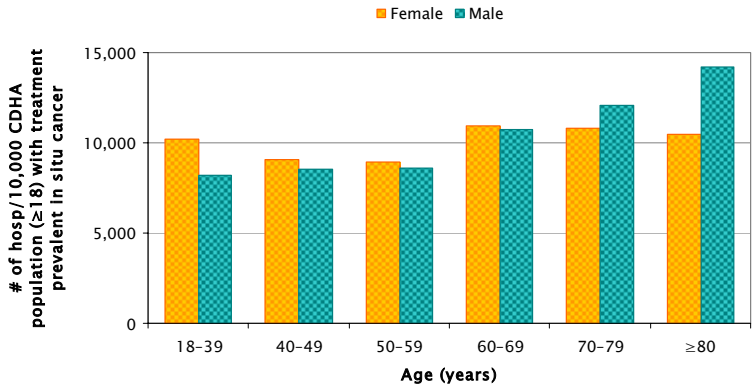
The overall hospitalization rate for CDHA residents with treatment prevalent in situ cancer was 15.9 times higher than that of CDHA residents with no chronic disease (F=11.1 times; M=25.6 times). Although there is a 1.1:1 ratio between hospitalizations and cases, not every individual with treatment prevalent in situ cancer **necessarily** was hospitalized. Some individuals may have had multiple hospitalizations whereas others may have had none.

Table 4.6 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent in situ cancer (versus no chronic condition)

Year	Female		Male	
	In situ cancer	No chronic condition	In situ cancer	No chronic condition
2002	11,226.8	971.5	11,658.4	462.7
2003	10,745.0	972.5	11,220.0	426.8
2004	10,025.5	930.8	10,979.5	435.6

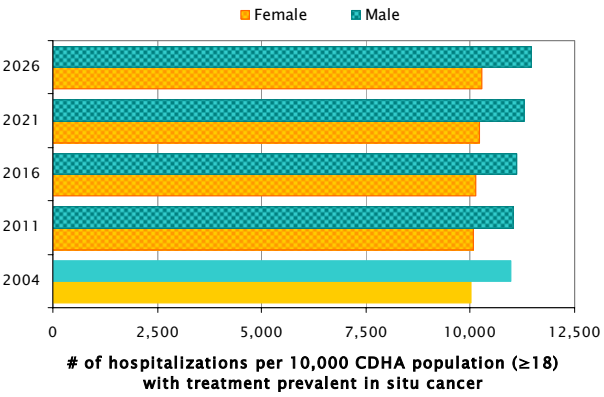
Among females with treatment prevalent in situ cancer in FY2004, those between 50 and 59 years of age had the lowest all-cause hospitalization rate (8,904.1 per 10,000) and those between 60 and 69 years of age had the highest rate (10,948.9 per 10,000). For males, the hospitalization rate rose consistently with age (18-39: 8,196.7 per 10,000; ≥80: 14,184.1 per 10,000). The rate of hospitalization among females exceeded that of males for the four youngest age groups while the reverse was true for the two oldest age groups.

Figure 4.17 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent in situ cancer in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups do not change, the rate of hospitalization among CDHA residents receiving treatment for in situ cancer will increase by 3.9% by the year 2026 (F=2.6%; M=4.3%). In twenty years time, there will be approximately 10,865.1 hospital admissions for every 10,000 CDHA residents identified with treatment prevalent in situ cancer (F=10,287.2; M=11,449.9).

Figure 4.18 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent in situ cancer



4.4 Cardiovascular Disease

4.3.1 Overall Cardiovascular Disease (includes stroke)

Definition: a chronic condition that affects the arteries, veins, arterioles, venules, or capillaries, impairing the heart's ability to function[1]

About one out of every five CDHA residents aged 18 years and older was treated at least once in a 12-month period for cardiovascular disease (CVD). The yearly treatment prevalence increased with age but remained constant across time. For CDHA residents aged 18-39 years, the yearly treatment prevalence was relatively low at <5%; this value increased to over 60% by age 70. Overall, a slightly higher proportion of females than males were treated for CVD. However, when age was considered, only females between the ages of 18 and 39 had a higher treatment prevalence (F:M ≈ 1.3:1). At ages of 40 years or more, the proportion of CDHA residents treated for CVD was nearly the same for males and females.

Figure 4.19 Treatment prevalence for cardiovascular disease by sex and year

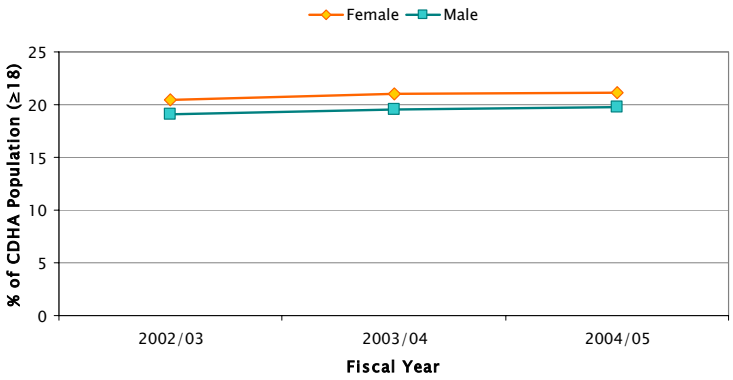
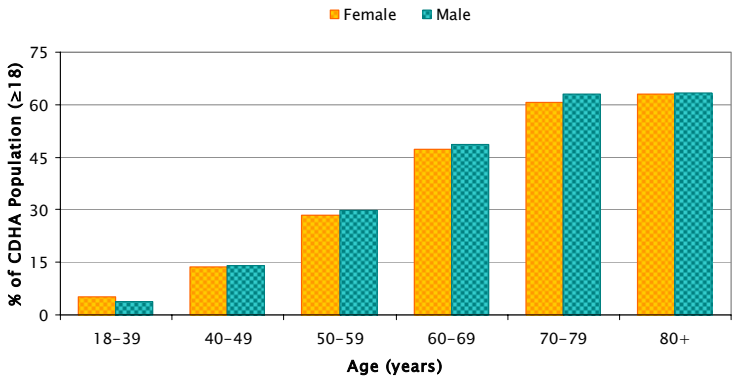


Figure 4.20 Treatment prevalence for cardiovascular disease by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: heart disease. [Online] 2006 Nov; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/000147.htm

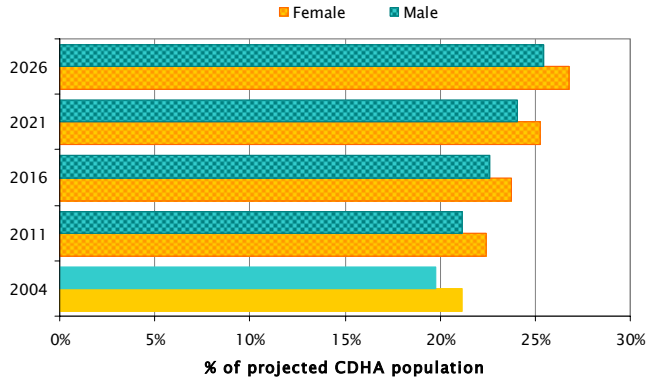
Annual treatment prevalence for CVD increased dramatically with age. Accordingly, the overall treatment prevalence rate will increase as the CDHA population ages. Assuming the FY2004 treatment prevalence rate for each of the six age groups remains unchanged, about 26.2% (vs 20.5% in FY2004) of the CDHA population will be receiving treatment for CVD by 2026 (F=26.8%; M=25.5%). Overall, the number of identifiable cases will increase by 30.4% (F=29.4%; M=31.7%).

Table 4.7 Projected number of CDHA residents to receive treatment for cardiovascular disease by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	38,100	7.3%	32,800	9.0%
2016	40,842	15.0%	35,381	17.6%
2021	43,521	22.5%	37,722	25.4%
2026	45,945	29.4%	39,629	31.7%

FY2004 cases: Female = 35,520 Male = 30,094

Figure 4.21 Projected treatment prevalence for cardiovascular disease by sex and year



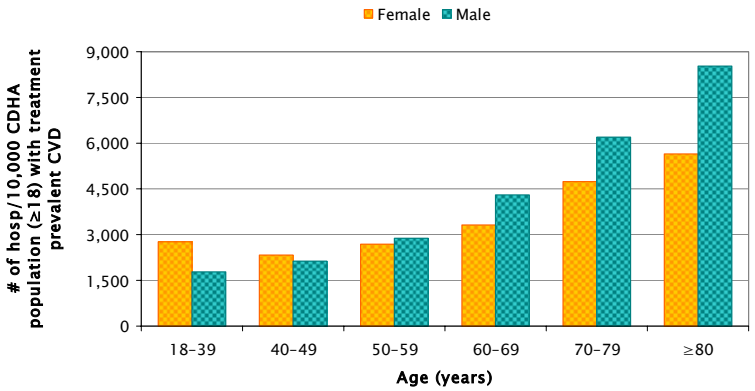
The all-cause hospitalization rate for CDHA residents with treatment prevalent CVD was 5.6 times higher than that of CDHA residents with no chronic disease. This difference was much lower among females (3.8 times) than among males (9.3 times).

Table 4.8 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent cardiovascular disease (CVD; versus no chronic condition)

Year	Female		Male	
	CVD	No chronic condition	CVD	No chronic condition
2002	3,673.6	971.5	4,163.9	462.7
2003	3,712.0	972.5	4,109.2	426.8
2004	3,589.3	930.8	4,063.6	435.6

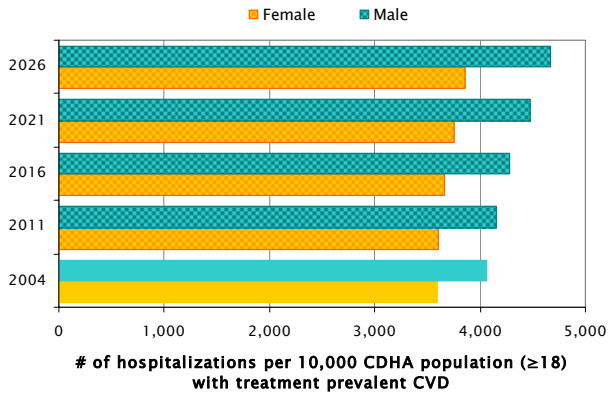
In FY2004, the all-cause hospitalization rate among female residents of CDHA increased steadily from 40-49 years of age onward; for males, the rate increased consistently from 18-39 years onward. The hospitalization rate among females was higher than that of males at 18-39 years of age and 40-49 years of age and lower than that of males from 50 years of age onward. The disparity between younger females and their male counterparts likely would be much greater if hospitalizations for the IWK Health Centre were included (i.e., pregnancy and childbirth related admissions).

Figure 4.22 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent cardiovascular disease (CVD) in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups hold across time, the rate of hospitalization among CDHA residents receiving treatment for CVD will increase by 11.2% by the year 2026 (F=7.6%; M=14.8%). The number of hospitalizations per 10,000 population with treatment prevalent CVD will increase to 3,861.3 for females (vs 3,589.3) and 4,663.2 for males (vs 4,063.6).

Figure 4.23 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent cardiovascular disease (CVD)



4.3.1 Stroke

Definition: a condition characterized by insufficient blood flow to the brain resulting from a blood clot forming in the vessels that carry blood to the brain (ischemic) or from a leaky vessel within the brain (haemorrhagic)[1]

As a subtype of cardiovascular disease, stroke was relatively rare; the yearly treatment prevalence was below 1% for both males and females. The yearly treatment prevalence for stroke was constant across time but increased with age. At 18–39 years of age, the yearly treatment prevalence was negligible (<0.1%), and it increased to approximately 6% by age 80. After age 60, the proportion of males treated for stroke exceeded the proportion of females. In fiscal year 2004, the female:male ratios for treatment prevalence decreased as age increased (1:1.6 for 60–69 years; 1:1.2 for 70–79 years; 1:1.1 for 80 years and over).

Figure 4.24 Treatment prevalence for stroke by sex and year

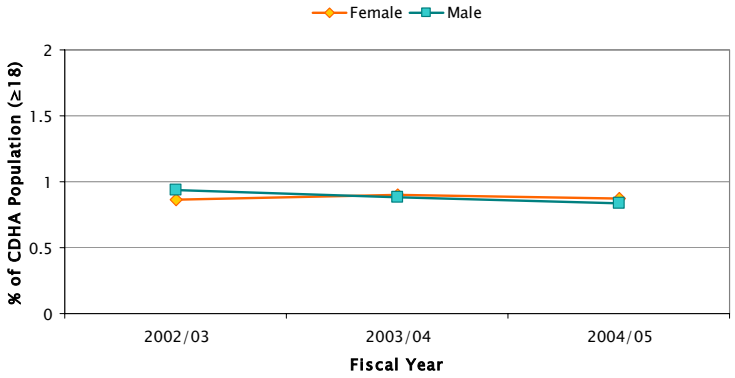
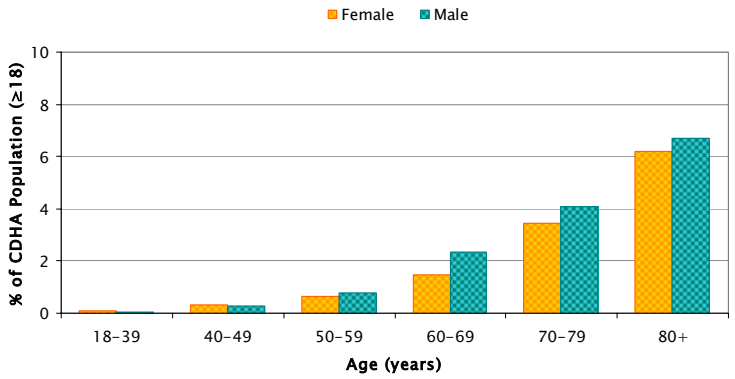


Figure 4.25 Treatment prevalence for stroke by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: stroke. [Online] 2005 June; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/000726.htm

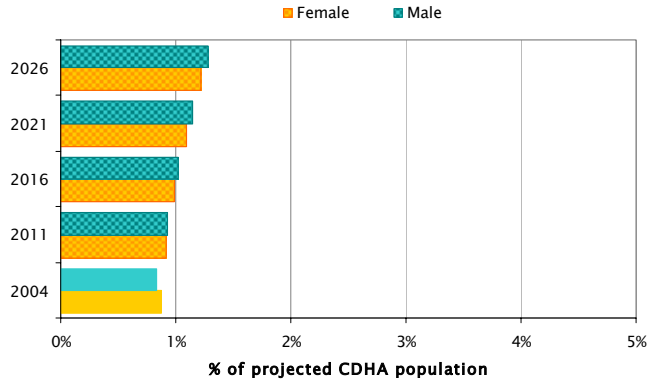
Stroke was relatively rare in the population (<1%); but, the treatment prevalence rose substantially with age. As a result, the overall treatment prevalence rate for stroke will increase as the CDHA population ages. If the treatment prevalence for each of the six age groups stays at the FY2004 rates, about 1.3% (vs 0.9% in FY2004) of the CDHA population will be identified as receiving treatment for stroke by 2026 (F=1.2%; M=1.3%); this rate equates to a 49.4% increase in the number of treatment prevalent cases (F=43.7%; M=55.9%).

Table 4.9 Projected number of CDHA residents to receive treatment for stroke by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	1,566	7.2%	1,433	12.4%
2016	1,704	16.7%	1,604	25.8%
2021	1,888	29.3%	1,800	41.2%
2026	2,098	43.7%	1,987	55.9%

FY2004 cases: Female = 1,460 Male = 1,275

Figure 4.26 Projected treatment prevalence for stroke by sex and year



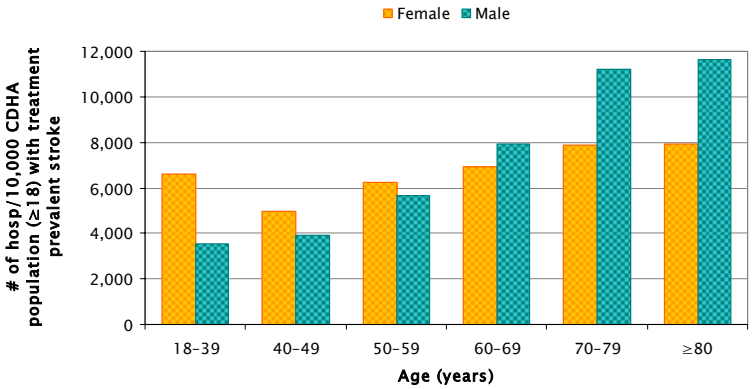
Overall, the all-cause hospitalization rate for CDHA residents with treatment prevalent stroke was 11.7 times higher than that of CDHA residents with no chronic disease (F=7.8 times; M=19.8 times).

Table 4.10 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent stroke (versus no chronic condition)

Year	Female		Male	
	Stroke	No chronic condition	Stroke	No chronic condition
2002	7,233.3	971.5	8,384.1	462.7
2003	7,804.6	972.5	9,053.0	426.8
2004	7,267.1	930.8	8,839.2	435.6

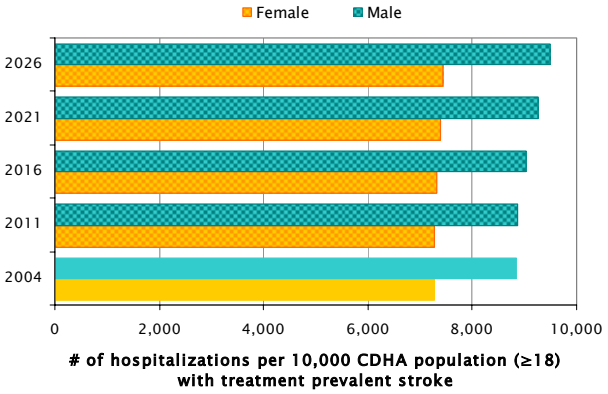
As with CVD, the all-cause hospitalization rate (FY2004) for CDHA residents with treatment prevalent stroke increased with age from 40-49 years of age onward for females and from 18-39 years onward for males. The hospitalization rate among females was higher than that of males up to 59 years of age and was lower than that of males after 60 years age.

Figure 4.27 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent stroke in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups do not change, the rate of hospitalization among CDHA residents receiving treatment for stroke will increase by 5.5% by the year 2026 (F=2.4%; M=7.4%). There will be an additional 176 hospitalizations per 10,000 females with treatment prevalent stroke and an additional 649 hospitalizations per 10,000 males with treatment prevalent stroke.

Figure 4.28 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent stroke



4.5 Diabetes

Definition: a chronic condition resulting in abnormally high blood glucose levels; may be the result of the body making little or no insulin (Type 1) or the result of the body becoming resistant to insulin and/or making too little insulin (Type 2)[1]

Overall, about 6% of CDHA residents 18 years of age and older were treated at least once in a 12-month period for diabetes. The proportion of CDHA residents treated for diabetes was relatively consistent across time. The yearly treatment prevalence for diabetes increased with age up to 79 years and then decreased slightly by 80 years of age. When considering CDHA residents of all ages, the treatment prevalence among males exceeded that of females. This difference held for all age groups except 18-39 year-olds.

Figure 4.29 Treatment prevalence for diabetes by sex and year

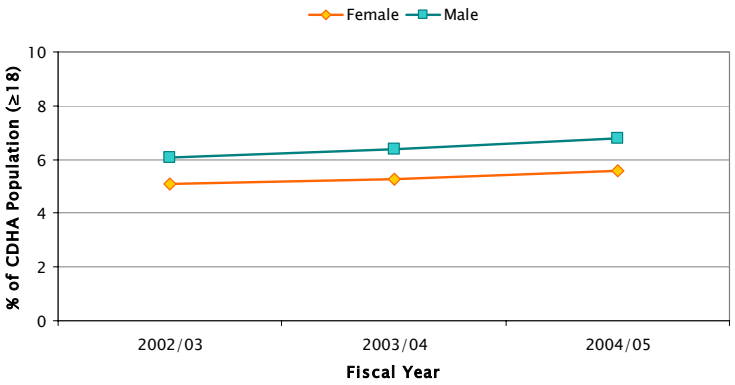
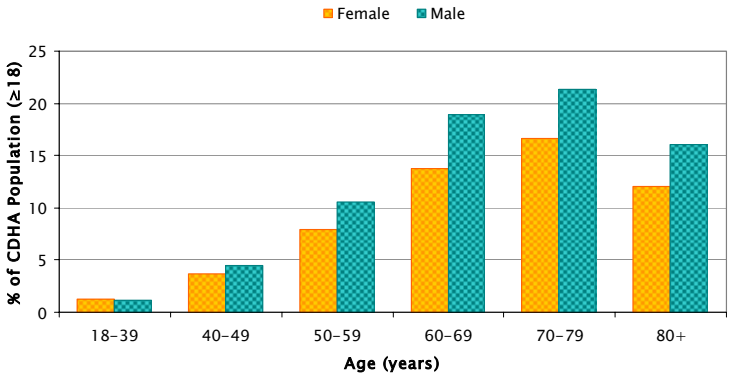


Figure 4.30 Treatment prevalence for diabetes by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: diabetes. [Online] 2005 Feb; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/001214.htm

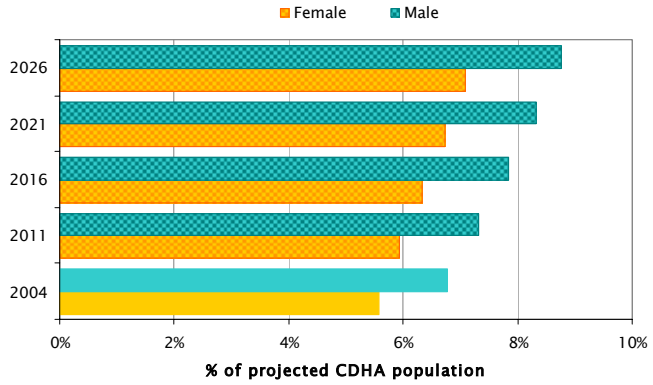
Overall, the yearly treatment prevalence for diabetes increased with age up to 70-79 years. The greatest projected growth in the population will occur among those between 60 and 79 years of age; thus, the overall treatment prevalence of diabetes will increase as the CDHA population ages. Assuming the FY2004 treatment prevalence rate for each of the six age groups remains unchanged, about 7.9% (vs 6.2% in FY2004) of the CDHA population will be receiving treatment for diabetes by 2026 (F=7.1%; M=8.8%), representing a 31% increase in the number of identifiable cases (F=29.6%; M=32.3%).

Table 4.11 Projected number of CDHA residents to receive treatment for diabetes by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	10,098	7.7%	11,312	9.8%
2016	10,861	15.9%	12,244	18.9%
2021	11,571	23.4%	13,035	26.5%
2026	12,150	29.6%	13,627	32.3%

FY2004 cases: Female = 9,374 Male = 10,302

Figure 4.31 Projected treatment prevalence for diabetes by sex and year



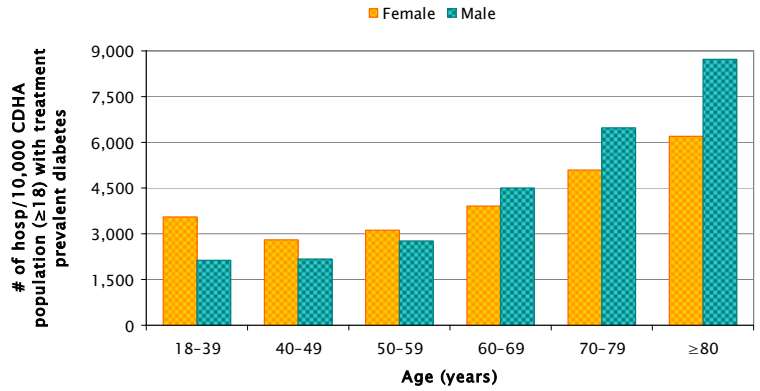
The all-cause hospitalization rate for CDHA residents with treatment prevalent diabetes was 5.9 times higher than that of CDHA residents with no chronic disease (F=4.2 times; M=9.3 times).

Table 4.12 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent diabetes (versus no chronic condition)

Year	Female		Male	
	Diabetes	No chronic condition	Diabetes	No chronic condition
2002	4,120.6	971.5	4,108.5	462.7
2003	4,054.3	972.5	4,126.0	426.8
2004	4,004.7	930.8	4,113.8	435.6

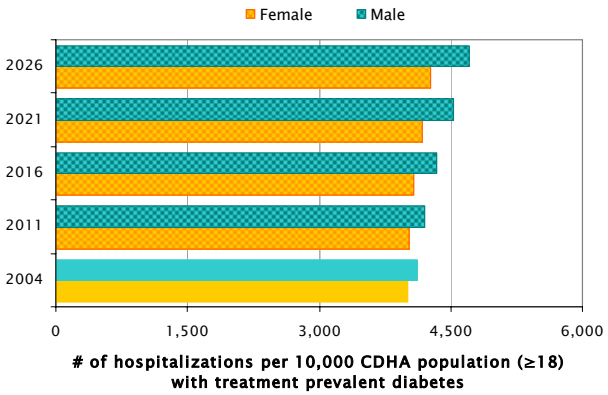
In FY2004, the all-cause hospitalization rate rose steadily from 40-49 years of age onward for females and from 18-39 years onward for males. The hospitalization rate among females was higher than that of males for CDHA residents in the 18-59 year age range and lower than that of males for those 60 years of age and over.

Figure 4.32 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent diabetes in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups remain constant, the rate of hospitalization among CDHA residents with treatment prevalent diabetes will increase by 10.8% by the year 2026 (F=6.5%, M=14.5%). The number of hospital admissions will increase from 4,061.8 per 10,000 populations with treatment prevalent diabetes to 4,501.2 per 10,000 (F=4,004.7 to 4,266.3; M=4,113.8 to 4,710.7)

Figure 4.33 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent diabetes

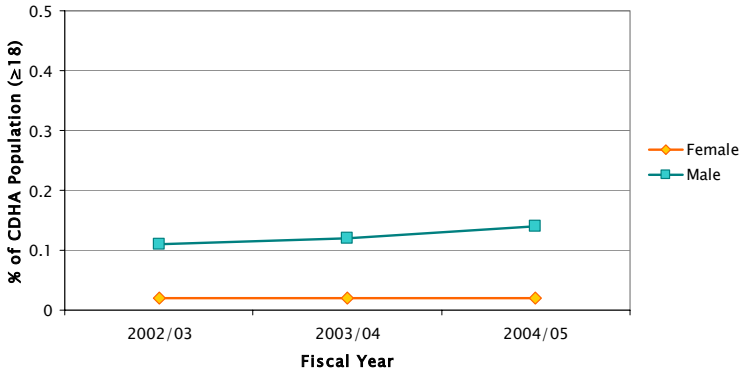


4.6 HIV/AIDS

Definition: AIDS is the end-stage result of an infection by the human immunodeficiency virus (HIV), which causes progressive deterioration of the immune system and thus compromises the body's ability to fight infections[1]

HIV/AIDS was a very rare disease in CDHA; the yearly treatment prevalence was 0.02% for females and <0.15% for males. The yearly treatment prevalence was constant across the three years of study. About 75% of treatment cases occurred among those under the age of 50.

Figure 4.34 Treatment prevalence for HIV/AIDS by sex and year



The all-cause hospitalization rate for CDHA residents with treatment prevalent HIV/AIDS was 5.1 times higher than that of CDHA residents with no chronic disease (F=2.5 times, M=8.4 times). Over two thirds of the hospitalizations among CDHA residents with treatment prevalent HIV/AIDS occurred among those under the age of 50.

Table 4.13 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent HIV/AIDS (versus no chronic condition)

	Female		Male	
Year	HIV/AIDS	No chronic condition	HIV/AIDS	No chronic condition
2002	3,000.0	971.5	4,171.8	462.7
2003	1,621.6	972.5	3,615.8	426.8
2004	2,750.0	930.8	3,457.9	435.6

Note: The number of treated cases was too low to report on prevalence for specific age groups, especially 50-59, 60-59, 70-79, and ≥80 years.

The majority of cases of HIV/AIDS was found among individuals less than 50 years of age. Because the rate projections assumed a constant prevalence (that of FY2004), they would not reflect current cases of HIV/AIDS as the individuals move into older age groups. For this reason, rate projections related to HIV/AIDS were not calculated.

1. National Library of Medicine. Medline Plus: medical encyclopedia: AIDS. [Online] 2006 May; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/000594.htm

4.7 Liver Disease

Definition: Any one of many conditions that impair the function of the liver[1]

About 0.6% of CDHA residents 18 years of age and older were treated at least once in a 12-month period for chronic liver disease. There was no difference across time and no clear age-related pattern for the yearly treatment prevalence. In fiscal year 2004, the treatment prevalence for chronic liver disease among female residents of CDHA was similar to that of males for the 18-39 year age group, was greater that of males for the 60-69 year age group (F:M ≈ 1.1:1), and was lower than that of males for the remaining age groups (1:1.4 for 40-49 & 50-59 years, 1:1.2 for 70-79 years, 1:1.5 for 80 years or more).

Figure 4.35 Treatment prevalence for chronic liver disease by sex and year

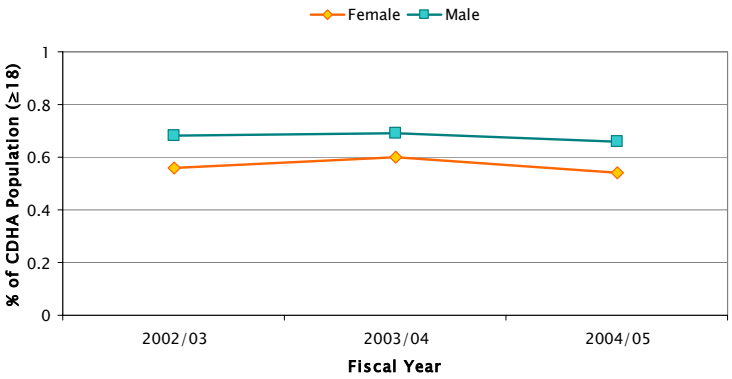
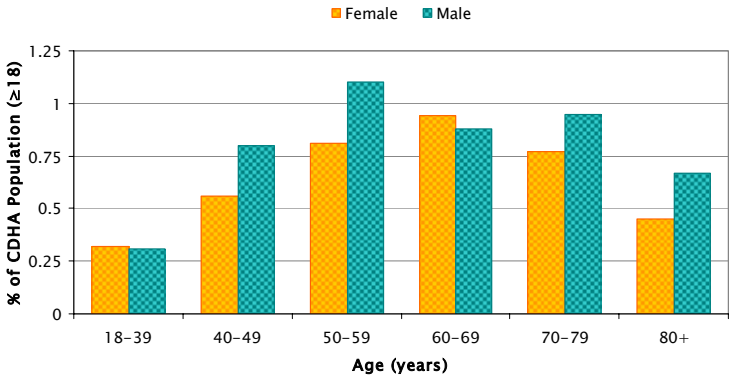


Figure 4.36 Treatment prevalence for chronic liver disease by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: Liver disease. [Online] 2006 July; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/000205.htm

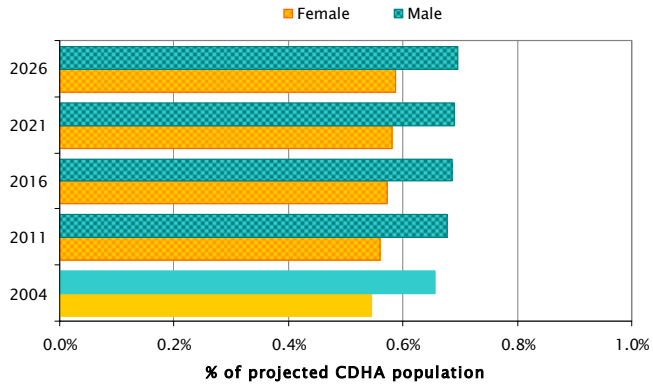
Chronic liver disease was very rare with a treatment prevalence below 1% and no clear age-related trend. Assuming the FY2004 treatment prevalence rate for each of the six age groups holds constant, 0.64% (vs 0.60% in FY2004) of the CDHA population will be receiving treatment for chronic liver disease by 2026 (F=0.6%, M=0.7%). Overall, there will be a 9.0% increase in the number of treatment prevalent cases (F=10.0%, M=8.2%).

Table 4.14 Projected number of CDHA residents to receive treatment for chronic liver disease by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	954	4.4%	1,049	4.9%
2016	984	7.7%	1,073	7.4%
2021	1,000	9.4%	1,081	8.1%
2026	1,005	10.0%	1,082	8.2%

FY2004 cases: Female = 914 Male = 1,000

Figure 4.37 Projected treatment prevalence for chronic liver disease by sex and year



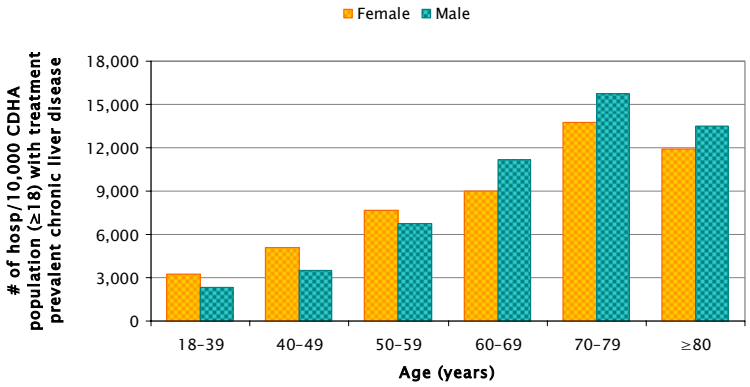
The all-cause hospitalization rate for CDHA residents with treatment prevalent chronic liver disease was 9.6 times higher than that of CDHA residents with no chronic disease This gap was greater among males (15.5 times) than among females (6.6 times).

Table 4.15 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent chronic liver disease (versus no chronic condition)

Year	Female		Male	
	Liver disease	No chronic condition	Liver disease	No chronic condition
2002	5,945.7	971.5	7,152.9	462.7
2003	6,107.2	972.5	6,972.0	426.8
2004	6,991.3	930.8	6,450.0	435.6

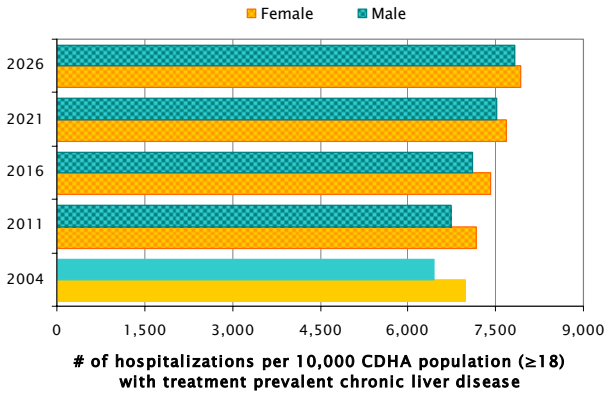
In FY2004, the all-cause hospitalization rate for CDHA residents with treatment prevalent chronic liver disease increased consistently from 18-39 years of age to 70-79 years of age, and then it declined. The hospitalization rate among females exceeded that of males for the three younger age groups (18-59 years), and the reverse was true for the three older age groups (60 years and over).

Figure 4.38 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent chronic liver disease in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups hold constant, the rate of hospitalization among CDHA residents receiving treatment for chronic liver disease will increase by 17.3% by the year 2026 (F=13.4%, M=21.2%). The hospitalization rate among females with treatment prevalent chronic liver disease will increase from 6,991.2 to 7,924.3 per 10,000 population, and the rate among males will increase from 6,450.0 to 7,818.1 per 10,000 population.

Figure 4.39 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent chronic liver disease



4.8 Chronic Lower Respiratory Disease

Definition: Any of several conditions that impair the function of the lung: asthma, bronchietctasis, chronic bronchitis, chronic obstructive pulmonary disease, and emphysema[1]

One out of ten CDHA residents aged 18 years and older was treated at least once in a 12-month period for chronic lower respiratory disease (CLRD). For males, the yearly treatment prevalence for CLRD increased with age; for females, treatment prevalence increased up to 80 years of age at then began to decline. Treatment prevalence remained relatively constant across time. For the younger age groups (18-69), a higher proportion of females than males were treated for CLRD; the reverse was true for the two older age groups (≥70). The female:male ratio for treatment prevalence was greatest at 18-39 years (1.6:1 in FY2004).

Figure 4.40 Treatment prevalence for chronic lower respiratory disease by sex and year

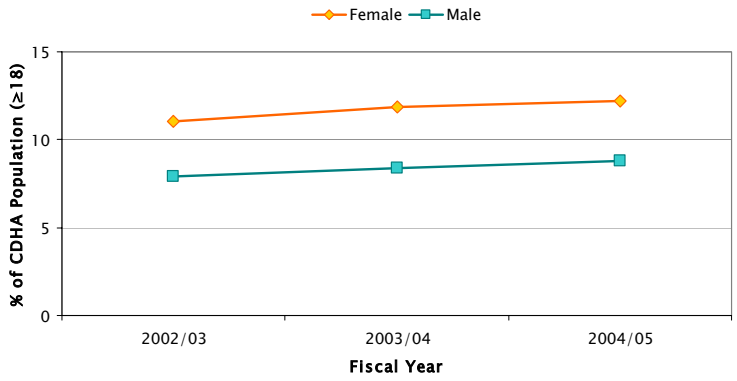
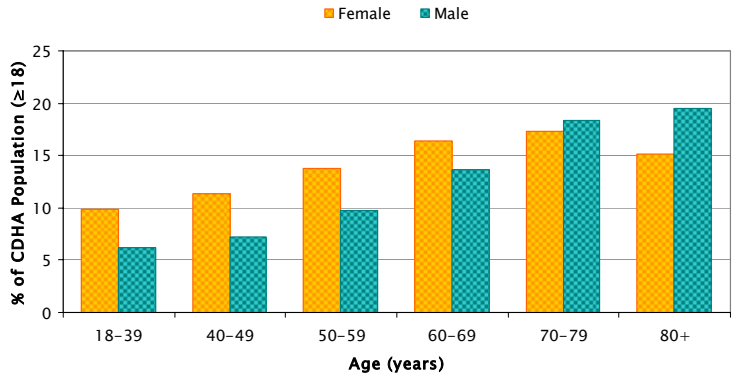


Figure 4.41 Treatment prevalence for chronic lower respiratory disease by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: Lung disease. [Online] 2006 Nov; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/000066.htm

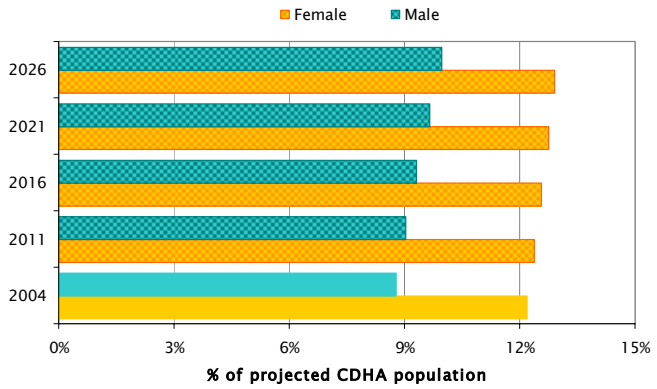
In general, the yearly treatment prevalence for CLRD increased with age; as such, the overall treatment prevalence rate will increase as the CDHA population ages. Assuming treatment prevalence remains at the FY2004 rates for each of the six age groups, 11.5% (vs 10.6% in FY2004) of the CDHA population will be receiving treatment for CLRD by 2026 (F=12.9%, M=10.0%), which corresponds to an 11.3% increase in the number of cases (F=8.3%, M=15.9%).

Table 4.16 Projected number of CDHA residents to receive treatment for chronic lower respiratory disease by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	21,040	2.9%	13,992	4.8%
2016	21,571	5.5%	14,583	9.2%
2021	21,938	7.3%	15,110	13.1%
2026	22,147	8.3%	15,484	15.9%

FY2004 cases: Female = 20,449 Male = 13,356

Figure 4.42 Projected treatment prevalence for chronic lower respiratory disease by sex and year



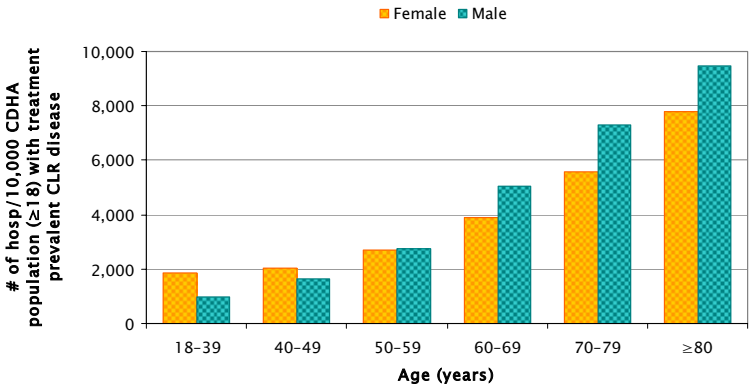
The all-cause hospitalization rate for CDHA residents with treatment prevalent chronic lower respiratory disease was 4.6 times higher than that of CDHA residents with no chronic disease (F=3.2 times, M=7.7 times).

Table 4.17 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent chronic lower respiratory disease (CLRD; versus no chronic condition)

Year	Female		Male	
	CLRD	No chronic condition	CLRD	No chronic condition
2002	3,061.5	971.5	3,517.8	462.7
2003	3,143,4	972.5	3,378.1	426.8
2004	3,004.1	930.8	3,268.9	435.6

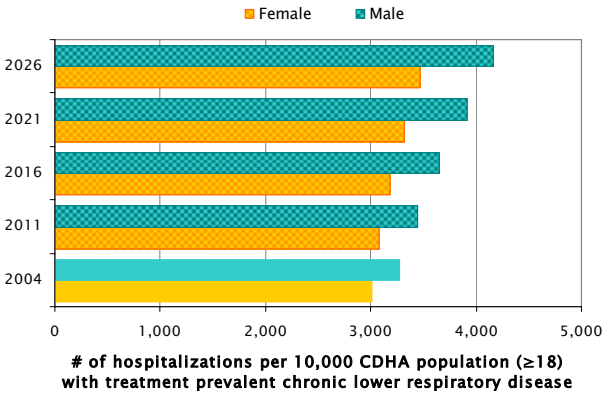
In FY204, the all-cause hospitalization rate among CDHA residents with treatment prevalent chronic lower respiratory disease increased with age. The hospitalization rate among females was higher than that of males at 18-39 and 40-49 years of age, was similar to that of males at 50-59 years of age, and was lower than that of males at 60 years of age an older.

Figure 4.43 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent chronic lower respiratory disease in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups hold, the hospitalization rate among CDHA residents receiving treatment for chronic lower respiratory disease will increase by 20.7% by 2026 (F=15.3%, M=27.4%). Among CDHA residents with treatment prevalent CLRD, the number of hospitalizations per 10,000 population will increase by 460 among females and by 896 among males.

Figure 4.44 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent chronic lower respiratory disease



4.9 Renal Failure

Definition: A condition characterised by a gradual and progressive loss of kidney function, which causes fluids and waste products to accumulate in the body[1]

The proportion of the CDHA being treated for chronic renal failure was relatively low at 0.6%. The treatment prevalence increased with age for both sexes but remained constant across time. Across all age groups, a higher proportion of males than females received treatment for chronic renal failure. The greatest difference between females and males was observed among CDHA residents over 70 years of age; this finding was consistent across all three years of study (F:M ≈ 1:2).

Figure 4.45 Treatment prevalence for chronic renal failure by sex and year

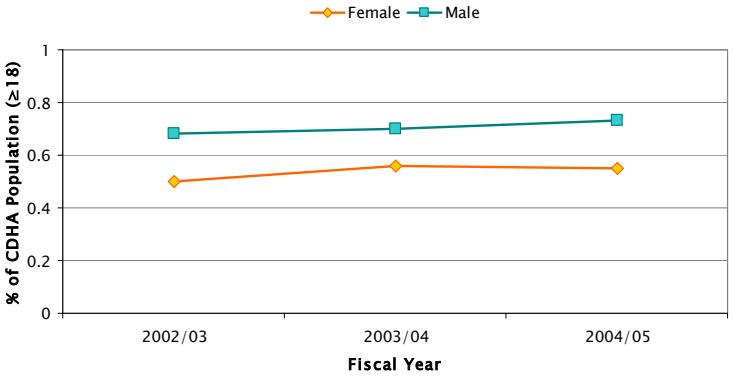
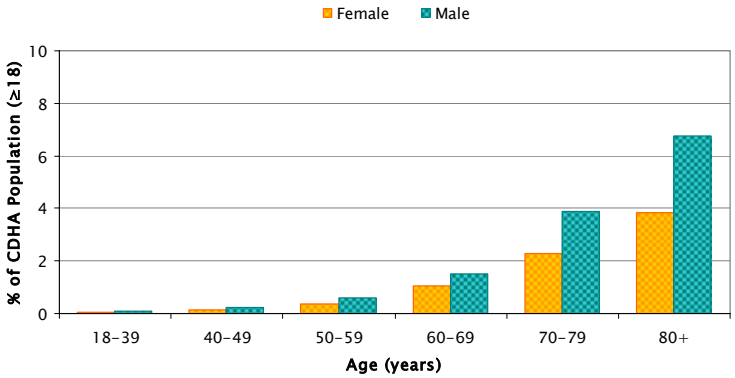


Figure 4.46 Treatment prevalence for chronic renal failure by sex and age for FY2004



1. National Library of Medicine. Medline Plus: medical encyclopedia: chronic renal failure. [Online] 2005 Sept; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/000471.htm

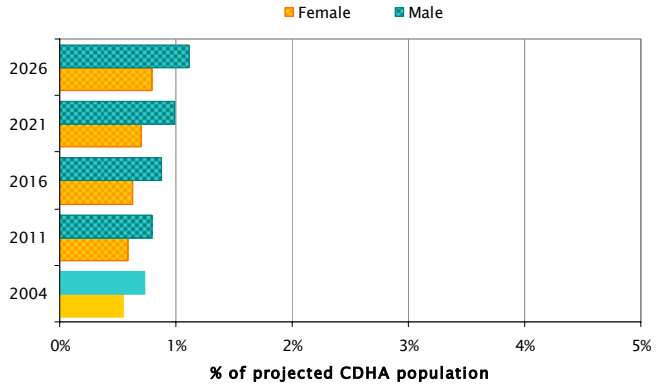
Yearly treatment prevalence for chronic renal failure increased dramatically with age; hence, the overall treatment prevalence rate will increase as the CDHA population ages. If the FY2004 treatment prevalence rate for each of the six age groups holds constant, over 0.9% (vs 0.6% in FY2004) of the CDHA population will receive treatment for chronic renal failure by 2026 (F=0.8%, M=1.1%) – a 51.8% increase in the number cases (F=46.9%, M=56.0%).

Table 4.18 Projected number of CDHA residents to receive treatment for chronic renal failure by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	993	7.8%	1,232	11.0%
2016	1,089	18.2%	1,377	24.0%
2021	1,214	31.9%	1,556	40.2%
2026	1,353	46.9%	1,731	56.0%

FY2004 cases: Female = 921 Male = 1,110

Figure 4.47 Projected treatment prevalence for chronic renal failure by sex and year



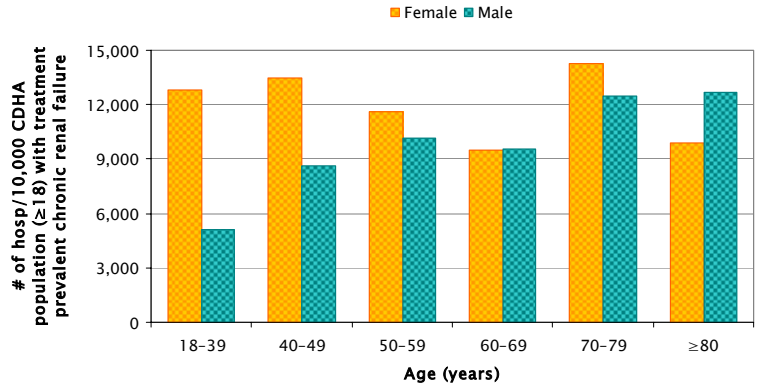
The all-cause hospitalization rate for CDHA residents with treatment prevalent chronic renal failure was 16.6 times higher than that of CDHA residents with no chronic disease (F=11.4 times, M=26.9 times).

Table 4.19 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent chronic renal failure (versus no chronic condition)

Year	Female		Male	
	Renal failure	No chronic condition	Renal failure	No chronic condition
2002	10,706.5	971.5	12,827.2	462.7
2003	10,597.2	972.5	11,978.9	426.8
2004	11,552.7	930.8	10,964.0	435.6

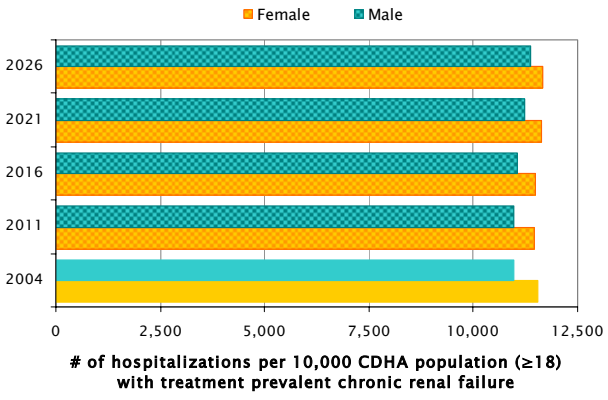
There was no clear age trend for the all-cause hospitalization rate among females or males with treatment prevalent chronic renal failure. In FY2004, the lowest rate for females was observed among those 60-69 years of age (9,518.1 per 10,000) and the lowest rate for males was among those 18-39 years of age (5,090.9 per 10,000). The highest rate for females was among those aged 70-79 years (14,296.9 per 10,000) and the highest rate for males was among those aged 80 years and over (12,682.0 per 10,000). The hospitalization rate among females was higher than that of males for four of six age groups: 18-39, 40-49, 50, 59 and 70-79. The rate among males exceeded that of females for those over 80 years of age.

Figure 4.48 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent chronic renal failure in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups do not change, the rate of hospitalization among CDHA residents receiving treatment for chronic renal failure will increase by 2.4% by the year 2026 (F=1.0%, M=3.7%). The will be an additional 110 hospitalizations per 10,000 females with treatment prevalent chronic renal failure and an additional 402 hospitalizations per 10,000 males with treatment prevalent chronic renal failure.

Figure 4.49 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent chronic renal failure

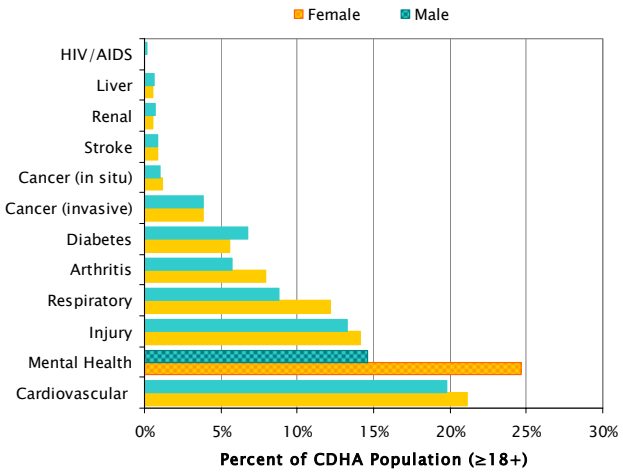


Chapter 5: Mental Health Problems

Definition: Any mental or behavioural disorder as classified by the International Classification of Diseases excluding intellectual disability, developmental disorders (e.g., speech language, scholastic skills), and behavioural/emotional disorders with childhood onset (e.g., attention deficit disorder, tic disorder).

Overall the treatment prevalence for mental health (MH) problems was second only to cardiovascular disease (MH: 19.9% vs CVD: 20.5% in FY2004), with nearly 1 in 5 CDHA residents receiving treatment. A considerable difference between the sexes was evident (F=24.6% vs M=14.6%). The proportion of females treated for MH problems was 68% higher than the proportion of males. In fact, among females, the treatment prevalence for MH problems was higher than for cardiovascular disease (MH: 24.6% vs CVD 21.2% in FY2004).

Figure 5.1 Treatment prevalence of mental health problems versus chronic disease and injury among CDHA residents in FY2004



The treatment prevalence for MH problems varied with age for both sexes but remained constant across time. For females across the three years of study, the treatment prevalence for MH problems was highest among those 80 or more years of age; the second highest treatment prevalence was among those 40-49 years of age. Similarly, among males, the highest treatment prevalence was among those 80 years of age or more. A higher proportion of females than males received treatment for MH problems across all age groups. The ratio between the proportion of females and males treated for MH problems decreased with increasing age; the greatest difference occurred among CDHA residents aged 18-39 years (F:M ≈ 1.9:1).

Figure 5.2 Treatment prevalence for mental health problems by sex and year

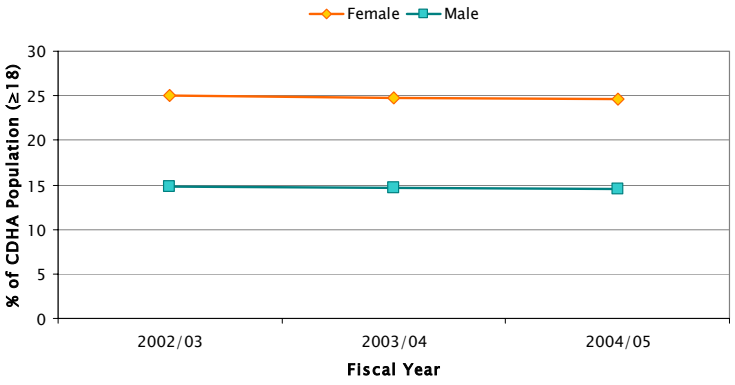
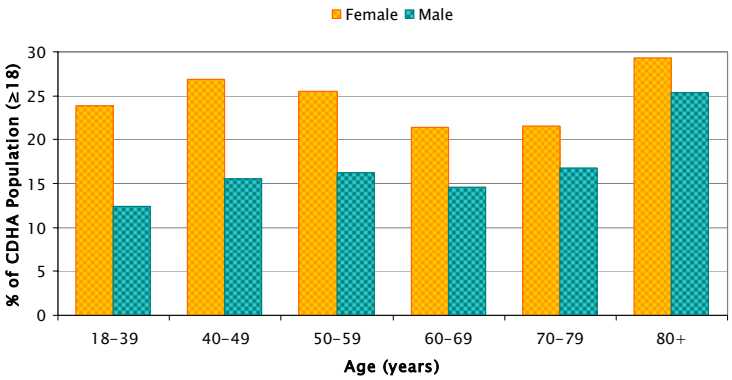


Figure 5.3 Treatment prevalence for mental health problems by sex and age for FY2004



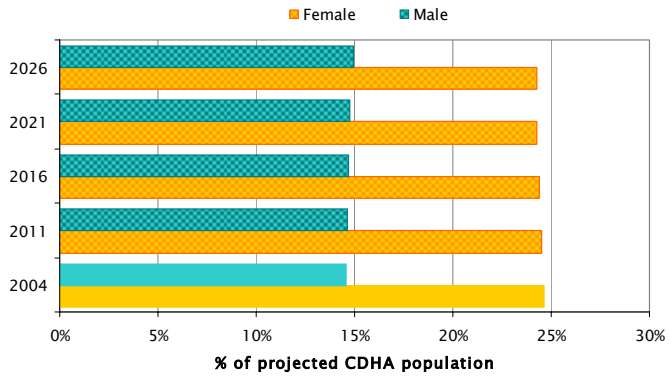
If the FY2004 treatment prevalence rate for each of the six age groups remains constant, the overall percentage of the CDHA population that will be receiving treatment for MH problems will remain relatively stable over the next 20 years. The number of identifiable cases will increase by 2% (F=0.7%, M=4.6%) while the population increases by 1%.

Table 5.1 Projected number of CDHA residents to receive treatment for mental health problems by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	41,731	0.9%	22,647	2.1%
2016	41,897	1.3%	22,971	3.6%
2021	41,813	1.1%	23,134	4.3%
2026	41,623	0.7%	23,193	4.6%

FY2004 cases: Female = 41,353 Male = 22,182

Figure 5.4 Projected treatment prevalence for mental health problems by sex and year



Of the 57,252 hospital admissions made by residents of CDHA, 32.5% were observed among those with treatment prevalent MH problems (F=37.0%; M=26.2%). For non-residents, approximately 25.9% of hospital admissions were made by those identified as treatment prevalent for MH problems (F=29.9%; M=22.2%).

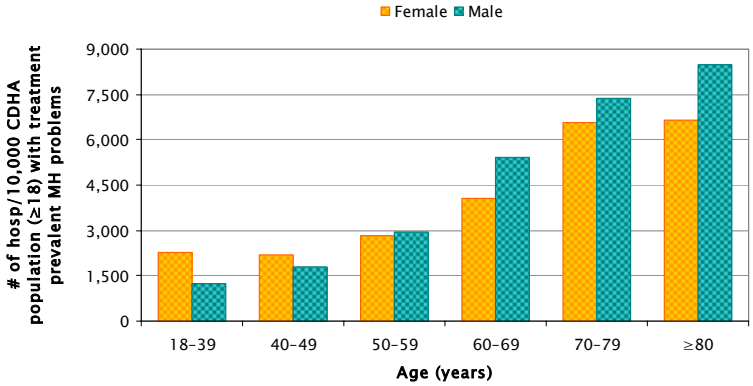
The all-cause hospitalization rate for CDHA residents with treatment prevalent MH problems was 4.3 times higher than that of CDHA residents with no chronic disease (F=3.1 times, M=6.5 times).

Table 5.2 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent mental health (MH) problems (versus no chronic condition)

	Female		Male	
Year	MH problem	No chronic condition	MH problem	No chronic condition
2002	2,871.2	971.5	2,849.9	462.7
2003	3,039.7	972.5	2,935.8	426.8
2004	2,986.2	930.8	2,814.4	435.6

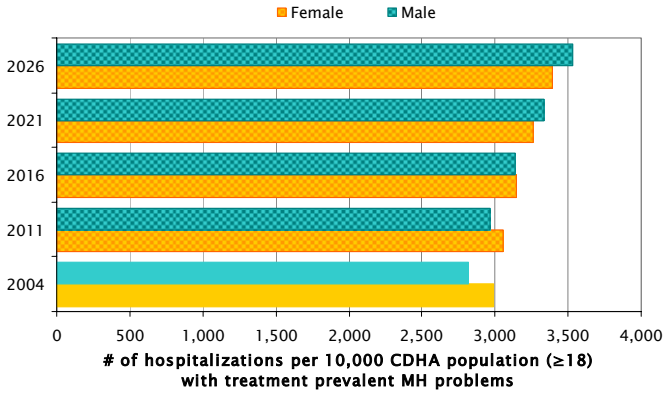
In FY2004, the all-cause hospitalization rate among female residents of CDHA with treatment prevalence MH problems increased consistently from 40-49 years of age onward; for males, the rate increase steadily across all age groups. The hospitalization rate among females was higher than that of males at 18-39 years of age and 40-49 years of age, similar to that of males at 50-59 years of age, and lower than that of males at 60 years and over.

Figure 5.5 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent mental health problems in FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups remain constant, the rate of hospitalization among CDHA residents receiving treatment for MH problems will increase by 17.6% by 2026 (F=13.5%, M=25.5%). For females with treatment prevalent MH problems, the hospitalization rate will increase from 2,986.2 to 3,390.1 per 10,000; for males, the hospitalization rate will increase from 2,814.4 to 3,531.1 per 10,000.

Figure 5.6 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent mental health (MH) problems

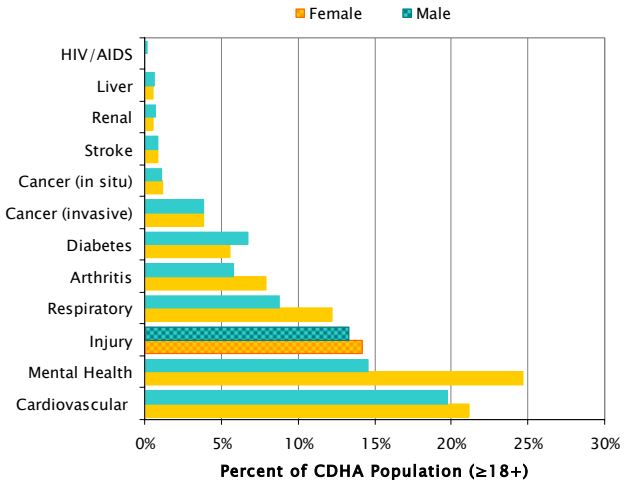


Chapter 6: Injury

Definition: Any intentional or unintentional injury as classified by the International Classification of Diseases excluding complications of surgical and medical care.

Injury was the third most treated health problem among CDHA residents; only treatment for cardiovascular disease and mental health problems was more prevalent. This high rate of injury is a serious issue as the majority of injuries are preventable. Overall, there was little difference between females and males with regard to the treatment prevalence for injury (F=14%–15% vs M=13%–15%).

Figure 6.1 Treatment prevalence of injury versus chronic disease and mental health problems among CDHA residents in FY2004



For CDHA residents over 39 years of age, a slightly higher proportion of females than males received treatment for injury in FY2004. Among those 18–39 years of age, the treatment prevalence for injury was slightly higher for males. Among females, treatment prevalence for injury was relatively stable until 70–79 years of age, rising to its highest level among those aged 80 or more years. For males, a slight decline in treatment prevalence for injury occurred among those aged 40–69 years. The highest treatment prevalence among males was observed among those 80 years of age and older. A slight decline in the treatment prevalence for injury occurred between fiscal year 2002 and 2004 (FY2002: 15.3% vs FY2004: 13.7%).

Figure 6.2 Treatment prevalence for injury by sex and year

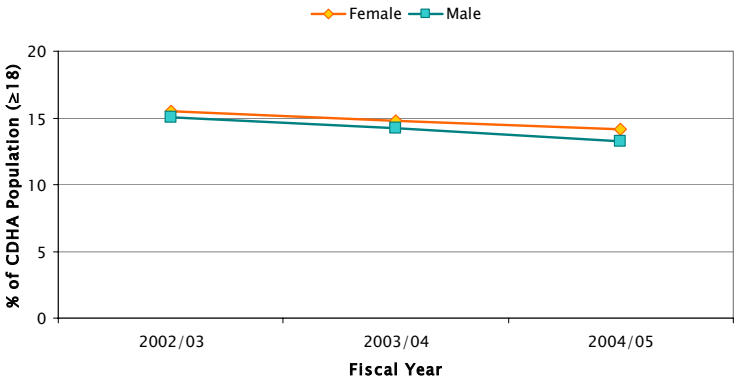
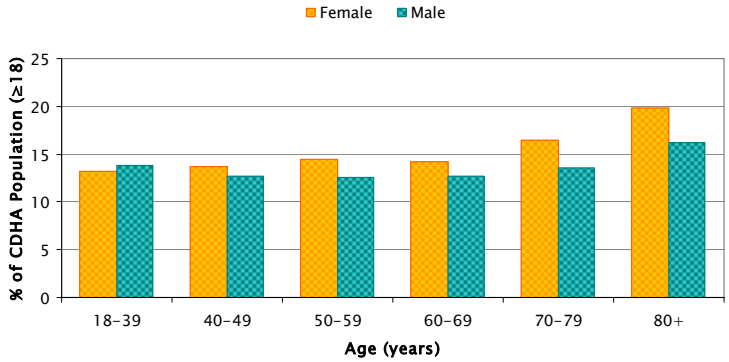
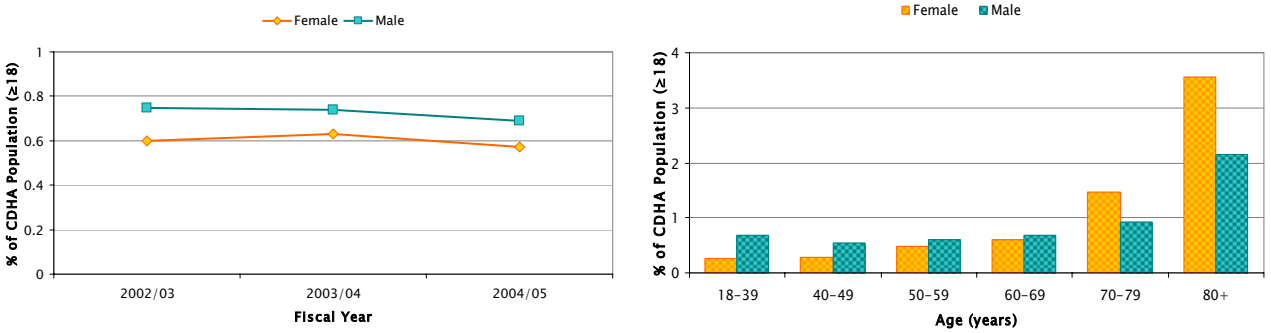


Figure 6.3 Treatment prevalence for injury by sex and age for FY2004



When just the injuries resulting in hospitalizations were examined, the overall treatment prevalence for females was lower than that of males. However, when age was factored in, the treatment prevalence for females was higher than that of males for the 70–79 and ≥80 age groups.

Figure 6.4 Injury resulting in hospitalization by sex and year and by sex and age



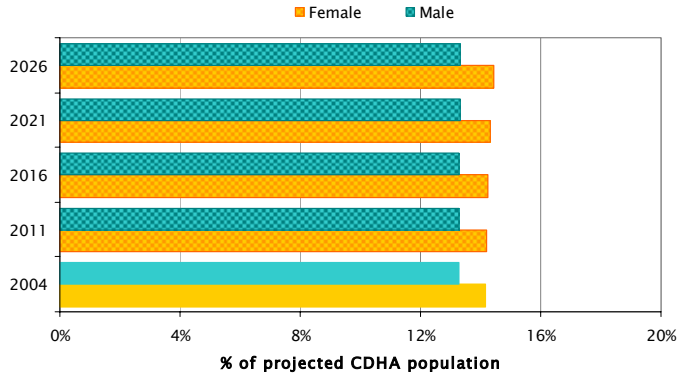
For females and males, the highest treatment prevalence for injury was observed among those 80 years of age and older. If the FY2004 treatment prevalence rate for injury remains unchanged for each of the six age groups, about 13.9% (vs 13.7% in FY2004) of the CDHA population will receive treatment for one or more injuries by 2026 (F=14.5%, M=13.3%). Overall, there will be a 3.6% increase in the number of CDHA residents treated for injury (F=4.4%, M=2.6%).

Table 6.1 Projected number of CDHA residents to receive treatment for injury by sex

Year	Female		Male	
	Projected # of cases	% increase from FY2004	Projected # of cases	% increase from FY2004
2011	24,133	1.7%	20,553	1.7%
2016	24,465	3.1%	20,779	2.8%
2021	24,664	3.9%	20,848	3.2%
2026	24,773	4.4%	20,742	2.6%

FY2004 cases: Female = 23,736 Male = 20,208

Figure 6.6 Projected treatment prevalence for injury by sex and year



About 22.7% of hospital admissions made by residents of CDHA were observed among individuals with treatment prevalent injury (F=22.3%; M=23.3%). For non-residents, approximately 23.2% of hospital admissions were made by those flagged as treatment prevalent for injury (F=22.4%; M=24.0%).

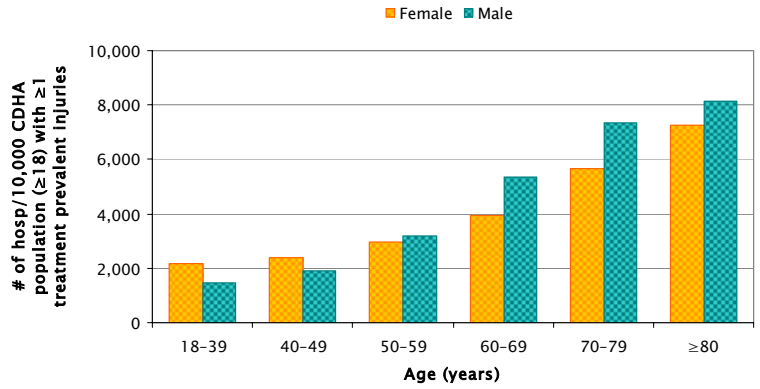
The all-cause hospitalization rate for CDHA residents with treatment prevalent injury was 4.3 times higher than that of CDHA residents with no chronic disease (F=3.3 times, M=6.2 times).

Table 6.2 Hospitalization rate (per 10,000 population) by sex and year for CDHA residents with treatment prevalent injury (versus no chronic condition)

Year	Female		Male	
	Injury	No chronic condition	Injury	No chronic condition
2002	3,115.5	971.5	2,704.8	462.7
2003	3,186.2	972.5	2,800.7	426.8
2004	3,138.3	930.8	2,754.9	435.6

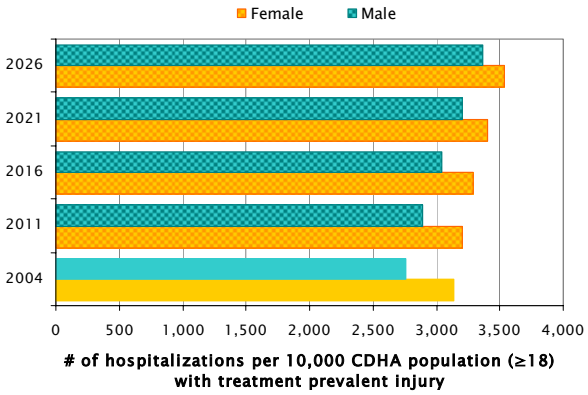
The all-cause hospitalization rate for CDHA residents with treatment prevalent injury increased steadily across the age groups for both females and males in FY2004. The hospitalization rate among females was higher than that of males at 18-39 years of age and 40-49 years of age and lower than that of males from 50 years of age onward.

Figure 6.7 Hospitalization rate by sex and age for CDHA residents identified with treatment prevalent injuries FY2004



If the FY2004 treatment prevalence and hospitalization rates for each of the six age groups remain constant, the rate of hospitalization among CDHA residents receiving treatment for injury will increase by 16.9% by 2026 (F=12.7%, M=22.3%).

Figure 6.8 Projected hospitalization rate by sex and year for CDHA residents identified with treatment prevalent injuries



Chapter 7: Procedures

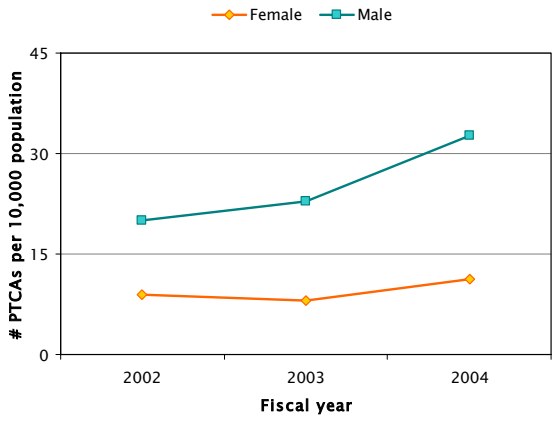
7.1 Percutaneous Transluminal Coronary Angioplasty (PTCA)

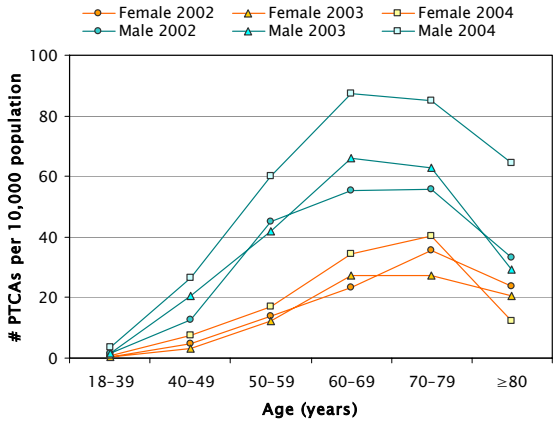
Definition: a medical procedure in which a balloon catheter (thin flexible tube with an inflatable balloon near the end) is used to open narrowed or blocked blood vessels thereby restoring blood flow to the heart; a stent is often used to keep the artery open[1]

Overall, the rate of percutaneous transluminal coronary angioplasty (PTCA) increased across time from 14.1 to 21.4 procedures per 10,000 CDHA population. The percent increase from FY2002 to FY2004 was much greater for males (64.1%) than for females (26.1%). For both females and males, the rate of PTCA procedures increased with age until 60-69 years, held relatively steady until 80 years of age, and then declined sharply.

The rate of PTCA procedures for males exceeded that of females for all ages and across all years. This gaps also widened across time. In FY2002, the rate of PTCA procedures among males was 2.2 times higher than the rate among females (F=8.9 per 10,000; M=20.0 per 10,000); by FY2004, the rate was 2.9 times higher among males (F=11.2 per 10,000; M=32.7 per 10,000).

Figure 7.1 Rate of percutaneous transluminal coronary angioplasty (PTCA) by sex and year and by sex, age, and year

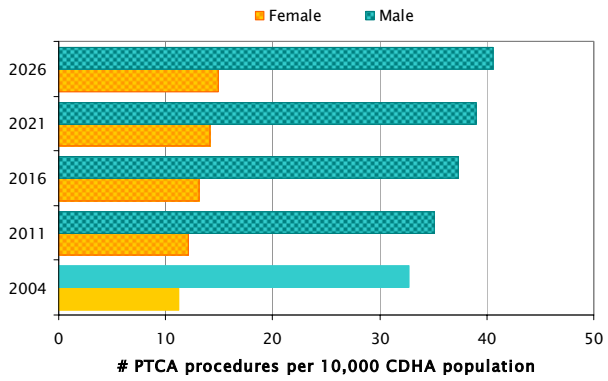




1. National Library of Medicine. Medline Plus: medical encyclopedia: Angioplasty. [Online] 2006 May; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/002953.htm

The greatest rate of increase in the population is projected to be among those 60-79 years of age. This age group has the highest rate of PTCA procedures; thus, the overall rate of PTCAs will increase as the CDHA population ages. Assuming the age-specific rate of PTCA procedures remains constant, there will be 27.1 procedures for every 10,000 CDHA residents by 2026 (F=14.9; M=40.6), representing a 26.5%† increase (F=32.9%; M=24.1%) from FY2002 (n=21.4 procedures).

Figure 7.2 Projected rate of percutaneous transluminal coronary angioplasty (PTCA) by sex and year



† Calculated using unrounded rates

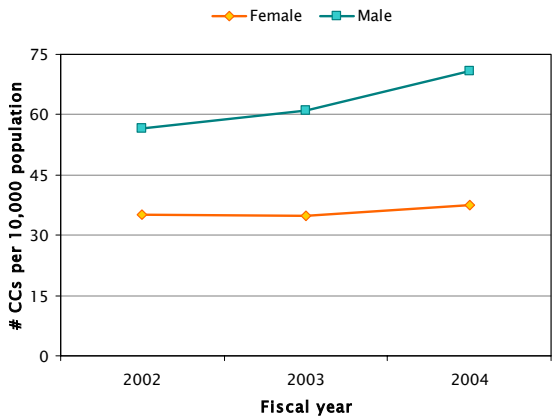
7.2 Cardiac Catheterization

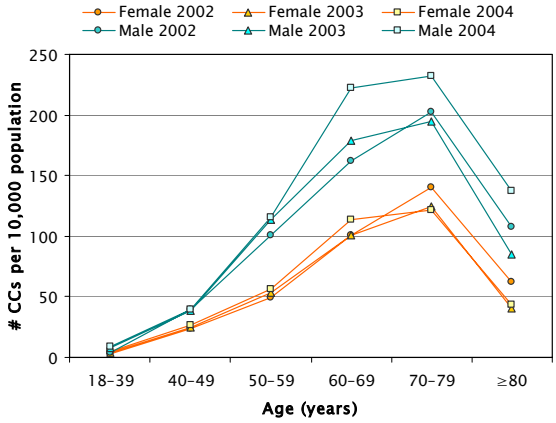
Definition: a medical procedure in which a catheter (thin flexible tube) is inserted through a and into the heart to measure blood flow and pressure in the heart, examine blood vessels, and/or treat certain heart conditions; excludes cardiac catheterizations performed as part of percutaneous transluminal coronary angioplasty procedures[1]

Across the three years of study, the rate of cardiac catheterizations increased by 6.7%† among females (35.2 to 37.6 per 10,000) and by 25.3%† among males (56.4 to 70.7 per 10,000). For both sexes, the rate of cardiac catheterization procedures increased with age, reaching its highest level at 70–79 years of age (F=121.2 per 10,000; M=232.3 per 10,000 in FY2004). After 79 years of age, the rate of cardiac catheterizations declined sharply (F=43.5 per 10,000; M=137.0 per 10,000).

The rate of cardiac catheterizations was lower for females than for males for all ages, and this difference increased slightly over time. In FY2002, the female:male ratio for the rate of cardiac catheterization procedures 1:1.6, by FY2004 the ratio was 1:1.9.

Figure 7.3 Rate of cardiac catheterization (CC) by sex and year and by sex, age, and year



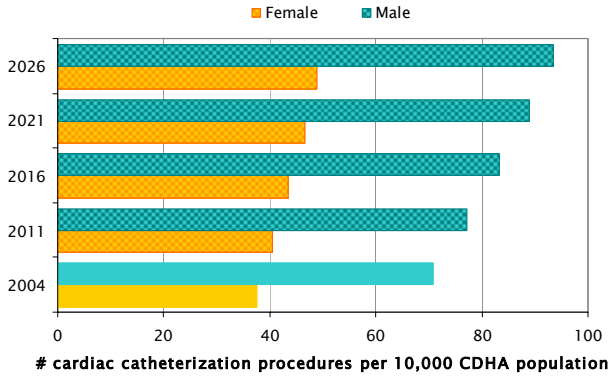


† Calculated using unrounded rates

1. National Library of Medicine. Medline Plus: medical encyclopedia: Cardiac catheterization. [Online] 2006 July; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/003419.htm

The highest rate of cardiac catheterizations was observed among those 70-79 years; this same age group is expected to have the greatest rate of growth over the next twenty years. As such, the overall rate of cardiac catheterizations will increase as the CDHA population ages. Assuming the age-specific rates of cardiac catheterization procedures remain at FY2004 levels, there will be 70.1 procedures for every 10,000 CDHA residents by 2026 (vs 53.3 in FY2004), representing a 31.4%† increase (F=30.0%†; M=32.1%†).

Figure 7.4 Projected rate of cardiac catheterization (CC) by sex and year



† Calculated using unrounded rates

7.3 Coronary Artery Bypass Graft Surgery (CABG)

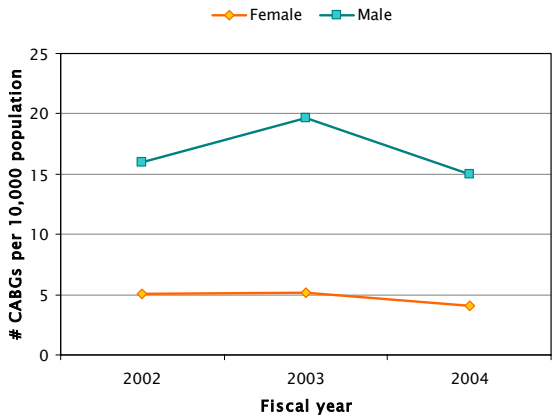
Definition: a medical procedure in which a blood vessel harvested from the leg, arm, or chest wall (e.g., saphenous vein, radial artery, internal mammary artery) is grafted to an opening in a blocked coronary artery and to an opening in the aorta†, allowing blood flow to bypass the blockage[1]

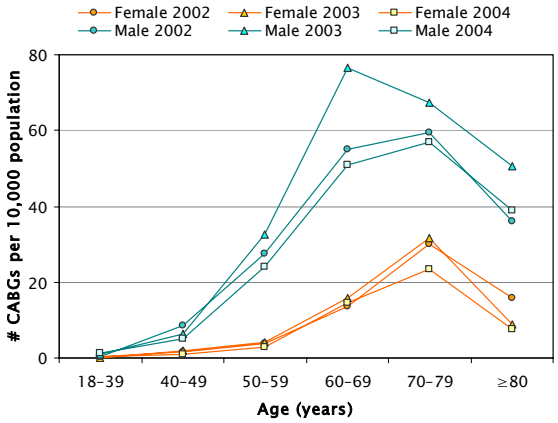
† The internal mammary artery is already attached to the aorta

There was little difference in the rate of coronary artery bypass graft (CABG) procedures across time for females residents of CDHA: 5.1 per 10,000 in FY2002 and FY2003 and 4.1 per 10,000 in FY2004. For males, the rate of CABG procedures varied across time, with the highest rate being observed in FY2003. There were 19.7 CABG surgeries for every 10,000 male residents of CDHA in FY2003 (FY2002=16.0; FY2004=15.0).

In general, the rate of CABG procedures was at least three times higher among males than females (range: 3.1–3.8 times). For females, the rate of CABG surgeries increased with age, reaching a peak at 70–79 years of age (23.4–31.7 per 10,000), and then declining by 80 years of age (7.5–15.8 per 10,000). A similar pattern was observed among males in FY2002 (70–79: 59.5 per 10,000; ≥80: 36.0 per 10,000) and FY2004 (70–79: 56.9 per 10,000; ≥80: 38.8 per 10,000). In FY2003, the rate of CABG procedures among males reached a maximum of 76.6 per 10,000 by 60–69 years of age, and then declined to 50.7 per 10,000 by 80 years of age.

Figure 7.5 Rate of coronary artery bypass graft surgery (CABG) by sex and year and by sex, age, and year

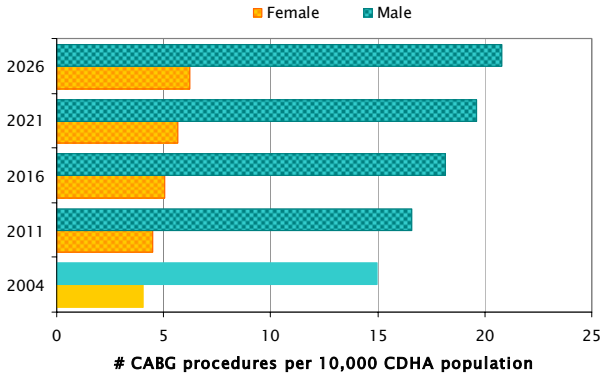




1. National Library of Medicine. Medline Plus: medical encyclopedia: Heart bypass surgery. [Online] 2006 May; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/002946.htm

The highest rate of CABG procedures was observed among those 60-79 years. The highest rate of growth in the CDHA population is expected to occur in this age range, meaning that the overall rate of CABG surgeries in the population will increase across time. Assuming the FY2004 age-specific rates of CABG procedures do not change, there will be 13.2 procedures for every 10,000 CDHA residents by 2026 (vs 9.3 in FY2004). Overall, there will be a 42.3%† increase in the number of CABG surgeries performed among CDHA residents (F=53.6%†; M=39.0%†).

Figure 7.6 Projected rate of coronary artery bypass graft surgery (CABG) by sex and year



† Calculated using unrounded rates

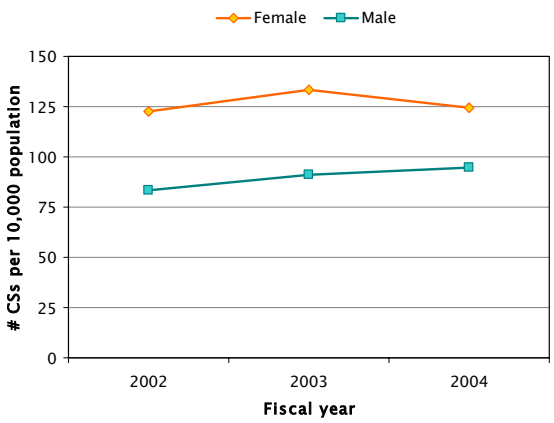
7.4 Cataract Surgery

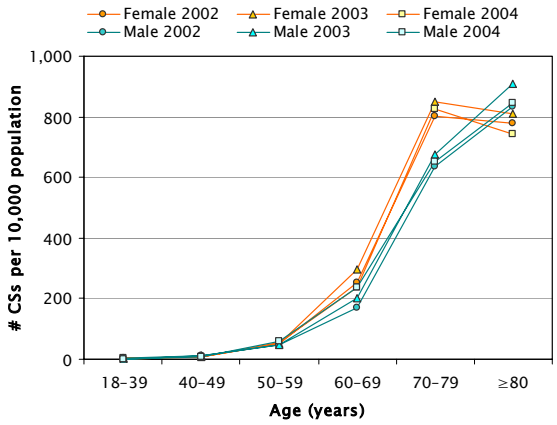
Definition: a medical procedure to improve vision by removing a clouded lens and replacing it with an artificial lens[1]

The rate of cataract surgery varied across time. For females, the highest rate (133.4 per 10,000) was observed in FY2003 (FY2002: 122.4 per 10,000; FY2004: 124.2 per 10,000). For males, there was a small but steady increase in the rate of cataract surgery across time, from 83.5 per 10,000 in FY2002 to 94.8 per 10,000 in FY2004.

Unlike coronary procedures, the rate of cataract surgery was 1.3–1.5 times higher among female residents of CDHA than among males. For both males and females the rate of cataract surgery increased with age, and the sharpest increase occurred between the 60–69 year and 70–79 year age group (F=248.2%†, M=175.8%†). However, the rate among females peaked at 70–79 years, and then declined. For males, the rate of cataract surgery increased consistently across all age groups.

Figure 7.7 Rate of cataract surgery (CS) by sex and year and by sex, age, and year



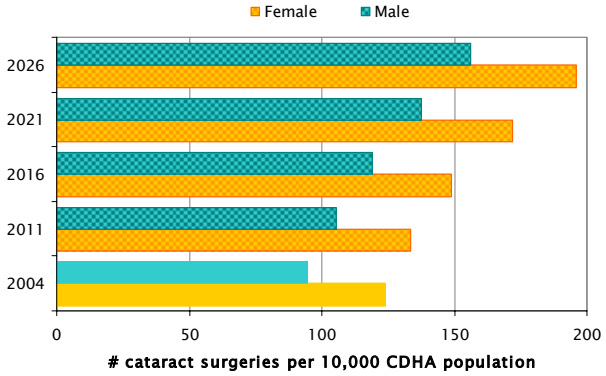


† Calculated using unrounded rates

1. National Library of Medicine. Medline Plus: medical encyclopaedia: Cataract removal. [Online] 2006 Sept; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/002957.htm

The highest rate of cataract surgery was observed among females between 70-79 years and among males over 80 years of age. The projected rate of growth in the CDHA population is highest for the oldest age groups; thus, the overall rate of cataract surgery will increase as the population ages. Assuming the age-specific rates of cataract surgery hold constant at the FY2004 levels, there will be a 60.5% increase (F=57.7%†; M=64.6%†) in the number of cataract surgeries performed among CDHA residents by 2026 (FY2026: 176.9 per 10,000; FY2004: 110.2 per 10,000).

Figure 7.8 Projected rate of cataract surgery by sex and year



7.5 Orthopaedic Surgery of Hip and Knee (Arthroplasty)

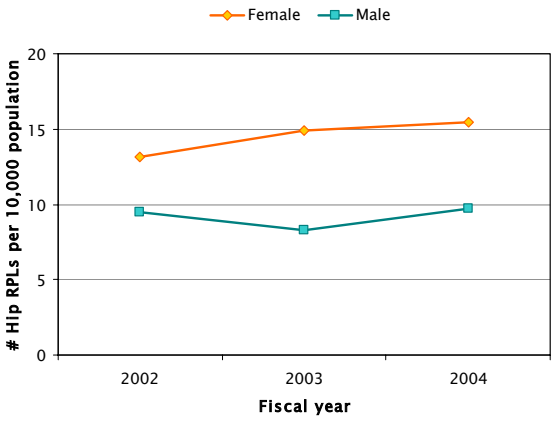
Definition: a medical procedure in which all or part of a damaged or diseased hip or knee joint is removed and replaced with an artificial device[1,2]

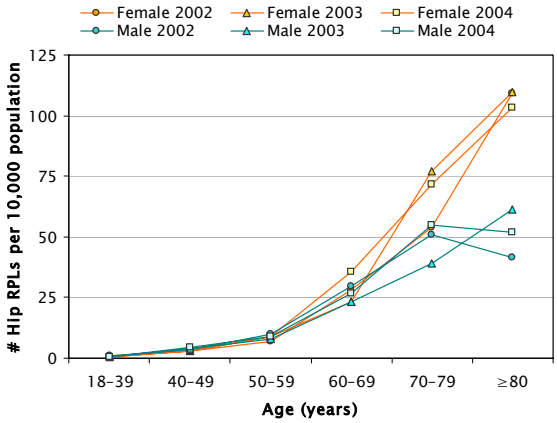
7.5.1 Hip Replacement Surgery

Overall, the rate of hip replacement procedures increased slightly across time from 11.4 per 10,000 in FY2002 to 12.7 per 10,000 in FY2004; although, in FY2003, there was a slight decline in the rate among males. The rate of hip replacement procedures was 1.4 to 1.8 times higher among females than among males. The increased rate of hip replacement surgery among females is consistent with the fact that females are at greater risk of having a serious fall-related injury that requires hospitalization.[3]

For females, the rate of hip replacement surgery increased with age across all age groups. By 80 years of age, the rate of hip replacement surgery was 103.1-109.6 procedures for every 10,000 population. In FY2003, a similar pattern was observed among males; the highest rate of hip replacement surgery (61.4 per 10,000) occurred among those 80 years of age or older. However, for FY2002 and FY2004, the highest rate of hip replacement surgery was observed among those between 70-79 years of age (FY2002: 51.0 per 10,000; FY2004: 54.6 per 10,000).

Figure 7.9 Rate of hip replacement surgery (Hip RPL) by sex and year and by sex, age, and year

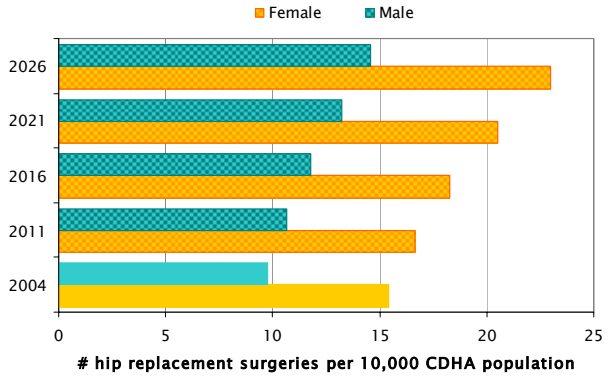




1. National Library of Medicine. Medline Plus: medical encyclopedia: Hip joint replacement. [Online] 2006 May; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/002975.htm
2. National Library of Medicine. Medline Plus: medical encyclopedia: Knee joint replacement. [Online] 2005 Aug; Available from: URL: http://www.nlm.nih.gov/medlineplus/ency/article/002974.htm
3. Department of Health Promotion and Protection. Seniors' falls in Nova Scotia: a report. 2007, March. Available from URL: http://www.gov.ns.ca/hpp/injuryprevention.html

The highest rate of hip replacement surgeries was observed among those ≥70 years. The fastest growth in the population is projected to occur among those 60-79 years of age; as such, the overall rate of hip replacement surgeries will increase as the CDHA population ages. Assuming the FY2004 age-specific rates of hip replacement surgeries hold constant, there will be 19.0 procedures for every 10,000 CDHA residents by 2026 (vs 12.7 in FY2004), representing a 49.4%† increase (F=49.0%†; M=50.1%†).

Figure 7.10 Projected rate of hip replacement surgeries by sex and year



7.5.2 Hip Fixation and Repair

Overall, there were 352 hip fixation procedures between FY2002 and FY2004, which equates to a rate of 3.7 procedures for every 10,000 CDHA residents (F=5.2 per 10,000; M=2.1 per 10,000). The rate of hip fixation procedures was below 5 per 10,000 population for those under 70 years of age. This rate increased to 12.0-16.9 per 10,000 for residents between 70-79 years. The majority of hip fixation procedures was performed on those 80 years of age and older. For females in this age group, the rate of hip fixation procedures was between 65.7 and 77.0 per 10,000; for males, it was between 29.4 and 43.9 per 10,000.

In general, the rate of hip fixation procedures was 2.4-2.8 times higher for females than for males. Because there were so few procedure among the three youngest age groups (n=33 from FY2002-FY2004), this pattern did not hold across all the age groups. However, it did hold for the three oldest age groups.

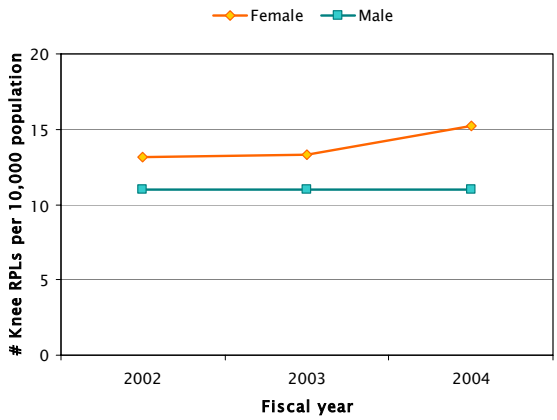
Only nine hip repair procedures were recorded across the three years of study (n=3 in FY2002, n=2 in FY2003, and n=4 in FY2004).

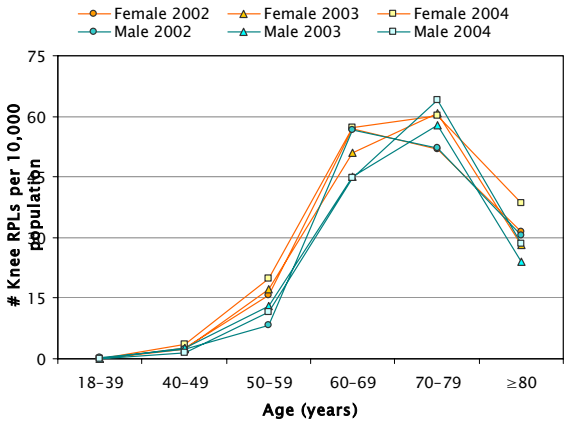
7.5.3 Knee Replacement Surgery

Overall, the rate of knee replacement surgery remained constant between FY2002 and FY2003 for both female and male residents of CDHA (F=13.1–13.3 per 10,000; M=11.0 per 10,000). In FY2004, the rate increased for females but remained unchanged for males (F=15.2 per 10,000; M=11.0 per 10,000).

In general, the overall rate of knee replacement surgery was 1.2–1.4 times higher for females than for males; however, this pattern did not hold for all age groups or all years. The rate of knee replacement surgery among females in the 50–59, 60–69, and ≥80 age groups was reliably higher than among their male peers. There was no consistent pattern for the rate of knee replacement among those in the remaining age groups (18–19, 40–49, & 70–79). In FY2002, the highest rate of knee replacement surgeries was observed among those between the ages of 60 and 69 years (F=56.8 per 10,000; M=56.6 per 10,000). In FY2003 and FY2004, the highest rate was observed among those between the ages of 70 and 79 years (FY2003: F=60.6 per 10,000; M=58.0 per 10,000; FY2004: F=60.2 per 10,000; M=63.9 per 10,000).

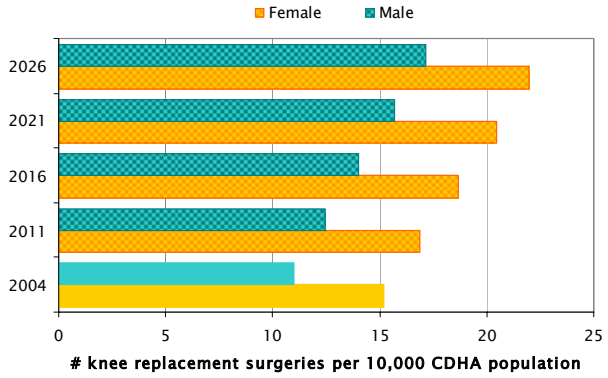
Figure 7.11 Rate of knee replacement surgery (Hip RPL) by sex and year and by sex, age, and year





The highest rate of knee replacement surgeries was observed among those 60-79 years; this same age group is projected to have the fastest growth in the population. Accordingly, the overall rate of knee replacement surgeries will increase as the CDHA population ages. Assuming the age-specific rates of knee replacement surgeries for FY2004 remain unchanged, there will be 19.7 procedures for every 10,000 CDHA residents by 2026 (vs 13.2 in FY2004), representing a 49.2%† increase (F=44.6%†; M=56.2%†).

Figure 7.12 Projected rate of knee replacement surgeries by sex and year



7.5.4 Knee Fixation and Repair

Only 37 knee fixation procedures were recorded across the three years of study (n=13 in FY2002, n=12 in FY2003, and n=12 in FY2004).

Over the three years of study, there were 781 knee repair procedures. The rate of knee repair procedures decreased across time from 9.9 per 10,000 in FY2002 to 6.6 per 10,000 in FY2004. The rate of decline was greater for males (40.0% decline) than for females (25.1% decline). The rate of knee repair procedures was 1.3-1.7 times higher for males than for females.

With the exception of males in FY2002, the highest rates of knee repair procedures were observed among those between the ages of 50 and 69 years (F=10.6-21.7 per 10,000; M=11.1-19.5 per 10,000). For males in FY2002, the highest rates were observed among those between the ages of 40 and 59 years (40-49: 19.7 per 10,000; 50-59: 18.5 per 10,000).