

COMMUNITY HEALTH

**PURSUANT TO CLAUSE 19 OF ENVIRONMENT ACT LICENCE NO. 3055 AND
CLEAN ENVIRONMENT COMMISSION RECOMMENDATION 9.11**

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1.0 INTRODUCTION

This report was prepared in response to clause 19 of *Environment Act Licence No. 3055* and the corresponding recommendation 9.11 of the Clean Environment Commission (CEC) Report on the Bipole III Transmission Project, which call for Manitoba Hydro to conduct a community health assessment of the Gillam area. As stated in the CEC report (2013), the community health assessment “would create a baseline for community health against which the results of the Project would be measured”.

It is anticipated that over the next several years there will be an increased work force in the Gillam area due to planned Manitoba Hydro projects (Appendix 1 presents the workforce schedule for Bipole III). Fox Lake Cree Nation, Manitoba Hydro and the Town of Gillam share a desire to work proactively to limit potential negative impacts related to the increased workforce. As such, Manitoba Hydro has worked with the Town of Gillam and Fox Lake Cree Nation to establish a Terms of Reference for a worker interaction committee. The mandate of this committee is to provide a forum for information sharing and communication related to the anticipated increased workforce in the Gillam area with the intent of: early identification of potential issues, preventing incidents to the extent possible, and identifying ways and means to work cooperatively to address issues as they arise. Membership will include Fox Lake Cree Nation, Manitoba Hydro, the Town of Gillam, as well as other stakeholders and service providers such as the RCMP and Gillam Hospital. This subcommittee will remain in effect until the constructions of Manitoba Hydro planned projects in the area are concluded.

Manitoba Hydro has endeavoured in the design and development the Keewatinoo Camp Infrastructure, located approximately 33 kilometres from the town of Gillam, to minimize negative worker interaction. Examples include MLCC licensed facilities, recreational opportunities and general high quality accommodations. Also, workers will be flown into Gillam and then transported to site eliminating the need for personal vehicles. Amenities such as these combined with limiting the workers ability to travel will reduce the need for workers to go outside that camp – hence limiting worker interaction with local residents. Workers associated with transmission line construction will be housed at a temporary camp supplied by Fox Lake and its venture partner on the previous site of the Sundance Community site, approximately 12 kilometres from the Town of Gillam. Where feasible, the amenities found at the Keewatinoo Camp will be made available to the occupants of the Sundance camp reducing the need to travel to Gillam.

As described in detail in regulatory filings related to the Bipole III Transmission Project and the Keeyask Generation Project, a number of programs and initiatives are underway to support existing community health care services and address well-being in KCNs communities and Gillam. At a corporate level and in the context of its northern projects, Manitoba Hydro, as Project Manager of several northern projects, will continue to cooperate with health care providers as new northern projects, including Keeyask, are developed. Manitoba Hydro works directly with the NRHA to support its efforts to maintain and enhance the capacity of local health services, particularly in Gillam. Note that access to these services extends beyond Gillam residents. In this regard, efforts include the following:

- Manitoba Hydro meets formally on an annual basis with the NRHA to discuss issues and opportunities. In addition to this meeting, Manitoba Hydro has regular informal contact with this health region on a range of issues.
- Manitoba Hydro assists the NRHA in the recruitment and retention of health professionals, where feasible, by making homes or rental housing available, and helping to secure employment for a health professional's spouse (housing and spousal employment are both important factors in recruiting and retaining health professionals). Health professionals recruited by the health region include doctors, nurses, pharmacists, and lab technicians.
- In some cases, Manitoba Hydro assists by flying in other health workers like massage therapists, physiotherapists, chiropractors, and dentists, whose services are not covered under the Canada Health Act. Note that these are the "private" health care professionals; because of funding arrangements, the company is much more limited when it comes to an ability to bring in staff like doctors and nurses. Without this support, it is very unlikely a town the size of Gillam would have access to services like physiotherapy. In addition, Manitoba Hydro funds a Spring and Fall clinic through Assiniboine Dental Group and provides housing for the dentists during their visits. These services are available to the entire community.
- A Professional Center is being funded through the Gillam Redevelopment and Expansion Program (GREP). This Centre will break ground in 2014 and will consolidate a range of services (e.g. chiropractic, physiotherapy, massage therapy, dentistry) at one location. This will consequently free up space in the hospital for other purposes.

The information in the remainder of this document is excerpted from "Socio-Economic Environment, Resource Use and Heritage Resources Section 5: Personal, Family and Community Life" that was part of the regulatory filing for the Keeyask Generation Project. The health characteristics of the current population of the Gillam area are described, and health indicators for the community are presented and analyzed. Appendix 1 presents the estimated work force numbers for the Bipole III Project (Appendix 1).

2.0 BACKGROUND

The health of individuals, families and communities is shaped by a variety of factors or determinants of health, which include the social and economic environment, the physical environment, and the person's individual characteristics and behaviours (WHO 2009). The approach to understanding community health considered factors such as the state of the environment, access to resources to meet basic needs, exposure to risks and capacity to cope with them, income and education level, and social networks and relationships with friends, families, and neighbours that all contribute to health and well-being (Quigley, R.L. *et al.* 2006). Many of these factors are discussed in volumes of the Keeyask Generation Project EIS (2012) and related supporting volumes. The KCNs' Environmental Evaluation Reports also provide valuable insights to their overall perspectives on community well-being.

Health goes beyond the simple absence of disease. A full understanding of community health also requires consideration of a community's social, physical and economic environments as well as individual factors that contribute to overall health (*i.e.*, a more holistic approach). Table 2-1 describes some of the well-documented relationships between the social, economic, environmental and individual factors that can affect health.

Table 2-1: Factors Contributing to Health

Factor	Link to Health
Education	<ul style="list-style-type: none">• Improves opportunities to access employment and income• Provides one with a sense of control over life's circumstances• Increased understanding of information related to maintaining health
Income	<ul style="list-style-type: none">• Higher income is linked to improved living conditions• Higher income increases ability to access resources• Stressors such as job strain, financial problems, and marital problems are more common among lower income individuals
Social Networks	<ul style="list-style-type: none">• Social support networks act as supports when family, friends and community contribute to problem solving, dealing with adversity, and sense of control over life's circumstances• Social supports act as a buffer against health problems
Physical Environment	<ul style="list-style-type: none">• Exposure to contaminants through air, water, soil and food can result in a variety of adverse health effects• Quality of housing (including the density of dwelling requiring major repairs, average number of persons per room, and indoor air quality) are linked to overall health• Distance to services (<i>e.g.</i>, distance to nearest hospital)• Personal security (<i>e.g.</i>, incidents of personal and property crime)
Individual	<ul style="list-style-type: none">• Genetic factors• Personal practices/behaviours (<i>e.g.</i>, diet, exercise, smoking, use of alcohol, <i>etc.</i>)• Coping skills

Sources: Health Canada 2003, Health Canada 2004, Health Council of Canada 2005, Hou and Chen 2003, Orpana *et al.* 2007, Atlas of Canada 2009, WHO 2009.

Beyond this, Aboriginal status itself is considered by some as one of the key determinants of health in Canada (Raphael 2004). Among the determinants of health described in Table 2-1, Aboriginal people are more likely than other Canadians to experience inequalities that affect health. For example:

- Education: Aboriginal people are less educated than their non-Aboriginal counterparts. Aboriginal youth are less likely to complete high school.
- Employment: Insufficient education diminishes the level of skills people have to enter the labour market. Aboriginal people are less likely to end up in positions where they have control over their working environment. Unemployment rates are higher for Aboriginal people than the general Canadian population.
- Income and Social Status: Aboriginal people are typically overrepresented in the low income bracket. Annual earnings are lower than other Canadians irrespective of whether they are working full-time or part-time.

- Social Support Networks: Colonialism resulted in losses of land (*e.g.*, changes associated with *The Manitoba Natural Resources Transfer Act* and registered trapline system [see Section 2.2.1.3]), language, and socio-cultural resources. The residential school system furthered these losses by removing young children from their communities, which has been linked to Aboriginal people being unable to establish effective family relationships.
- Physical Environments: Aboriginal communities often face housing shortages and people are more likely to live in crowded conditions or in homes in need of major repairs. This can result in stressors such as children having little room to study or play, or adults lacking private space to relax.
- Personal Health Practices and Coping Skills: Among the most relevant health behaviours by Aboriginal people are the over or misuse of alcohol, smoking, and lack of exercise and diet. Aboriginal communities are less likely to have community facilities and infrastructure to promote.
- Healthy lifestyle choices/ behaviours (*e.g.*, recreation centers, playgrounds, swimming pools).

(Loppie Reading and Wien 2009; Health Council of Canada 2005)

The Cree concept of *mino pimatisowin* or living “a good and honourable life” (Chapter 2 of the Keeyask EIS) is another way of characterizing health. Adelson (1998), in her work on Cree concepts of health and well-being, describes this in saying, “Someone is said to be *miyupimaatisiun*¹ if he or she eats the right foods, keeps warm and performs the activities needed to accomplish one’s goals, whatever they may be.” Further, Adelson suggests that Cree concepts of health are ultimately linked to a community’s social and political well-being. These concepts illustrate how health can be understood in much broader terms than those described by indicators.

Given the complexity of the factors influencing health, the approach to community health began by gaining a broad understanding of the factors influencing health in the Local Study Area. This included information from the KPI programs, community workshops, and the various KCNs’ Environmental Evaluation Reports and documents. In addition to this, a review of health indicators data² from the First Nations and Inuit Health Branch, INAC, and Manitoba Health was undertaken. The discrepancies among these data sets and limitations of the data are explained in Appendix 5A.

The following indicators were chosen based on practicalities such as the availability of data at the community level, as well as to provide a comprehensive picture of health for the KCNs, Gillam and Thompson:

- Birth rates and infant health – including birth rates, pregnancy rates, high and low birth weights, and spontaneous abortion rates;

¹ Adelson’s work focused on the Whapmagoostui Cree of northern Quebec whose dialect translates *mino pimatisowin* to *miyupimaatisiun*. FLCN has identified Adelson’s work as an accurate reflection of their community’s ATK in relation to health.

² Data from the First Nations and Inuit Health Branch and Manitoba Health was provided with the permission of the KCNs.

- Hospitalization and physician visits – overall use of medical services including reasons such as chronic diseases (cardiovascular disease and diabetes), infections of skin and subcutaneous tissue, and injuries;
- Communicable diseases; and
- Mortality – including mortality rates, premature mortality, and potential years of life lost.

Based on analysis of these indicators, key trends related to health were identified and are presented herein. Wherever feasible, perspectives and insights of the communities are used to support the health indicator data.

The assessment of effects on community identifies potential Project-related drivers that could affect community health and examines their implications on the selected health indicators.

Worker interaction also presents the potential for an increase in violence and associated injury within the community, which from past hydroelectric developments is often associated with the presence of a non-local construction workforce.

3.0 COMMUNITY HEALTH ASSESSMENT

The community health assessment which follows is organized by the following sections – Keeyask Cree Nations (KCNs) considered as a whole, Town of Gillam and City of Thompson. The assessment of KCNs' health has been combined because data at the level of each First Nation are confidential.

The communities in the Gillam area fall within the Burntwood Regional Health Authority (BRHA). The BRHA delivers health care to residents of a large geographic area spanning more than half the province's land mass. Among the challenges faced in the delivery of health care services is the fact that many communities, including two of the KCNs communities (WLFN and YFFN), are not accessible by all-season roads. Transportation can be a consequential barrier to accessing health services (BRHA 2009a) (see Section 4.3.3 for a description of the health facilities and services available in the Local Study Area).

The BRHA is also unique in that 72% of its population is Aboriginal. First Nation Members residing in the region who live on-reserve receive health care services on-reserve through the federal First Nations and Inuit Health Branch (FNIHB). These residents also access services off-reserve through the BRHA as necessary (*e.g.*, physician services as required, screening services, and hospitalization). Jurisdictional challenges exist relating to access to health services and are addressed through strong relationships with Aboriginal organizations such as the MKO and KTC, as well as through dialogues with First Nation communities and FNIH (BRHA 2009a).

As described in Section 5.2.2, health is influenced by a wide variety of factors, which makes it challenging to describe the overall health status of a community. Drinking water quality, food choices, behaviours such as smoking, level of physical activity and air quality all affect health. Socio-economic factors such as housing, income social status, education, early childhood development, and family and community supports must also be considered. Measuring these determinants of health can be challenging due to the breadth of factors that can contribute to health and the availability of data. Data on some indicators are not routinely collected and may be only available through sources such as surveys or community consultation. For example, while incidences of lung cancer may be collected, statistics on smoking rates among young adults are not readily available. Further, a full understanding of community health requires consideration of both health indicators, (*e.g.*, determinants such as birth rates and infant health, hospitalization and physician visits, communicable disease and mortality), and community perspectives on health and well-being at the individual and community level. This section presents health indicator data for the KCNs communities, Thompson and Gillam, as well as information on community-based understanding of health and well-being.

3.1 KEEYASK CREE NATIONS

3.1.1 Perspectives on Health and Well-being

Mino-pimatisiwin means living a good and honourable life. *Mino-pimatisiwin* includes many things such as being a good person, respecting *Askiy*, harvesting and consuming healthy *Ininewak* foods, and following Cree values (see Chapter 2 of the EIS for further detail). Adelson, in her work on Cree concepts of health

and well-being, describes this in saying “Someone is said to be *miyupimaatisiiun*¹ if he or she eats the right foods, keeps warm and performs the activities needed to accomplish one’s goals, whatever they may be” (1998). “Indeed, from a Cree perspective, health has as much to do with social relations, land, and cultural identity as it does with individual physiology” (Adelson 2000).

Adelson argues that the Cree concept of health “cannot be understood outside of the context of colonial and neo-colonial relations in Canada. Aboriginal people in Canada continue to live with the effects of displacement, discriminatory legislation, failed attempts at assimilation, forced religious conversion, and pervasive racism” (Adelson 2000). The KCNs have described such circumstances in different ways.

For CNP, this is expressed as they evaluate harmony and balance in their ancestral homeland ecosystem (see CNP Keeyask Environmental Evaluation Report). Before contact with Europeans, the ancestral homeland ecosystem was intact and capable of sustaining their population. Upon contact, activities/policies such as the *Indian Act*, cash payments to First Nations, the signing of Treaties, schooling, the construction of the Hudson Bay Rail line, the *Migratory Birds Convention Act*, the Natural Resources Transfer Agreement and the implementation of the registered trapline system, slowly began to erode the ancestral homeland ecosystem and created an unbalanced system. The onset of Manitoba Hydro’s activities placed further pressure on this system, and at present the communities feel as though the vital relationships that sustain the community are “the weakest in (their) history” (CNP Keeyask Environmental Evaluation Report).

FLCN’s history describes numerous events, activities and policies that affected their community, who before contact with Europeans lived with intimate familiarity with their surrounding environment, guided by concepts such as *pimatisiwin* and *oochinehwin*². Events that transformed the community in one way or another include the signing of the adhesion to Treaty 5, the construction of the Hudson Bay Railway, the Indian residential school system, the closure of York Factory in 1957, settlement at Gillam, and struggles to secure reserve land, among others. Some of these changing circumstances were complimentary with FLCN’s lifestyle (*e.g.*, people were able to incorporate seasonal employment with the rail line along with traditional pursuits), while others often had negative consequences (*e.g.*, the Indian residential school system). Perhaps the most profound of all these experiences was the construction of three hydroelectric generating stations in FLCN’s traditional territory. Not only did this affect FLCN’s relationship with the land and waterways “but also with each other and with the town of Gillam” (FLCN 2009a Draft).

YFFN describes their experiences in saying, “Our First Nation has been subject to successive forms and practices of colonialism since the 17th century” (YFFN Evaluation Report (*Kipekiskwaywinan*)). Major events that have shaped the community include its role in the fur trade at York Factory, joining the Anglican Church, signing Treaty 5, and relocation to York Landing in 1957. Just as the community was becoming familiar with their new surroundings resulting from the forced relocation to York Landing,

¹ Adelson’s work focused on the Whapmagoostui Cree of northern Quebec whose dialect translates mino pimatisiwin to miyupimaatisiiun. FLCN has identified Adelson’s work as an accurate reflection of their community’s ATK in relation to health.

² The Cree term oochinehwin refers to known consequences for inappropriate behavior as described in Ninan (FLCN 2009 DRAFT).

hydroelectric development resulted in profound changes to their surrounding environment. Of particular concern to the community in this regard is the decline to water quality the community has witnessed over time. However, YFFN remains certain that the community's ability to adapt to imposed changes is likely to prevail once again. This perspective is reflected in YFFN's Evaluation Report, which states: "The people of York Landing have seen many changes over the years and yet they have maintained their proud cultural traditions adapting to major disruptions such as relocation, the loss of their traditional lands, and the impacts of major hydro-electric projects. Today, the people of York Factory First Nation are preparing for the future by re-establishing their connection with the land, and becoming more self-reliant again" (YFFN Evaluation Report (*Kipekiskwaywinan*)).

Adelson's understanding of *pimatisowin* "has everything to do with life on the land" (2000) and is "inseparable from being able to hunt, pursue traditional activities, live well in the bush, eat the right foods, keep warm and provide for oneself and others" (Adelson 2000). Traditional foods from the land and water, which have sustained communities over the centuries, are acknowledged today as providing a better diet than what store-bought food typically provides (CINE 2006). Traditional foods are also acknowledged as providing for "strengthened cultural capacity and well-being" (CINE 2006). The ties between health/well-being and the land have been experienced firsthand by the KCNs, who maintain that the advent of hydroelectric development in northern Manitoba resulted in devastating effects to their abilities to pursue activities on the land and subsequently on community health. The factors affecting traditional food consumption patterns include but are not limited to:

- Loss of traditional ancestral hunting, trapping, and fishing locations;
- Unfamiliarity with the land and associated safety hazards and concerns;
- Need to go further afield to access traditional food sources;
- Concerns about water quality;
- Changes to the taste and texture of fish; and
- Concerns about mercury in fish.

(Split Lake Cree – Manitoba Hydro Joint Study Group 1996a; CNP Keeyask Environmental Evaluation Report; FLCN 2009a Draft, FLCN KPI Program 2009-2011; YFFN Evaluation Report (*Kipekiskwaywinan*); YFFN KPI Program 2009-2010).

These factors resulted in changes to diet and increased reliance on store-bought food, in addition to a shift to a more sedentary lifestyle. Such factors are thought to be linked to deterioration of health and increased incidences of modern illnesses (Split Lake Cree – Manitoba Hydro Joint Study Group 1996a; FLCN KPI Program 2009-2011).

3.1.2Community Health Assessment

Many northern and First Nations communities have undergone major changes over the past decades. While some of the changes have been beneficial, some of the changes have had negative impacts on health such as the decrease in physical activity; increasing high fat, high caloric, high sugar diet; access to

cigarettes, alcohol, and motor vehicles, which can increase risks of injuries, diabetes, heart disease, obesity, and cancer. There have also been major changes in the socio-cultural-economic lives of First Nations people.

Health is influenced by the interaction of a wide variety of factors including physical, mental, emotional and spiritual components. Understanding KCNs' concepts and realities of health and well-being requires a holistic approach to considering the total health of a person within the total environment. A community health assessment recognizes the many layers of health and well-being and the things that make the community unique, including its social systems, environmental factors, and demographics. Many of these aspects are discussed in different sections of this document, in Section 3 on the economy, and Section 4 on population, infrastructure and services. An important component to the assessment is the development of a set of key community indicators or measures that will help describe the baseline state of health in the community. Criteria for selecting indicators include availability, timeliness of the indicator, validity, stability, reliability, and responsiveness. This often means that certain types of data (such as administrative data collected through births and deaths registries, hospitalizations and medical appointments) are included to a much greater extent than other types of data that may be more difficult or costly to collect.

After consultation and review of available data, this community health assessment includes information obtained through community visits and key person interviews along with administrative health data that was requested from Health Canada, the First Nations and Inuit Health Branch, and Manitoba Health (with permission received from each of the KCNs). Technical health documents were prepared for each of the KCNs separately. Due to the sensitivity of the contents of these documents, the information is summarized here for the KCNs collectively, in addition to reports for Gillam and Thompson.

A holistic picture of health status includes physical, mental, emotional and spiritual health issues. The scope of this section includes a review of broad health indicators as well as common health conditions and chronic diseases.

SELECTION OF HEALTH STATUS INDICATORS

The broad indicator areas in the KCNs' Community Health Assessment include Population, Births and Infant Health, Communicable Diseases, Hospital and Physician Visit Data and Mortality. Appendix 5A provides a brief description of some of the International Classification of Disease¹ classifications that may be reported on through the physician billing, hospitalization and mortality data. This disease classification system is endorsed by the World Health Organization (2010) and is used for all physician and hospital billing.

¹ The International Classification of Disease (ICD) is the international standard diagnostic classification for all general epidemiological, many health management purposes and clinical use. It is used to classify diseases and other health problems recorded on many types of health and vital records including death certificates and health records. In addition to enabling the storage and retrieval of diagnostic information for clinical, epidemiological and quality purposes, these records also provide the basis for the compilation of national mortality and morbidity statistics by WHO Member States.

These broad ICD-10 disease classification areas are presented in this chapter if they were a "leading cause" of physician visits, hospitalization or death. In addition, specific indicators ("conditions of interest") within each area were chosen based both on practicalities such as availability of the data at the community level and providing the most comprehensive picture of health in each community. In some cases, data were not available for every community (for example information about chronic diseases). The results of the analysis were shared with each of the KCNs' respective health professionals in order to confirm whether the findings were consistent with experiences in the communities and to identify other issues not captured in the data.

Other important indicators and facets of health, including education, employment, income, services, language, culture, and spirituality are considered in other sections of this document.

Population

Information about population size and change helps identify how quickly communities are growing and if there are certain age groups growing at a faster rate than other parts of the population. Communities with largely young populations tend to have high birth rates, fewer people available for employment (proportionally as many are under age 15) and may experience specific health risks such as more injuries and fewer chronic diseases. From a First Nations perspective, population projections "suggest a growing demand for services – social, educational and health" and also "point to the impact on Bill C-31 on the future diminishing resources of the communities as their populations grow" (First Nations Regional Health Survey 2005).

Births and Infant Health

Information about births and infant health such as infant mortality and low and high birth rates provide very good information about the health of the community in general. For example, infant mortality rates have often been found to be one of the single best measures of health in a community, with communities that experience higher rates of infant mortality also experiencing higher rates of poor health overall. This is due in part to the fact that "Infants are considered to be vulnerable to adverse underlying social, economic, and environmental conditions. It is this vulnerability that makes infant health measures sensitive 'sentinels' to underlying population health determinants" (First Nations Regional Health Survey 2005).

Communicable Diseases

Transmission of some communicable diseases is related to lifestyle, general health of the population and availability of resources to aid with personal hygiene. That is, certain communicable diseases are spread due to poorly cooked food, or lack of hand washing. Some general risk factors that can increase the burden of communicable disease include:

- Lack of access to safe water, sanitation and cooking facilities can put a population at increased risk of outbreaks of waterborne and food borne diseases;
- An overcrowded population increases the risk of transmission of communicable diseases, particularly respiratory diseases;

- Poor nutrition can impact a person's natural immunity and lead to more frequent, severe and prolonged episodes of infections; and
- Poor access to health services may mean that people do not receive treatment in a timely manner, which can impact that disease course and increase risk of transmission to others.

Selected Conditions of Interest

Most conditions of interest were selected based on several criteria including the relationship of the condition to water, conditions identified through research that are likely to be of importance to a northern community (such as diabetes or injury) as well as conditions identified by the KCNs as relevant to their communities. The specific conditions chosen for review include:

- Injury;
- Cardiovascular Disease;
- Infections of Skin and Subcutaneous Tissue;
- Mental Health Disorders;
- Diabetes;
- Congenital Anomalies diagnosed in newborns;
- Intestinal Infectious Diseases;
- Disorders of the Thyroid Gland;
- Hepatitis A;
- Noxious influences affecting newborns; and
- Mercury-related illnesses¹.

Physician visits data can provide information on how many people in a community are living with certain illnesses or experiencing certain events (such as injury). However, there is generally no administrative database used to record visits and diagnoses with a nurse at a nursing station (unlike physician visits where such data are generally available). Therefore these data can be of limited value for First Nations communities. While the physician visit rate can under-represent the true numbers of events in a community, it is still reported as an indicator to provide a picture of a community's health status.

¹ International Classification of Disease code 985.0 was used. 985.0 is a subcomponent of code 985 which is Toxic Effect of Other Metals. 985.0 specifically refers to Mercury and its Compounds and more specifically Minamata Disease. Minimata Disease is a neurological (brain) disorder caused by high levels of mercury poisoning.

Hospitalization data provide information about residents who were admitted as in-patients to a hospital (regardless of which hospital). This indicator provides information about illnesses that become severe enough for hospitalizations and what resources might be needed in the community to help people better manage their health. For example, if hospitalizations due to diabetes are increasing, it can be an indicator that the number of people living with diabetes is increasing but it can also suggest there may not be enough resources in the community to help people manage their diabetes before complications occur (as most people should not need to be hospitalized for this illness). Because these data include only people who have been admitted to hospital, it is reasonable to assume that in most cases the patient was ill enough to require hospitalization. However, in some cases, nurses in the community may determine that they have the resources to deal with a particular situation or to diagnose a problem and then refer the patient to hospital. Because the patient is transported from the community, they may be more likely to be admitted to hospital for tests or observation when a local community member may be more likely to be treated as an outpatient. Therefore, it is important to consider both acuity of illness and local resources in interpreting the hospital data.

Mortality

Mortality data are another set of information that can contribute to the understanding of the health status of the community. For example, the premature mortality rate (deaths before age 75) has been identified as one of the best single measures of health status and many researchers rely on this indicator above others to measure the health of the community. Communities with higher premature mortality rates also tend to have higher rates of illnesses, hospital utilization and poorer health overall. Mortality data by cause also provides information with respect to how many deaths may have been preventable (for example, those due to injuries).

LIMITATIONS OF THE DATA

The following sections describe the results of the community health assessment, which is based largely on available indicator data and community-based research results. One of the challenges in interpreting the data is that while each indicator presents information on a specific aspect of health, it is challenging to portray the concept of overall wellness. According to the First Nations Regional Longitudinal Health Survey 2002/03 (2005), wellness “is a very complex and multilayered philosophy.” The study goes on to explain that for First Nations, “human beings are connected to the natural world and thus to Creation, through many different levels or layers...all levels are interconnected” (First Nations Regional Longitudinal Health Survey 2005). Describing the overall interconnectedness between factors is a challenge, particularly as certain determinants of health have limited available data at the community level.

For example, one area of limitation in using a determinant of health indicator approach is an ability to consider the influence of certain risk factors. Information on risk factors includes personal health practices such as smoking, diet and exercise, which have important linkages to current and future health status of the population. While some risk factor data are available at the national level through tools such as the First Nations Longitudinal Health Survey, risk factor data specific to the Local Study Area are not readily available.

Generally, data used in the community health assessment were available for the years 1984-2006. Data are presented for this time period for population, infant health, physician visit and hospitalization data. In cases where data are collapsed into 10-year time frames, the two most recent time periods are usually chosen -1987-1996 and 1997-2006. In some cases, in order to present changes over time the earliest and latest time periods are chosen. Data presented are from Manitoba Health with the exception of some mortality data that was provided by FNIHB. In this case, the time period covered is not the same for each community and is not as lengthy as the time frame presented for the other health indicators as it was not available.

Data for Manitoba First Nations (as a whole) and the province of Manitoba are provided for comparison purposes where appropriate.

CAUTIONS IN INTERPRETING THE DATA

With individual communities, the size of the population can also be a limitation in identifying potential health issues because of the wide confidence intervals that result during the analysis. A change or impact needs to be fairly large in order to confidently say there is a statistically significant difference.

Several graphs presented in this section include the actual rates as well as the upper and lower 95% confidence intervals. Confidence intervals gives the range of rates in which are likely to be the true value 95% of the time – that is, that we are confident that 95% of the time, the true value or rate would be within the given range of confidence interval.

The small size of the KCNs' population relative to Manitoba First Nations and the Province as a whole may result in more pronounced peaks and valleys in some of the graphs. This may not be indicative of an erratic trend, but rather may be a reflection of the small size of the communities whereby a relatively small number of incidents results in large changes from year to year.

Finally, when attempting to determine whether there are actual changes over time in disease burden or deaths as well as when attempting to compare different populations, rates are required. These may be presented as "per 1,000" residents or "%" (which is the same as "per 100 residents") *etc.* This means that comparisons can be made. However, it is often important when considering resources needed at the community level to also consider the actual number of patients, hospitalizations, deaths or other events. This can assist in planning for health care resources, particularly in populations that may also be increasing (for example, if a community population is growing at the same rate as a certain illness, then there won't be an increase in "rates" shown even though the number of actual people requiring health care services for a disease has actually increased). This is why, in many cases, the actual number of events for community residents may be presented as well as rates for comparison over time as well as between the community and other comparison areas.

3.1.2.1 Health Characteristics Associated with Population Characteristics

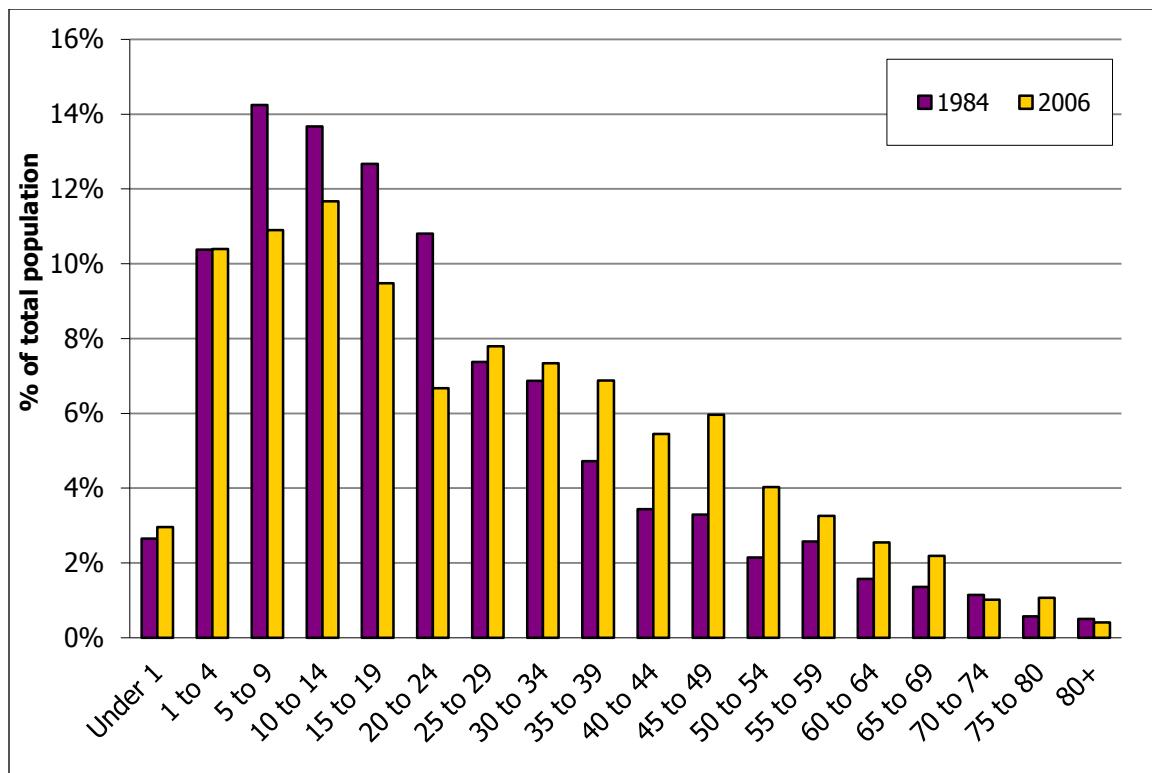
An understanding of population lays the foundation for interpreting the health of First Nations communities (First Nations Regional Longitudinal Health Survey 2005). As discussed in Section 4.3.1, the KCNs have a young population with at least 40% of residents under the age of 20. This is a much different and younger population distribution than seen in Manitoba overall where only about 25% of

residents are under the age of 20. KCNs communities are young and growing; according to Manitoba Health population data¹, overall they have grown by 40.5% between 1984 and 2006 (slightly higher than all Manitoba First Nations living on-reserve at 36%). Although the KCNs communities have a large population of young people, the population make-up of KCNs communities has changed over the past 25 years with an increasing proportion of the population in the 25 to 69 year age group and a decrease in the proportion of residents under 25 years.

Communities with larger numbers of young people like the KCNs may be more likely to have higher rates of illnesses or health needs related to younger people (such as issues related to pregnancy, immunization, child health and injury) than Manitoba overall. A younger community may also appear to have lower rates of illnesses such as chronic diseases or deaths because these issues typically happen later in life.

While only 4.7% of KCNs residents are over age 65 (compared to 13.8% of Manitobans), this group is growing (see Figure 3-1). This has an impact on the types and numbers of illnesses seen in the communities today compared to 1984. When more people in a community start living longer, this means that the community might start seeing some diseases that they have not seen in the past. For example, many chronic diseases such as diabetes, heart disease, and cancers are typically found in older people. Increases in rates of these types of illnesses are being seen in some First Nations populations. The prevalence of these conditions and the prevalence of individuals experiencing multiple conditions increases with age (First Nations Regional Longitudinal Health Survey 2005) and other risk factors such as diet, exercise and smoking.

¹ Manitoba Health population data are presented in this section, as these figures are used to calculate rates for all health data provided by this source. For accuracy, it is important that both the number of health events, and the population used to calculate the rates, come from the same source. In cases where INAC has provided health or mortality data, population figures from the same source are used to calculate rates.



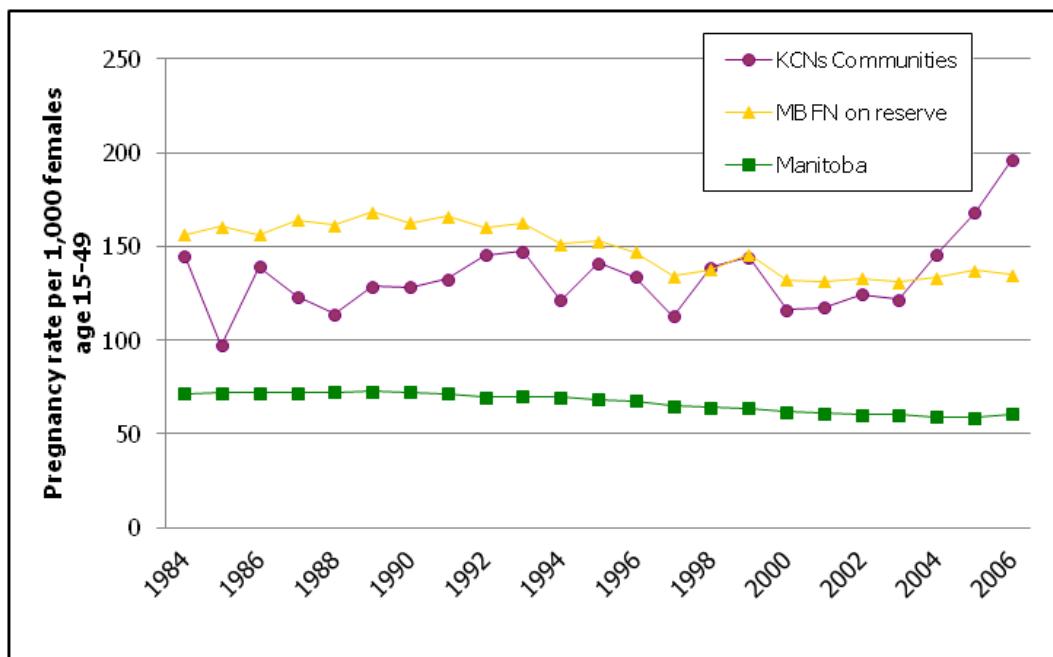
Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-1: Keeyask Cree Nations Communities Change in Population Structure (1984 and 2006)

Since 2004, pregnancy and birth rates in the KCNs communities have been higher compared to Manitoba and to other First Nations residents living on-reserve. According to Manitoba Health data, in 2006 the pregnancy rate for residents of KCNs communities was 195.8 pregnancies per 1,000 females age 15 to 49 compared to Manitoba First Nations rate of 135.1 per 1,000 and Manitoba at 60.7 per 1,000 (see Figure 3-2 and Figure 3-3).

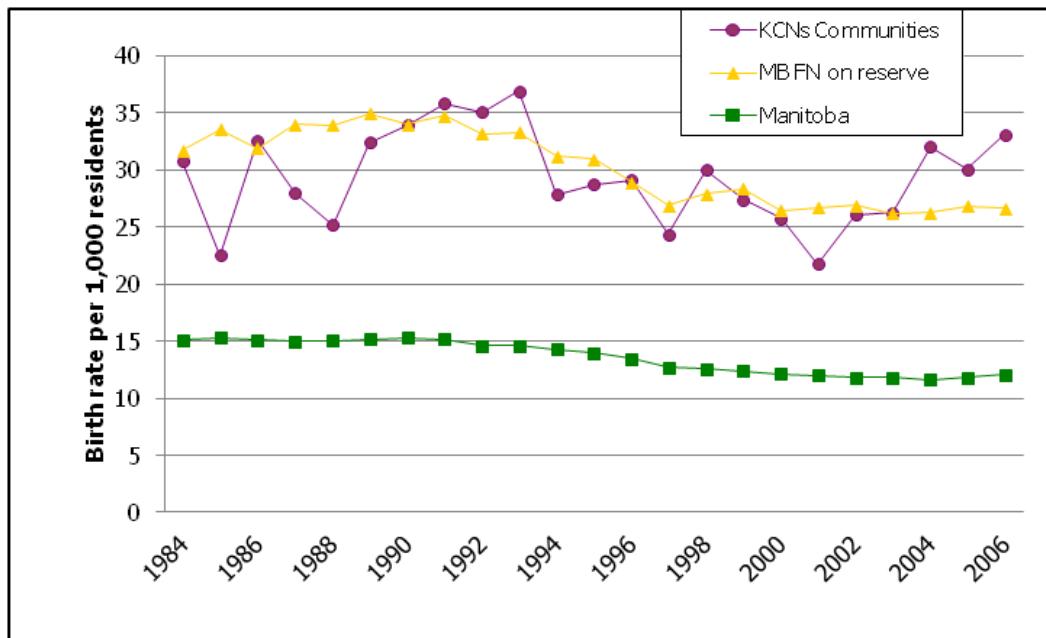


Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-2: Pregnancy Rates Over Time, Females Age 15-49 (1984-2006)



Source: Manitoba Health, special data run 2011.

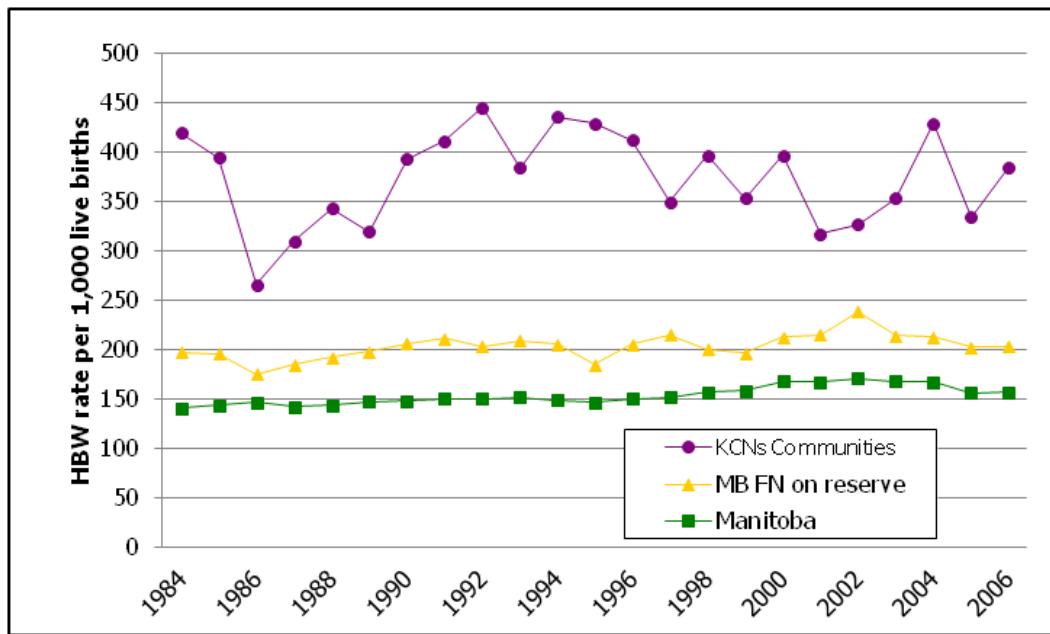
Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-3: Birth Rates Over Time (1984-2006)

Birth and pregnancy outcomes reviewed included low (LBW) and high birth weight (HBW) rates. International definitions of birth weight are used; low birth weight is defined as a birth weight of less than 2,500 grams and high birth weight is defined as a birth weight of more than 4,000 grams. These are medical definitions used for classifying the normal range of births. Risk factors for high birth weight infants include diabetes in the mother; and babies born at high birth weight are then themselves at increased risk for developing diabetes (Stene *et al.* 2001).

However, it is important to note that although there are increased health risks associated with both LBW and HBW infants, not all infants in these weight categories will have negative health impacts. In First Nations communities, HBW infants are typically much more common than LBW infants. For example, in 2006 there were 25 babies born weighing more than 4,000 grams to KCNs community Members (compared to fewer than five born at LBW). The 25 HBW infants among KCNs community Members can be converted to a rate for comparison to other areas. The KCNs' HBW rate of 384.6 infants per 1,000 live births was higher than Manitoba First Nations rate of 202.4 per 1,000 and the provincial rate of 156.4 per 1,000 in 2006. This means that in 2006, just over one in three babies born to a KCNs community resident had a high birth weight. While HBW rates among Manitobans appear relatively consistent, it does appear that there may be an increasing trend in HBW infants among KCNs residents (see Figure 3-4).



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskwewak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-4: High Birth Weight Rates (1984-2006)

3.1.2.2 Diseases of Interest to the Keeyask Cree Nations

Specific diseases of interest were identified by the KCNs through the community-based research programs. Many of these are represented on the chronic conditions lists that were provided by the nursing stations for KCNs communities. Data about both physician visit and hospitalization were collected and reviewed for each of these conditions. However, for some conditions there were no cases as illustrated in the physician visit data in Table 3-1 and the hospitalization data in Table 3-2.

Note that obstetrics data related to routine deliveries are not included as this is typically the most common reason for hospitalization but is not related to illness. It is also important to note that the data were provided by year so that the patients may be counted multiple times when summarizing the time trend data as illustrated in the table.

These tables concur with the community Chronic Disease Lists, which are kept by the nurses in many communities. That is, in both the community Chronic Disease List as well as the data retrieved from physician visit and hospitalization administrative data sets, cardiovascular diseases and diabetes were ranked highly in terms of numbers of residents living with the disease (Chronic Disease list) as well as being treated for the disease (physician visit and hospitalization data). This agreement between different data sources is important when evaluating reliability of data. While injury was ranked low on the Chronic Conditions list and accounts for the most patients and physician visits, this is because injury is usually an acute event and does not always lead to chronic conditions.

In the following sections, each chronic condition is examined, with further detail on time trend and comparison data for selected illnesses provided where sufficient data are available. Sufficient data were not available to review Hepatitis A (seven hospitalizations between 1980 and 2006), Disorders of the Thyroid Gland (nine hospitalizations) or Intestinal infectious disease (28 hospitalizations) in further detail.

Table 3-1: Physician Visits by Selected Cause, KCNs Community Members (1984-2006)

Selected Cause of Illness	Total patients	Total visits
Injury	7,587	14,253
Cardiovascular Disease	2,963	8,202
Diabetes	2,797	7,826
Mental Health and Behavioural Disorders	2,398	5,307
Infections of Skin and Subcutaneous Tissue	1,950	3,125
Congenital Anomalies diagnosed in newborns	488	831
Disorders of the Thyroid Gland	222	425
Intestinal Infectious Diseases	93	121
Noxious influences affecting newborns	0	0
Mercury-related illness	0	0
Hepatitis A	0	0

Source: Manitoba Health, special data run 2011.
Notes:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- Patients can be counted multiple times from year to year and do not represent unique individuals over the time frame.

Table 3-2: Hospitalizations by Selected Cause, KCNs Community Members (1984-2006)

Selected Cause of Illness	Total hospitalizations
Injury	1,571
Cardiovascular Disease	742
Infections of Skin and Subcutaneous Tissue	326
Mental Health Disorders	341
Diabetes	307
Congenital Anomalies diagnosed in newborns	73
Intestinal Infectious Diseases	28
Disorders of the Thyroid Gland	9
Hepatitis A	7
Noxious influences affecting newborns	0
Mercury-related illness	0

Source: Manitoba Health, special data run 2011.

Notes:

- KCNs communities include Tataskwewak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- Patients being hospitalized can be counted multiple times from year to year and do not represent unique individuals over the time frame.
- Obstetrics data are not included.

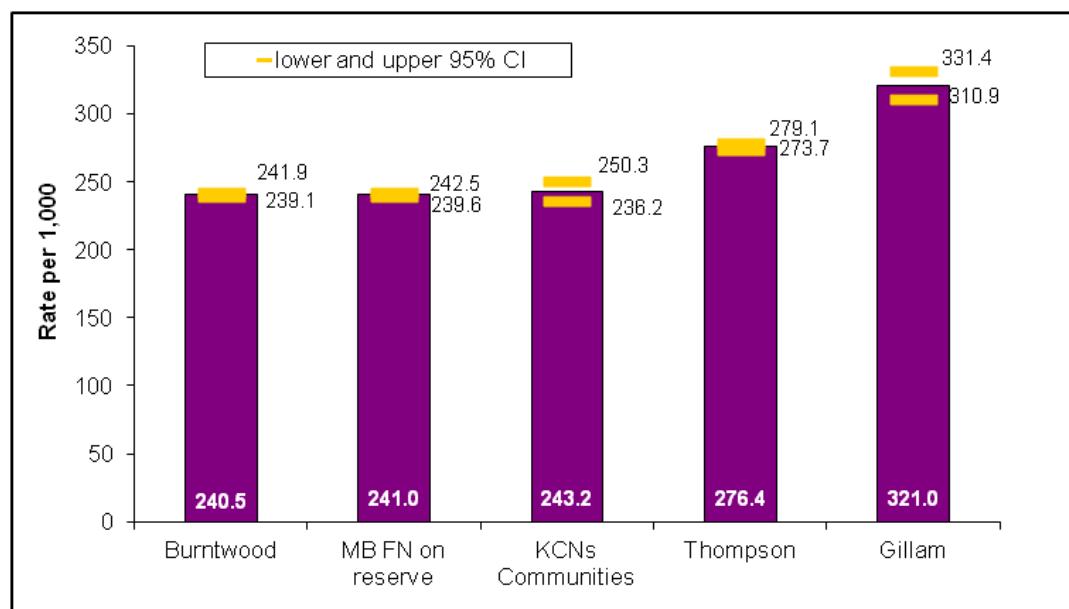
CARDIOVASCULAR DISEASE

Cardiovascular disease includes a wide range of diseases involving the heart and blood vessels. Angina, narrowing of the arteries, heart attack, congestive heart failure and stroke are examples of cardiovascular disease. Many of the risk factors for cardiovascular disease (such as obesity, lack of physical activity and stress) are common to Type 2 Diabetes and many cancers. KCNs communities indicated that diabetes, hypertension, stroke and heart conditions are current health issues among adults (CNP KPI Program 2009-2010; YFFN KPI Program 2009-2010; FLCN KPI Program 2009-2011).

The 10-year average annual rate of physician visits between 1997 and 2006 was 243.2 visits per 1,000 residents (see Figure 3-5). This is statistically lower than rates in Gillam and Thompson but statistically similar to the BRHA and Manitoba First Nations on-reserve.

The 10-year average annual physician visit rate for cardiovascular disease for KCNs females appears to be the lowest among comparison populations at 226.9 visits per 1,000 residents. This rate is statistically lower than all comparison populations with the exception of Manitoba First Nations living on-reserve. Among KCNs males, the average annual physician visit rate for cardiovascular disease between 1997 and

2006 was 258.7 visits per 1,000 residents. This rate is statistically lower than the rate in Gillam¹ but higher than the rates of the BRHA and Manitoba First Nations living on-reserve.



Source: Manitoba Health, special data run 2011.

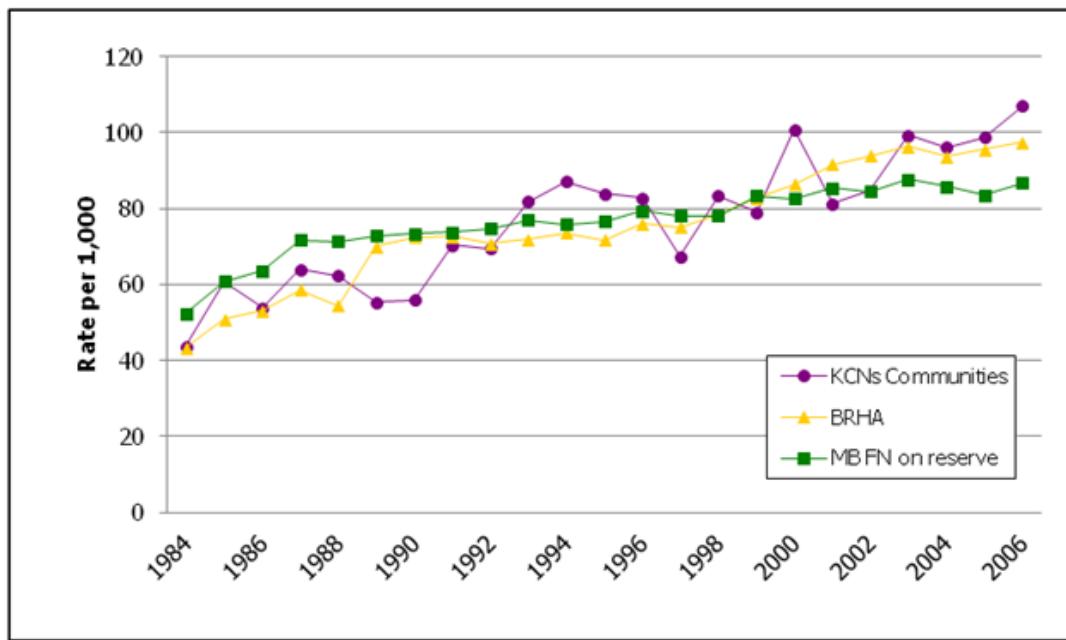
Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- CI refers to confidence interval. The confidence interval gives the range of rates in which it is likely to be the true value 95% of the time – that is, that we are confident that 95% of the time, the true value or rate would be within the given range of confidence interval (CI).

Figure 3-5: Average Physician Visit Rates For Cardiovascular Disease by Area (1997-2006)

As illustrated in Figure 3-6, treatment rates for cardiovascular disease appeared to be increasing for all comparison areas reviewed. While rates are presented in the graphs to allow for comparison of different areas, the actual number of patients and physician visits among KCNs community Members is also useful to help for resource planning. The actual number of KCNs residents who were treated by a physician for cardiovascular disease increased by 244% from 61 unique patients in 1984 to 210 in 2006. This is the highest rate of change among the comparison areas. The number of physician visits for these patients (where individuals can be counted more than once if they make multiple visits to the doctor) increased at a similar rate from 118 visits in 1984 to 468 visits in 2006 (an increase of 296.6%).

¹ Note that all data are based on community of reported residents, not community of service or Band affiliation. For example, “Gillam” refers to all residents who have provided Manitoba Health with a mailing address in Gillam, regardless of where they received services and regardless of Band affiliation. A member of TCN, WLFN, FLCN or YFFN who lives in Gillam would be recorded under “Gillam” in this analysis.



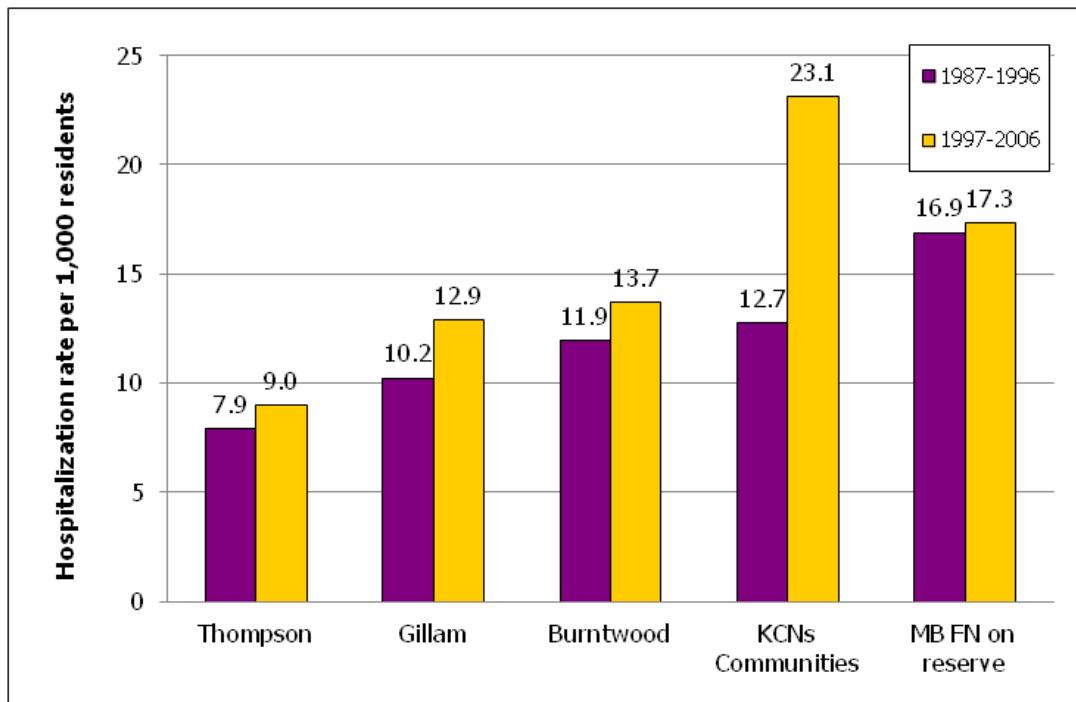
Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-6: Patient Treatment Rates for Cardiovascular Disease by Year, All Residents (1984-2006)

Generally, cardiovascular disease tends to be a disease among older residents and this is also the case for KCNs community Members. KCNs residents age 50 and older accounted for 83.7% of hospitalizations for cardiovascular disease. It is important to consider the hospitalization data with respect to the physician visit data. The physician visit data shown in Figure 3-7 showed KCNs residents as having the lowest or second lowest rates of physician visits for cardiovascular disease, yet hospitalization rates are the highest among the comparison communities (see Figure 3-7). This may be due to a variety of factors including data quality. Ongoing care or treatment that occurs at the nursing station would not be included in the physician visit data. In addition, any physicians that provide services in the community and are paid through a contract or other arrangement may not provide the diagnostic data to Manitoba Health, so these visits would not be captured. It is also possible that there are more hospitalizations due to more acute level of illness or because the staff at the nursing station determine that there are not resources at the community level to manage a condition, which in another community may be managed on an out-patient basis.



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-7: 10-year Hospitalization Rates for Cardiovascular Disease by Area (1987-1996 and 1997-2006)

DIABETES

Diabetes and related complications were identified by the KCNs as a priority health concern in KCNs communities. The availability of places to exercise and programs to participate in were also noted. Concerns about the loss of traditional lifestyles, ability to safely eat traditional foods, the high cost of food in communities, and the convenience of 'prepared or processed foods' may be leading residents to eat in a way that puts them at higher risk for certain health conditions, including diabetes. The KCNs indicated that several people, particularly Elders, already have diabetes and there is concern about late diagnosis of diabetes. There was also agreement that although there are other risk factors, diet and lifestyle are major contributors to diabetes (CNP KPI Program 2009-2010; YFFN KPI Program 2009-2010; FLCN KPI Program 2009-2011).

Diabetes is an important chronic disease that has a major impact on the health of Canadians and on the health care system. According to the Public Health Agency of Canada, 40% of Canadians with diabetes develop long-term complications such as high blood pressure, vision loss, cardiovascular disease, lower limb amputation or kidney disease. The Public Health Agency of Canada also reports that there are a disproportionate number of First Nations people who are being diagnosed with type 2 diabetes. Rates among Aboriginal people in Canada are three to five times higher than those of the general Canadian population (Public Health Agency of Canada 2009).

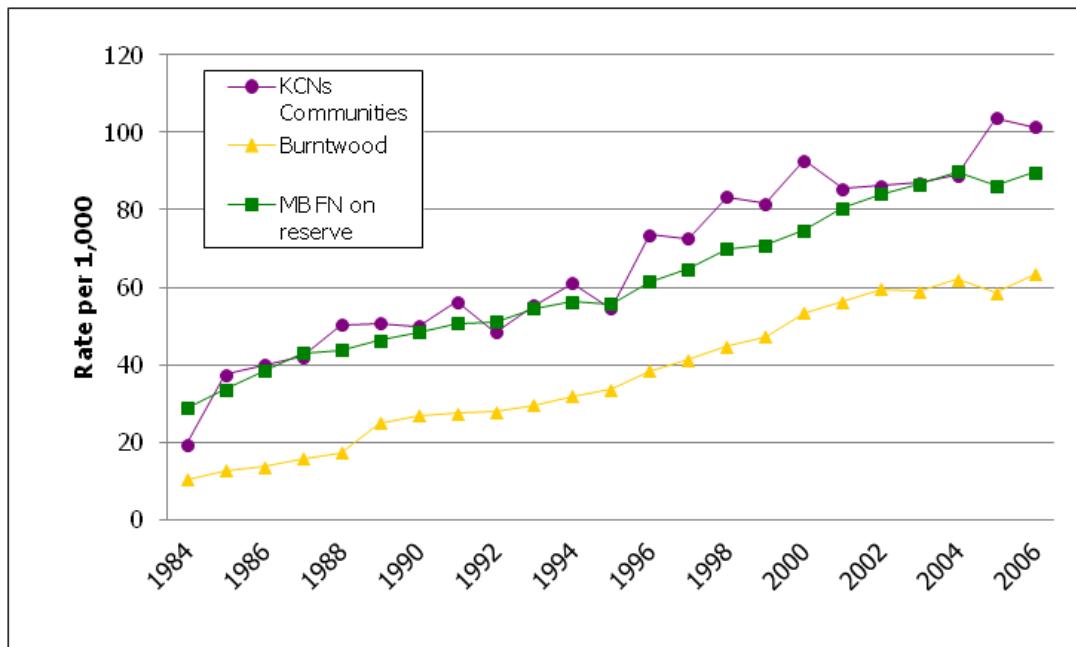
Canada's Public Health Agency identifies several risk factors for type 2 diabetes (see Table 3-3) and the more risk factors an individual has, the greater his/her likelihood of developing type 2 diabetes.

Table 3-3: Risk Factors for Diabetes

Risk Factor	Description
Obesity and 'Apple-shaped' figure	A high body weight increases diabetes risk. People who carry most of their weight in the trunk of their bodies (<i>e.g.</i> , above the hips) tend to have a higher risk of diabetes than those of similar weight with a 'pear-shaped' body (excess fat carried mainly in the hips and thighs).
Inactive lifestyle	Being overweight can be prevented by regular physical activity. A second benefit of regular physical activity is improved blood sugar control in people who already have type 2 diabetes.
Age	Age increases the risk of type 2 diabetes. According to PHAC, in 2006/07, the prevalence rate (people living with the disease) of diabetes in those aged 65 and over (21.3%) was three times as high as the rate in those 35 to 64 (7.1%).
Ethnic Ancestry	Being of Aboriginal, African, Latin American or Asian ethnic ancestry increases the risk of developing type 2 diabetes. Risk levels for these groups are between two and six times higher than for Canadians of Caucasian origin.
Family History	Having a blood relative with type 2 diabetes increases risk. If that person is a first-degree relative (<i>e.g.</i> , a parent, sibling or child), the risk is even higher.
History of Diabetes in Pregnancy	Almost 40% of women who have diabetes during their pregnancy go on to develop type 2 diabetes later, usually within five to 10 years of giving birth.
Impaired Glucose Tolerance	Impaired glucose tolerance or impaired fasting glucose is often seen before the development of type 2 diabetes.

Source: Public Health Agency of Canada (PHAC) 2009.

The number of people treated for diabetes among all KCNs residents increased by 637% from 27 people in 1984 to 199 people in 2006. This is the highest rate of change in numbers of patients among the comparison areas. The number of physician visits associated with these patients increased from 101 in 1984 to 614 in 2006, which is an increase of 507.9%. Figure 3-8 shows the patient numbers as rates per 1,000 to allow for comparison to other areas. This figure shows that patient treatment rates are increasing in all areas and that while KCNs community rates are very similar to the rates seen among all Manitoba First Nations living on-reserve, rates are consistently higher than for the BRHA population overall.



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-8: Patient Treatment Rates for Diabetes by Year, All Residents (1984-2006)

Trends in Diabetes

Diabetes is a very important cause of illness as well as a driver of medical service use in KCNs communities. Between 1984 and 2006, diabetes accounted for 7,912 or 20% of all physician visits for KCNs community Members. KCNs residents age 50 and older accounted for 68.1% of these visits.

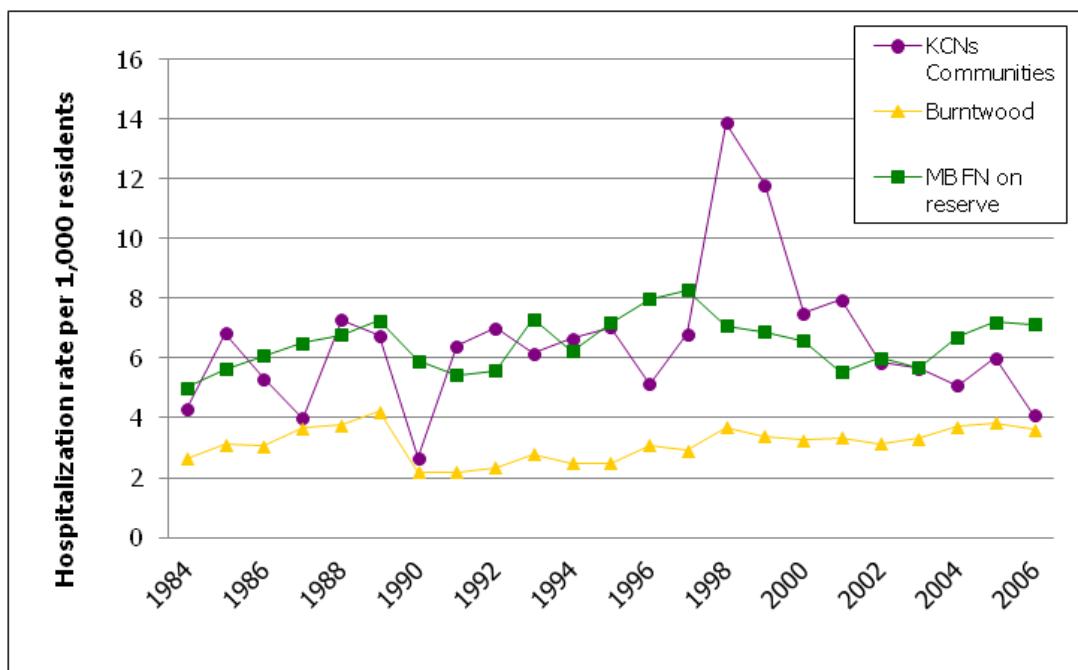
In this same time period, diabetes accounted for 258 or 8.3% of all hospitalizations for KCNs community Members compared to 4.8% of hospitalizations for all residents of the BRHA among conditions of interest reviewed¹. Overall, KCNs residents accounted for 7.9% of all BRHA hospitalizations for diabetes, which is higher than the 3.8% of the BRHA population that they represent².

Among KCNs residents, those age 50 and older accounted for 61% of hospitalizations for diabetes.

¹ A list of conditions for physician visits and hospitalizations were identified as key “conditions of interest.” When conditions of interest are referred to, it means that for example, diabetes accounted for 8.3% of all hospitalizations for those conditions on the list, but not necessarily 8.3% of ALL hospitalizations. This is a way of identifying, which of the conditions of interest resulted in greatest burden of illness and need for treatment.

² Throughout this section, there will be comparisons of the percentage of an event (such as hospitalizations or physician visits) in relation to the entire BRHA population. This gives the reader an idea as to whether the rate of the event seems out of line with the amount of the population accounted for by that community. If a certain illness, is more of a burden in the community we may see that it is out of proportion to the population.

Figure 3-9 illustrates the hospitalization rates per 1,000 residents (to allow for comparison) by year between 1984 and 2006 for KCNs, Manitoba First Nations living on-reserve and BRHA residents. Figure 3-10 presents the percentage change in the actual number of hospitalizations between the first and last five year time periods. Due to extreme variation from year to year (due to small numbers), it is difficult to identify any meaningful trends from Figure 3-9 aside from the observation that diabetes hospitalization rates among KCNs residents are consistently higher than for BRHA residents overall. Figure 3-10, which compares two five-year time periods (and allows for more stability in numbers), shows that the number of hospitalizations for Burntwood residents have increased by only 3% compared to 26.8% for KCNs residents. This may indicate that although there has been a demonstrated increase in treatment prevalence rates (through the physician visit data), there may not be enough other resources available in KCNs communities to help residents manage their diabetes. Other BRHA communities such as Thompson may have more community resources available so that people living with diabetes remain healthier and do not require hospitalization for their diabetes.

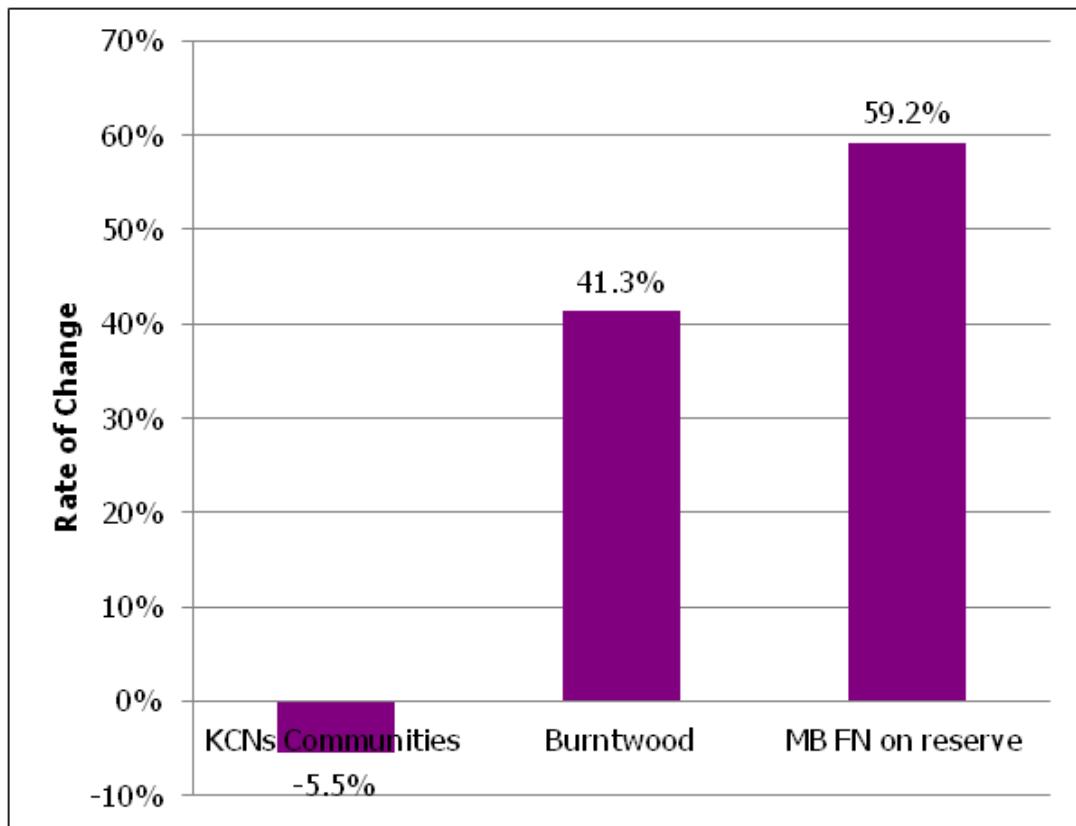


Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-9: Hospitalization Rates for Diabetes by Year, All Residents (1984-2006)



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-10: Percentage Change in Numbers of Hospitalizations for Diabetes (1984-1988 and 2002-2006)

INJURY

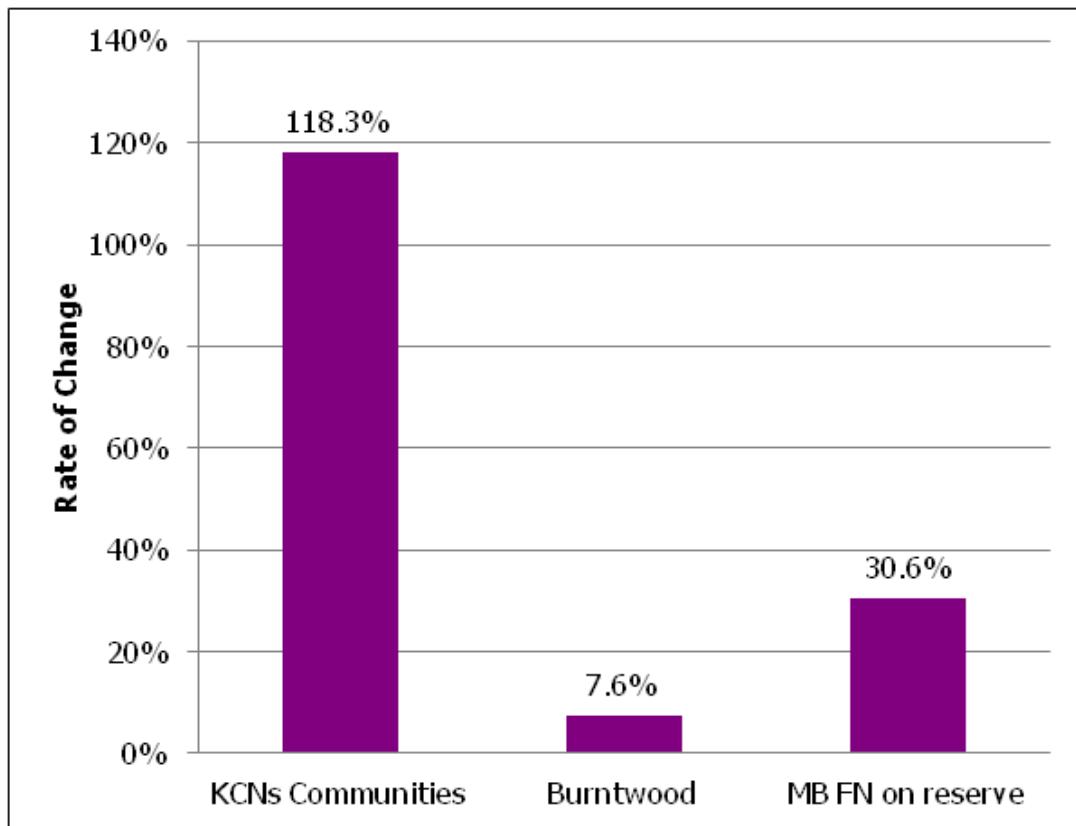
The First Nations Regional Longitudinal Health Survey (2005) notes that “Injuries are a serious public health problem in Canada, and even more so in many First Nations communities...First Nations injuries tend to follow a similar pattern to the rest of the Canadian population but occur with much greater frequency. Falls, sports, motor vehicle crashes and violence are all frequent causes of injury. Alcohol contributes to some types of injuries, particularly suicide attempts and violence.” These findings are consistent with trends experienced by the KCNs, where injury is seen as an important health issue. The KCNs indicated that youth in particular are perceived to be taking more risks and that it is not uncommon to see children and or youth with a broken arm or ankle. Participants indicated that injuries tend to be more common for those under the age of 30. As well, there is the perception that alcohol can contribute to accidents and injury (examples of different types of accidents were discussed such as snowmobile and car accidents related to alcohol use) (CNP KPI Program 2009-2010; YFFN KPI Program 2009-2010; FLCN KPI Program 2009-2011).

Just over one in four physician visits for the conditions of interest in 2006 was for injuries (27.2%). In that year there were 313 patients accounting for 606 physician visits for injuries. Overall, between 1984 and 2006, injuries accounted for 14,255, or 36% of all physician visits among KCNs community residents.

As indicated by KPI participants, data shows that younger residents and younger men in particular, tend to be at high risk for injury. For example, KCNs residents age 19 and under accounted for about one in five (20.8%) physician visits for injuries. Looking at the numbers of visits specifically by gender and age group, the highest number of physician visits was among male residents ages 15 to 29.

Although physician visits for injuries among KCNs residents were statistically lower than all of the comparison populations, this was not the case for hospitalizations. Between 1984 and 2006, injuries among KCNs residents accounted for 6.9% of all injury hospitalizations for BRHA residents while accounting for only 3.8% of the BRHA population. Among KCNs residents, people age 19 and under accounted for 41.4% of hospitalizations for injuries, with the highest number of hospitalizations seen among male residents ages 15 to 19.

For planning purposes, the actual number of hospitalizations for injuries among all KCNs residents increased from 224 hospitalizations between 1984 and 1988 to 454 between 2002 and 2006. This represents an increase of 102.7% between the two five year time periods and is by far the highest rate of change among the comparison areas (see Figure 3-11).



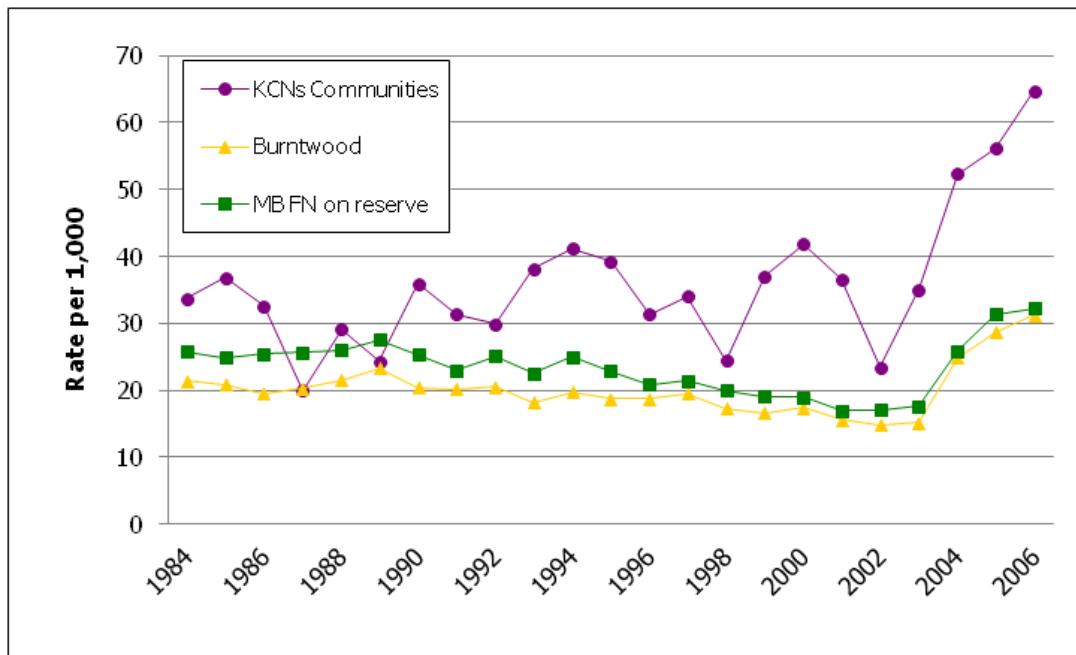
Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-11: Percentage Change in Numbers of Hospitalizations for Injuries (1984-1988 and 2002-2006) Averages

Although physician visits for injuries among KCNs residents were consistently lower than the comparison areas, hospitalization rates for injuries were higher in almost every year and show a clearer trend towards a sharp increase in the most recent five years. This may reflect lack of reporting of treatment for injuries (for example if treated by the nurse and not a physician who notifies Manitoba Health), or it may reflect that when there are injuries they may be more severe, or are severe enough that they cannot be managed in the community and require hospitalization outside the community. Figure 3-1 illustrates injury hospitalization rates per 1,000 residents to allow for comparison over time and between comparison areas. The hospitalization rate for KCNs community residents increased from 33.6 hospitalizations per 1,000 residents in 1984 to 64.7 per 1,000 in 2006.



Source: Manitoba Health, special data run 2011.

Note:

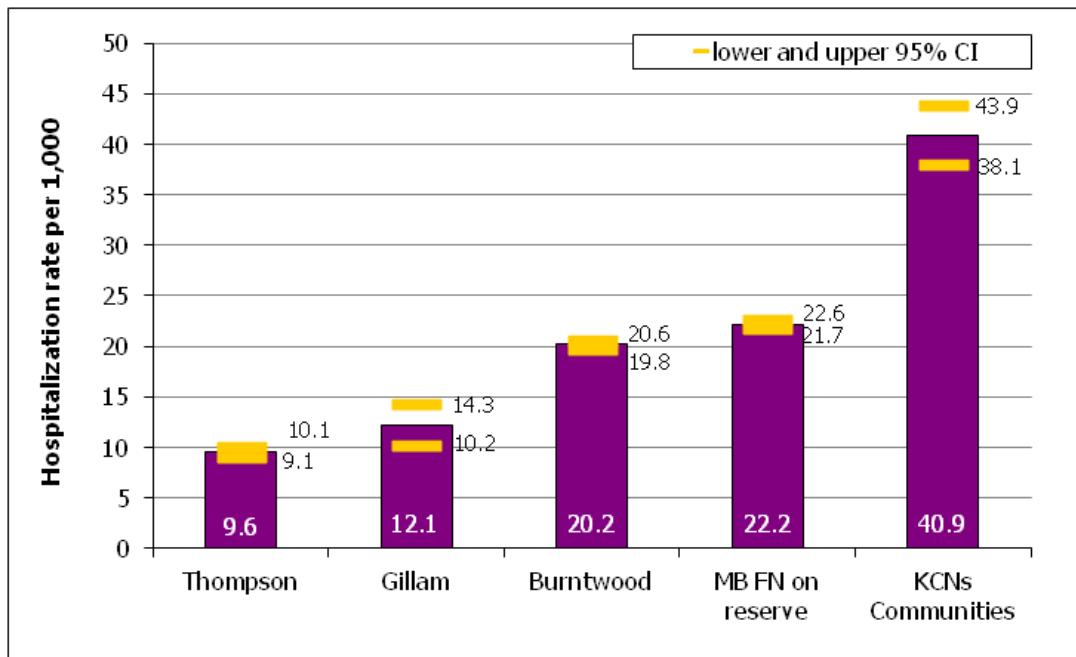
- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-1: Hospitalization Rates for Injuries by Year, All Residents (1984-2006)

The 10-year average annual injury hospitalization rate of 40.9 per 1,000 for KCNs community Members was statistically higher than for all comparison populations (see Figure 3-13). The next closest rate to KCNs is Manitoba First Nations living on-reserve where injury hospitalization rates between 1997 and 2006 were 22.2 per 1,000.

The 10-year average annual hospitalization rate for injuries among KCNs females was the highest among comparison populations at 36.2 hospitalizations per 1,000. The KCNs rate is statistically higher than all other comparison areas. The next highest rate is Manitoba First Nations living on-reserve and that rate is about half the KCNs rate at 19.6 hospitalizations per 1,000 females.

Among KCNs males, the average annual hospitalization rate for injuries between 1997 and 2006 was higher than the rate among KCNs females at 45.4 hospitalizations per 1,000 residents. As with females, this rate is statistically higher than the other comparison areas.



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- CI refers to confidence interval. The confidence interval gives the range of rates in which it is likely to be the true value 95% of the time – that is, that we are confident that 95% of the time, the true value or rate would be within the given range of confidence interval (CI).

Figure 3-13: Hospitalization Rates for Injuries by Area (1997-2006) Average

MENTAL HEALTH

According to a survey conducted by the Canadian Mental Health Association, approximately 3.4 million Canadians have experienced a major bout of depression at some point in their lives. Women and those between 25-54 years of age are more likely to have experienced depression or anxiety (Canadian Mental Health Association 2011). A Statistics Canada survey reported that half a million Canadian workers experience depression and almost 80% of them indicate that the symptoms they experience interfere with their ability to work (Statistics Canada 2007b). The high incidence and prevalence of mental illness that often goes untreated means the human and economic costs of mental illness are considerable.

The First Nations Regional Longitudinal Survey (2005) notes that various types of trauma contribute to First Nations peoples' mental health and wellness, and attributes some of this to the intergenerational effects of colonialism. Kirmayer *et al.* (2000) note "the high rates of suicide, alcoholism, violence and the pervasive demoralization seen in Aboriginal communities can be readily understood as a direct consequence of (a) history of (dislocation) and disruption of traditional subsistence patterns and connection with the land." This is consistent with the histories of the KCNs (see Section 5.3.2.1), and their observations of current health challenges.

The KCNs have expressed concerns about mental health issues. Residents and health care workers have indicated that social problems in the community such as addictions and low self-esteem may limit people's ability to access permanent employment. Concerns were raised about social problems observed during previous hydro development including increased alcohol and drug use among community Members. With respect to youth, participants in several community focus groups indicated there is a perception of an increase in suicides among young people in recent years and that drug and alcohol use is already common among youth (CNP KPI Program 2009-2010; YFFN KPI Program 2009-2010; FLCN KPI Program 2009-2011).

Mental health is an important area to track and ensure appropriate services and supports are in place for KCNs residents. The KCNs indicated that although people are becoming more aware of issues associated with mental health (such as anxiety and depression), there is still a lack of awareness about services that are available. It was also noted that adults may be more open to talking about mental health compared to youth and Elders. Although men have typically been less willing to discuss mental health, there is a perception that this is slowly changing. Community Members indicated that alcohol abuse contributes to a variety of mental health related issues, including family stability and violence in the community (CNP KPI Program 2009-2010; YFFN KPI Program 2009-2010; FLCN KPI Program 2009-2011).

Rates are presented for comparison between areas but for KCNs planning, numbers of patients and visits are presented first. The number of patients treated for mental health and behavioural disorders among all KCNs residents increased by 130.2 % from 53 patients in 1984 to 122 in 2006. This rate of change is higher than for BRHA but lower than for Manitoba First Nations living on-reserve. The number of physician visits increased from 111 in 1984 to 349 in 2006 — an increase of 214.4%. Given that mental health patients often require multiple appointments and support, this increase could have considerable impact on local community resources. It is also important to note that hospitalizations among KCNs residents for mental health and behavioural disorders were seen among residents as young as 10 to 14 years of age.

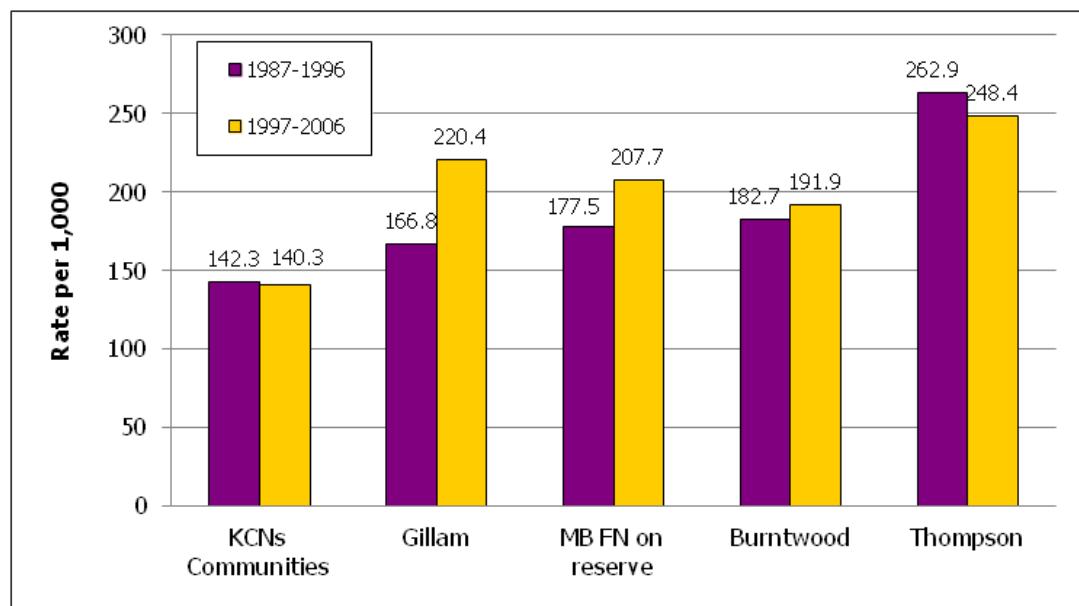
In 2006, there were 122 patients accounting for 349 physician visits for mental health disorders recorded among KCNs residents. These visits accounted for 15.6% of all physician visits for conditions of interest in 2006. Overall, between 1984 and 2006, mental health disorders accounted for 5,307, or 13.4% of all physician visits among KCNs residents.

Figures 3-14 to 3-16 illustrate the changes in physician visit rates (per 1,000 residents) for mental health disorders by area for two 10-year periods. Data are presented for all residents (Figure 3-2), females (Figure 3-3) and males (Figure 3-4). The 10-year rates offer additional stability and more confidence in interpreting changes over time and differences between areas.

Figure 3-2 shows that for all residents, the 10-year physician visit rates for mental health disorders among KCNs community residents remained almost unchanged at 142.3 and 140.3 visits per 1,000 between 1987-1996 and 1997-2006. These rates appear to be lower than all comparison areas. Among KCNs residents, the total number of physician visits actually increased from 2,257 to 2,656 between 1987-1996 and 1997-2006; however the increase in number of visits is not reflected in the most recent rate due to the higher increase in population (an example as to why it is important to consider both absolute numbers and rates if possible).

Among KCNs females, the 10-year physician visit rate for mental health disorders increased from 96.8 to 154.2 visits per 1,000 females between 1987-1996 and 1997-2006 (see Figure 3-3). The rate in the most recent time period appears to be much lower than for all comparison areas; in fact, the KCNs rate is approximately half the rate of several of the other areas. The actual number of physician visits among KCNs females increased from 759 to 1,425 between 1987-1996 and 1997-2006.

The physician visit rate among KCNs males decreased from 186.6 visits per 1,000 males to 127.1 per 1,000 between 1987-1996 and 1997-2006 (see Figure 3-4). As with females, the most recent rate appears to be lower than all other comparison areas. The actual number of physician visits among KCNs males for mental health disorders decreased from 1,498 to 1,231 between 1987-1996 and 1997-2006.

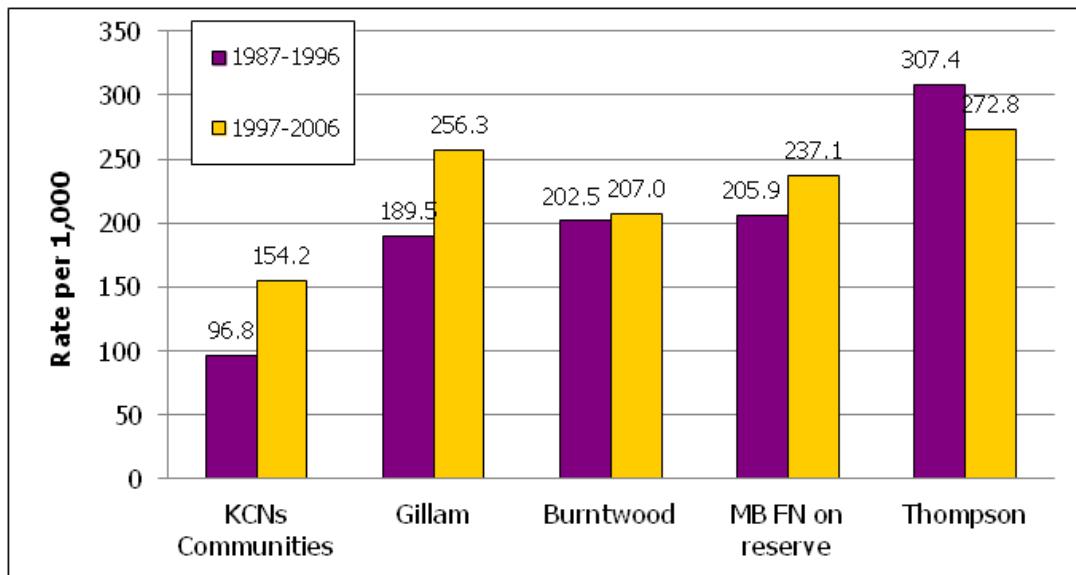


Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-2: 10-Year Physician Visit Rates for Mental and Behavioural Disorders by Area, All Residents (1987-1996 and 1997-2006)

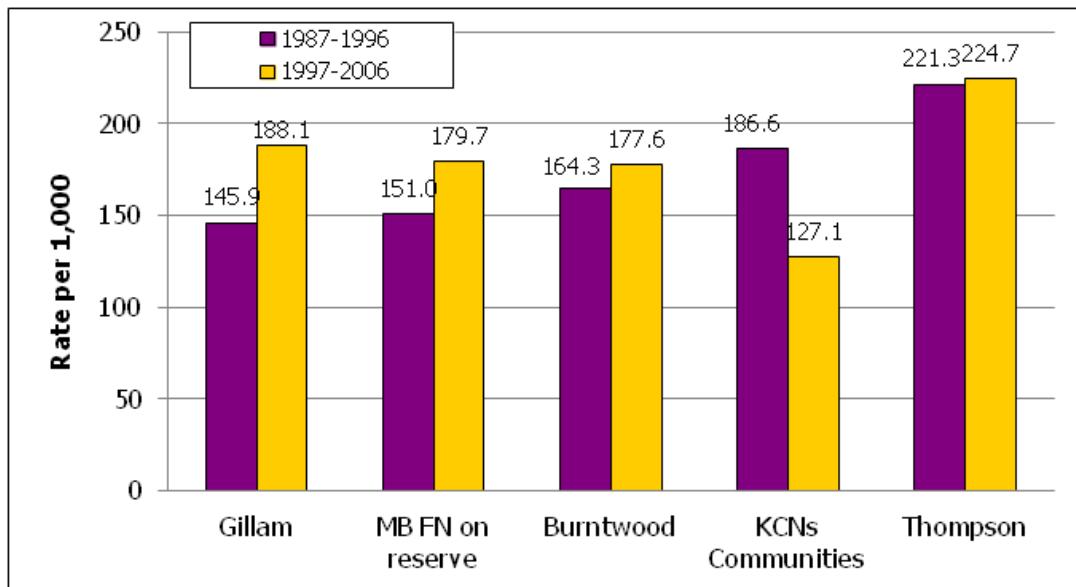


Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-3: Female 10-year Physician Visit Rates for Mental and Behavioural Disorders by Area (1987-1996 and 1997-2006)



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-4: Male 10-year Physician Visit Rates for Mental and Behavioural Disorders by Area (1987-1996 and 1997-2006)

KCNs residents age 50 and older accounted for 26.4% of physician visits for mental health disorders, with the highest number of physician visits seen among male residents ages 50 to 54 followed by males age 15 to 19. Table 3-4 shows the number and per cent of physician visits by age group and gender for all visits for mental and behavioural disorders between 1984 and 2006 for KCNs residents. Some physician visits occurred in very young children and infants under the age of one. It is important to note that this International Classification of Disease (ICD-10) category (for reference see Appendix 5A) includes the diagnoses of "mental retardation" as well as "behavioural and emotional disorders that are diagnosed in childhood and adolescence." This means that although these data may appear to be erroneous at first, there are valid reasons for inclusion of the younger age groups.

Table 3-4: Physician Visits for Mental and Behavioural Disorders by Gender and Age Group, Keeyask Cree Nations (1984-2006)

	Female	%	Male	%	Total	%
< 1	5	0.1%	7	0.1%	12	0.2%
1 to 4	40	0.8%	74	1.4%	114	2.1%
5 to 9	45	0.8%	138	2.6%	183	3.4%
10 to 14	85	1.6%	100	1.9%	185	3.5%
15 to 19	266	5.0%	220	4.1%	486	9.2%
20 to 24	276	5.2%	436	8.2%	712	13.4%
25 to 29	282	5.3%	517	9.7%	799	15.1%
30 to 34	280	5.3%	372	7.0%	652	12.3%
35 to 39	289	5.4%	429	8.1%	718	13.5%
40 to 44	260	4.9%	191	3.6%	451	8.5%
45 to 49	197	3.7%	128	2.4%	325	6.1%
50 to 54	166	3.1%	180	3.4%	346	6.5%
55 to 59	67	1.3%	47	0.9%	114	2.1%
60 to 64	25	0.5%	55	1.0%	80	1.5%
65 to 69	13	0.2%	30	0.6%	43	0.8%
70 to 74	5	0.1%	34	0.6%	39	0.7%
75 to 79	11	0.2%	23	0.4%	34	0.6%
80 +	4	0.1%	10	0.2%	14	0.3%

Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

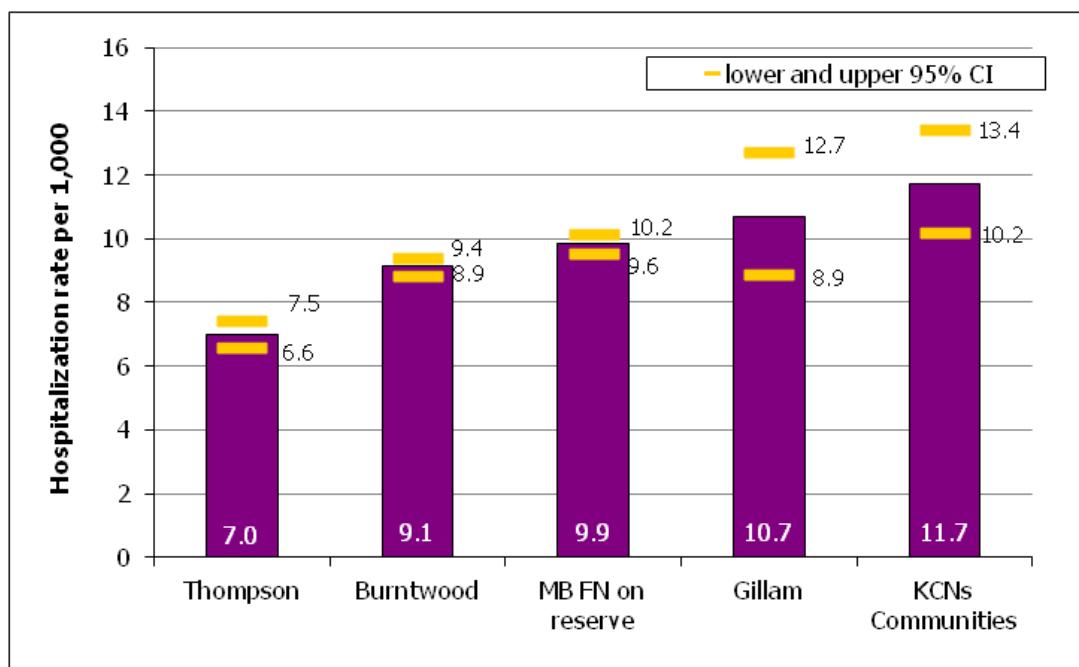
Due to the small numbers of hospitalizations for mental health disorders by year, only 10-year average annual hospitalizations rates were reviewed to assess whether there were statistical differences between the areas examined.

The 10-year average annual rate (between 1997 and 2006) of 11.7 hospitalizations per 1,000 KCNs residents is statistically higher than all comparison populations with the exception of Gillam, which is statistically similar at 10.7 hospitalizations per 1,000 residents (see Figure 3-5).

The 10-year average annual hospitalization rate for mental health disorders for KCNs females was 11.7 per 1,000 females. The KCNs female hospitalization rate between 1997 and 2006 was not statistically different from any of the comparison areas with the exception of Thompson (at 7.4 hospitalizations per 1,000 residents) and the BRIHA (at 8.9 hospitalizations per 1,000 residents).

Among KCNs males, the average annual hospitalization rate for mental health disorders between 1997 and 2006 was also 11.7 hospitalizations per 1,000 residents. This rate was statistically different only from Thompson, which is lower at 6.6 hospitalizations per 1,000.

The fact that the Thompson hospitalization rate (7.0 per 1,000 residents) for mental health disorders was the lowest among the comparison areas and yet physician visit rates were very high indicates that perhaps with more support at the community level (and availability of physicians for ongoing treatment and monitoring), hospitalizations could be avoided.



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- CI refers to confidence interval. The confidence interval gives the range of rates in which it is likely to be the true value 95% of the time – that is, that we are confident that 95% of the time, the true value or rate would be within the given range of confidence interval (CI).

Figure 3-5: Average Hospitalization Rates for Mental and Behavioural Disorders by Area, All Residents (1997-2006)

SKIN INFECTION

Skin infections are becoming a greater public health concern in Canada, occurring both in the community and in health care settings. The increase in infection rates can be partly attributed to improved and more

actively used screening techniques; however, another issue is the misuse of antibiotics, which can make infections more resistant and more difficult to contain and treat (Public Health Agency of Canada 2008).

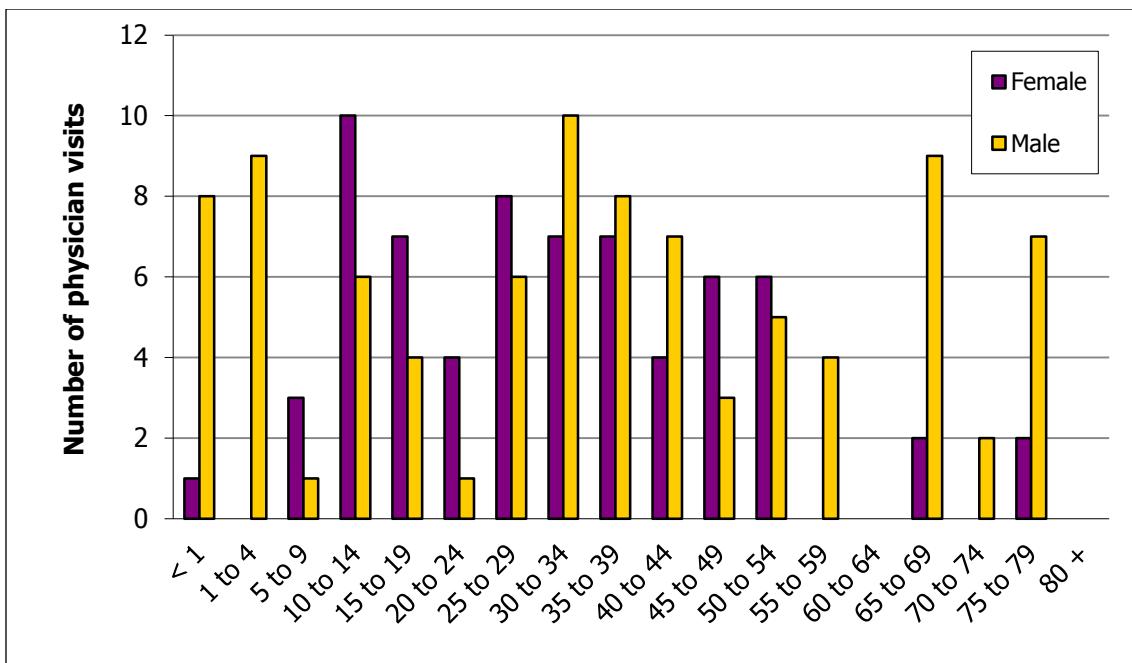
Children and those with weakened immune systems are particularly susceptible to these infections. Public health and infection control officials have underlined the importance of access to a clean water supply, hand washing and the use of hand sanitizers as a way to avoid infections.

For the KCNs, skin infection concerns exist in relation to water quality. In York Landing (*Kawechiwasiwak*), for example, there are concerns about skin rashes and itchy skin believed to be caused by the community's water supply. The same types of concerns are noted by individuals who swim near the community (YFFN KPI Program 2009-2010, CNP *pers. comm.* 2012).

Treatment prevalence rates for skin infections overall were among the lowest among comparison areas but hospitalization rates were higher. This may be due to treatment at the nursing station and a lack of recording of all treatment due to limited physician services, or it may be due to other risk factors that indicate skin infections can become more acute and require hospitalizations. For example, KCNs residents age 50 and older accounted for 40.9% of hospitalizations for infections of skin and **subcutaneous tissue** and given that there is a higher incidence of diabetes among this age group, there may be a relationship between the risk factor of diabetes and the outcome of more acute skin infections.

Between 1984 and 2006, skin infections accounted for 3,125, or 7.9% of all physician visits among KCNs residents. In this time period, KCNs residents accounted for 4.2% per cent of all BRHA physician visits for infections of skin and subcutaneous tissue, which is slightly higher than the 3.8% of the BRHA population that they represent.

Within KCNs communities, residents age 50 and older accounted for almost one in four (23.6%) physician visits for skin infections. Looking within specific age groups however, the highest number of physician visits is seen among male residents ages 30 to 34, followed by females age 10 to 14 (see Figure 3-6). It is important to note that the numbers of physician visits within each age group are quite small (10 and under) so it would not be appropriate to attempt to draw conclusions about reasons for higher numbers of visits within certain age groups.



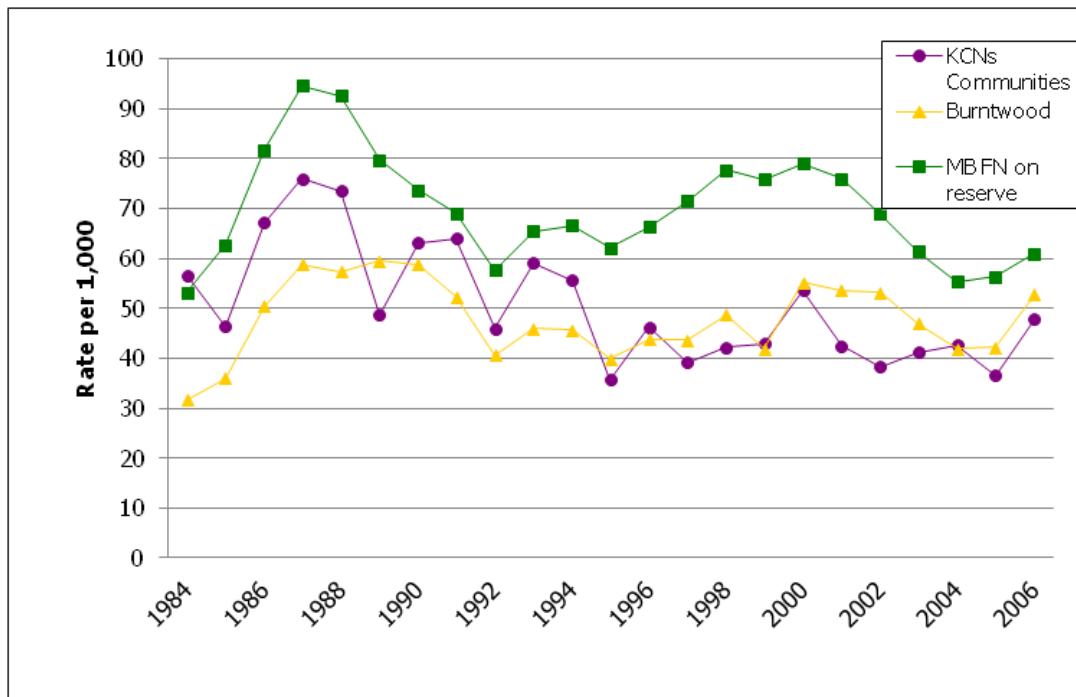
Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-6: Physician Visits for Infections of Skin and Subcutaneous Tissue by Gender and Age Group, Keeyask Cree Nations (2006)

Figure 3-19 illustrates the patient rates by year between 1984 and 2006 to allow for comparison between KCNs, Manitoba First Nations living on-reserve and BRHA residents. The patient rate among KCNs community residents shows variation over the years but appear to be consistently similar to the BRHA rates and lower than for all First Nations living on-reserve in Manitoba. Among KCNs residents, the number of patients declined somewhat from 56.5 patients per 1,000 residents in 1984 to 47.9 per 1,000 in 2006.



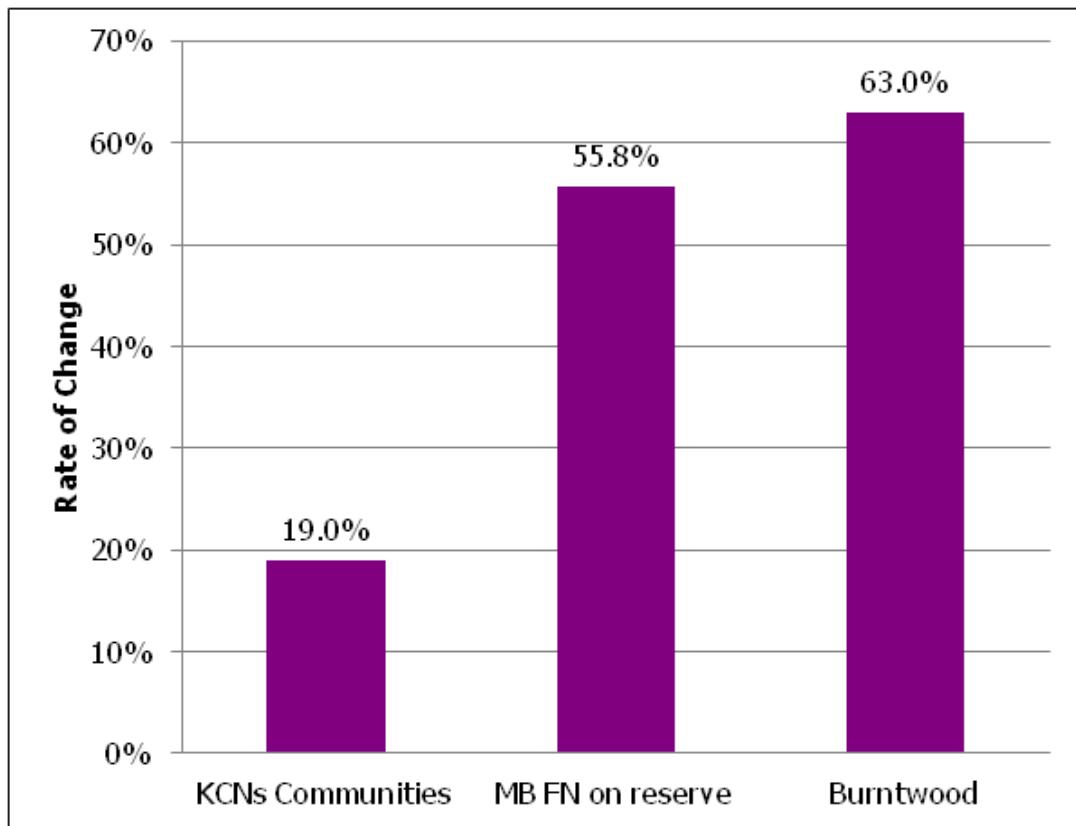
Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-19: Patient Rates for Infections of Skin and Subcutaneous Tissue by Year (1984-2006)

Although rates of patients being treated for skin infections have decreased (due to a larger increase in population compared to number of patients), it is important to note that the actual number of patients treated for skin infections among all KCNs residents increased by 19.0% from 79 patients in 1984 to 94 patients in 2006. This is the lowest rate of change among the comparison areas (see Figure 3-7). In this same time period, the number of physician visits among KCNs residents increased from 113 in 1984 to 157 in 2006, an increase of 38.9% (see Figure 3-8).

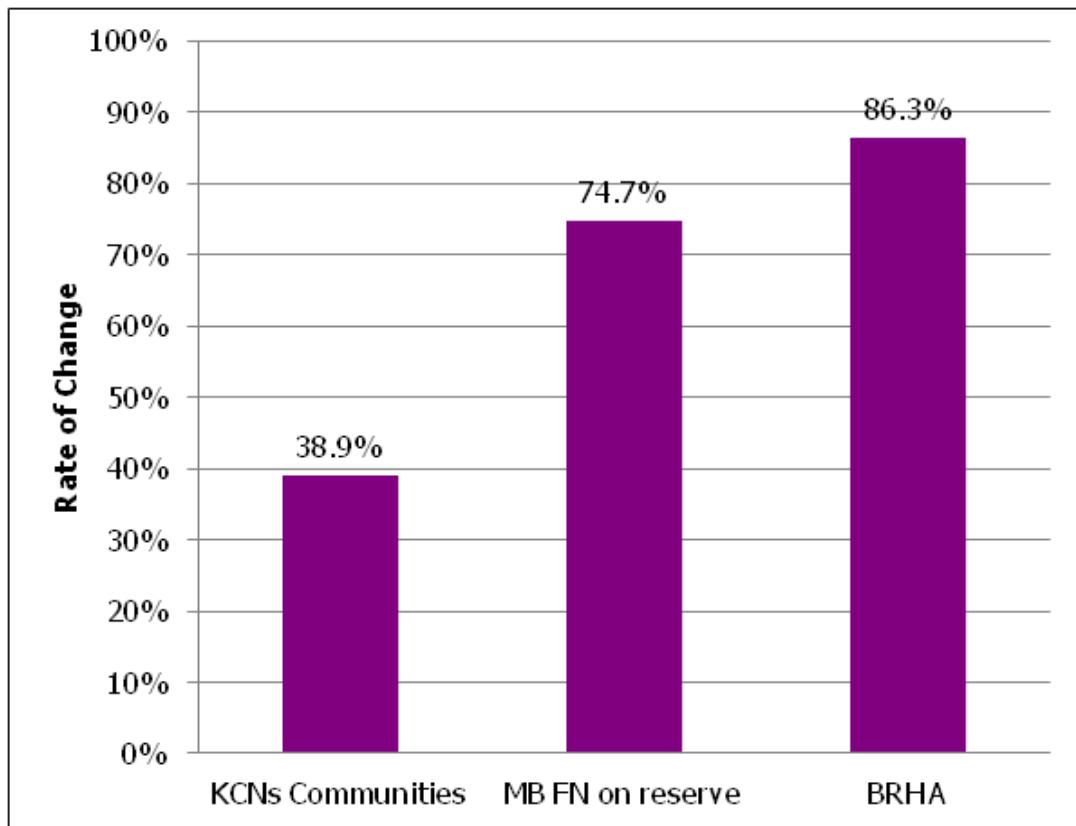


Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-7: Percentage Change in Numbers of Patients for Infections of Skin and Subcutaneous Tissue, All Residents (1984-2006)



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-8: Percentage Change in Numbers of Physician Visits for Infections of Skin and Subcutaneous Tissue, All Residents (1984-2006)

Between 1984 and 2006, skin infections accounted for 326 or 9.6% of all hospitalizations for the conditions of interest. In this time period, KCNs residents accounted for 6.6% of all BRHA hospitalizations for infections of skin and subcutaneous tissue, which is higher than the 3.8% of the BRHA population they represent.

Within KCNs communities, residents age 50 and older accounted for more than one in three (39.1%) hospitalizations for infections of skin and subcutaneous tissue. Table 3-5 shows the per cent of hospitalizations by age group and gender for all hospitalizations for infections of skin and subcutaneous tissue for KCNs residents.

Table 3-5: Hospitalizations for Infections of Skin by Gender and Age Group, KCNs (1984-2006)

	Female	%	Male	%	Total	%
< 1	5	1.7%	7	2.4%	12	4.1%
1 to 4	8	2.7%	6	2.1%	14	4.8%
5 to 9	13	4.5%	6	2.1%	19	6.5%
10 to 14	5	1.7%	8	2.7%	13	4.5%
15 to 19	7	2.4%	2	0.7%	9	3.1%
20 to 24	5	1.7%	11	3.8%	16	5.5%
25 to 29	7	2.4%	10	3.4%	17	5.8%
30 to 34	9	3.1%	13	4.5%	22	7.5%
35 to 39	11	3.8%	7	2.4%	18	6.2%
40 to 44	5	1.7%	8	2.7%	13	4.5%
45 to 49	6	2.1%	12	4.1%	18	6.2%
50 to 54	11	3.8%	14	4.8%	25	8.6%
55 to 59	6	2.1%	19	6.5%	25	8.6%
60 to 64	5	1.7%	10	3.4%	15	5.1%
65 to 69	4	1.4%	5	1.7%	9	3.1%
70 to 74	16	5.5%	7	2.4%	23	7.9%
75 to 79	14	4.8%	10	3.4%	24	8.2%
80 +	3	1.0%	6	2.1%	9	3.1%

Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake First Nation and York Factory First Nation.

CAUSES OF DEATH

Mortality (death) rates provide information about the overall health of the population, similar to life expectancy. That is, most typically, communities with high mortality rates will also have lower life expectancy. Mortality rates can be a useful indicator to examine changes over time. For example, while life expectancy measures do not change a great deal in the short term, some mortality rates can be drastically reduced in short periods of time. One example is the reduction in SIDS-related (sudden infant death syndrome) deaths that has been observed since the implementation of “Back to Sleep” and other education campaigns. Other examples include suicide or other injury prevention programs that can have an immediate impact on risky behaviours.

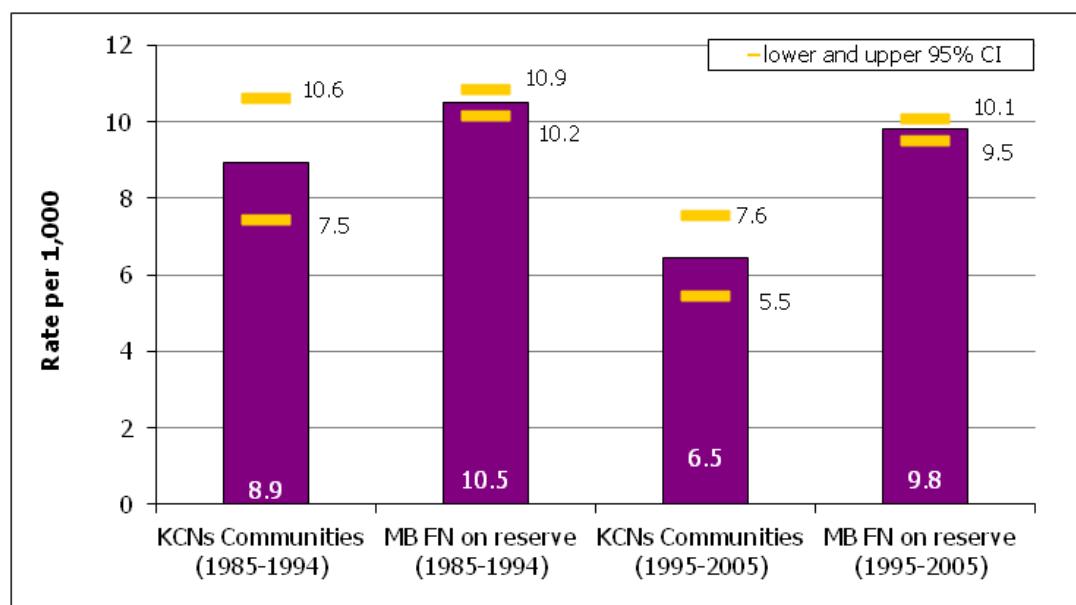
Mortality rates that take longer to change include cancer related mortalities as they often occur, at least partially, as a result of risk factors engaged in over a lifetime. For example, lung cancer mortality rates are

impacted by smoking behaviours over decades. Therefore, smoking cessation campaigns that occur today will not immediately have an impact on lung cancer mortality rates.

It is important to look at mortality and causes of mortality both in terms of all deaths as well as specifically at deaths that occur at younger ages as these deaths are more likely to be preventable.

According to First Nations Inuit Health, there were a total of 310 deaths from all causes among KCNs community Members in the 26 year period between 1980 and 2005. This means that there were on average 11.5 deaths per year. Females accounted for 116 (37.4%) of these deaths while males accounted for 194 (62.6%).

Rates have also been calculated for two 10-year periods to allow for comparison between different communities. Among KCNs community Members, the mortality rate decreased from 8.9 deaths per 1,000 residents between 1985 and 1994 to 6.5 deaths per 1,000 between 1995 and 2005. In the first time period, although the KCNs community rate appears to be lower than the Manitoba First Nations living on-reserve rate of 10.5 deaths per 1,000 residents, the difference between the two groups is not statistically significant (as illustrated by the overlapping confidence intervals). In the second time period (1995-2005), however, the KCNs rate of 6.5 deaths per 1,000 residents is statistically lower than the Manitoba First Nations living on-reserve rate of 9.8 deaths per 1,000 residents (see Figure 3-9). Although the calculated mortality rate among KCNs residents decreased, the true number of deaths increased slightly from 127 between 1985-1994 to 150 between 1995-2005. The mortality rate decreased because the population grew at a higher rate than the number of deaths.



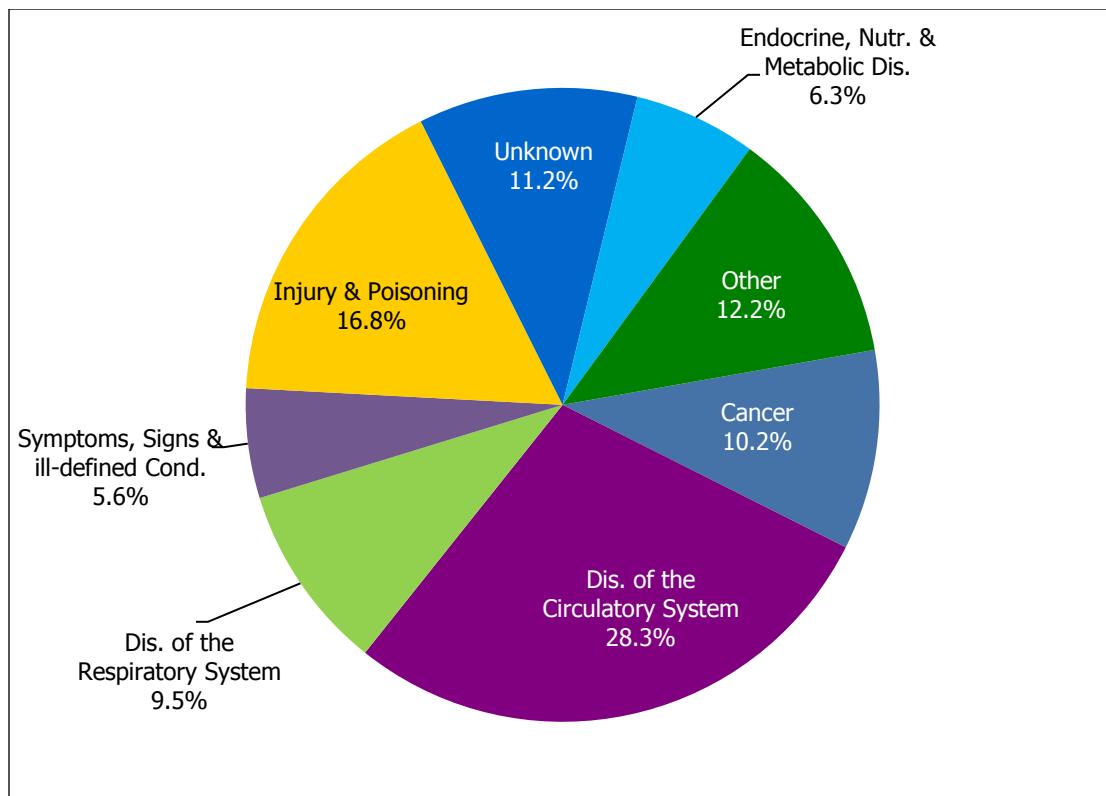
Source: Health Canada, First Nations and Inuit Health and Regions and Programs Branch (In-house data).

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- CI refers to confidence interval. The confidence interval gives the range of rates in which it is likely to be the true value 95% of the time – that is, that we are confident that 95% of the time, the true value or rate would be within the given range of confidence interval (CI).

Figure 3-9: Total Mortality Rate by Area (1985-1994 and 1995-2005)

A review of causes of death among all KCNs community Members showed that diseases of the circulatory system accounted for more than one in four deaths (28.3%) followed by injury and poisoning at 16.8% of all deaths. The third leading cause of death among all KCNs residents was unknown followed by cancer accounting for one in 10 deaths (see Figure 3-10 and Table 3-6), which lists the 12.2% of “other” causes of mortality based on the ICD-10 coding system). Among KCNs males in particular, disease of the circulatory system was a noteworthy cause of death accounting for almost one in every three deaths (32.3%) between 1980 and 2005. This was followed by injury and poisoning at 17.5% (almost one in five deaths) and cancer at 11.1% of all deaths. Among KCNs men, disease of the circulatory system and injuries alone account for over one half of all deaths. However, a positive trend is that the mortality rates for both appear to be decreasing.



Source: Health Canada, First Nations and Inuit Health and Regions and Programs Branch (In-house data).

Notes:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- See Table 3-6 for a listing of the “other” causes of death.

Figure 3-10: Causes of Mortality in Keeyask Cree Nations Communities, All Residents (1980-2005)

Table 3-6: "Other" Causes of Mortality in Keeyask Cree Nations Communities, All Residents (1980-2005)

	Number	%
Diseases of the Digestive System	9	3.0%
Diseases of the Genitourinary System	9	3.0%
Diseases of the Nervous System	8	2.6%
Certain Conditions Originating in Perinatal Period	4	1.3%
Certain Infectious and Parasitic Disease	3	1.0%
Pregnancy, Childbirth and Puerperium	1	0.3%
Congenital malformations, deformations and chromosomal abnormalities	1	0.3%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	1	0.3%
Mental and Behavioural Disorders	1	0.3%
TOTAL	37	

Source: Health Canada, First Nations and Inuit Health and Regions and Programs Branch (In-house data).

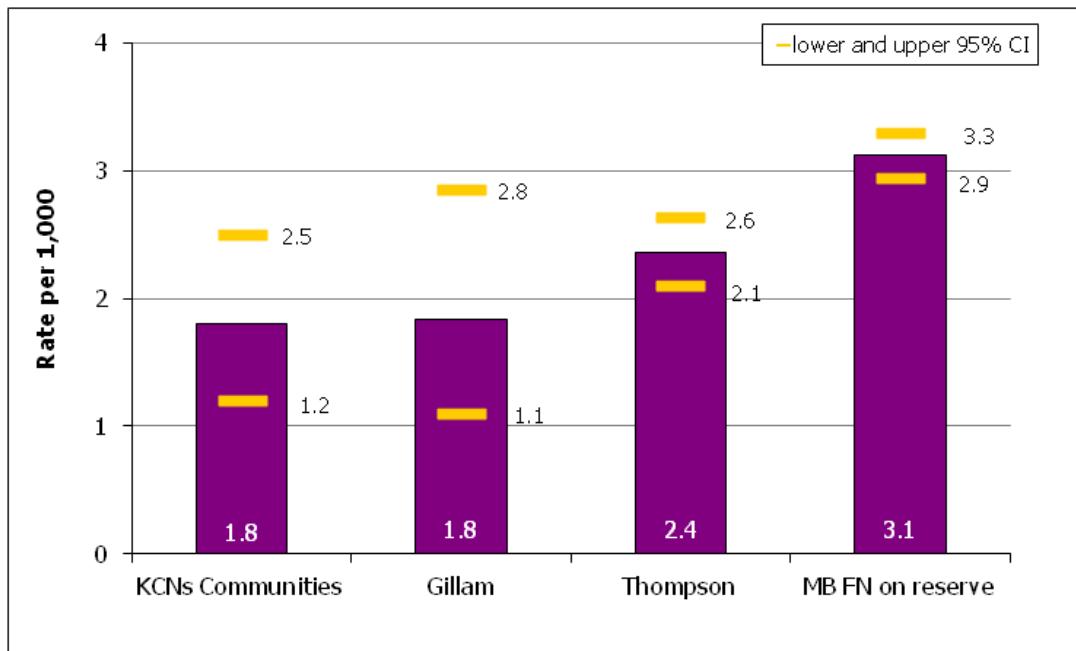
Note:

- All causes are ICD-10 classifications. See Appendix 5A for details of each classification.
- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

The premature mortality rate (deaths before age 75) has been identified as one of the best single measures of health status and many researchers rely on this indicator above all others to measure the health of the community. Communities with higher premature mortality rates also tend to have higher rates of illnesses, hospital utilization and poorer health overall. Premature deaths data by cause can help to identify how many deaths may have preventable (for example, those due to injuries).

One useful measurement of premature mortality is "Potential Years of Life Lost" (PYLL). PYLL is calculated by subtracting age at death from age 75 (the standard "death age") for each person who died, and then adding all of these differences for a total PYLL. This information is usually grouped by cause of death for comparison with cause-specific death rates. This measure emphasizes causes of death that tend to be more common among younger persons, such as injuries and inherited anomalies.

Figure 3-11 shows the average annual premature mortality rates for KCNs communities and the comparison areas. The premature mortality rate for KCNs was 1.8 deaths per 1,000 residents on average between 1998 and 2006. This rate was statistically similar to both Gillam and Thompson but statistically lower than the rate of 3.1 deaths per 1,000 for all Manitoba First Nations living on-reserve.



Source: Manitoba Health, special data run 2011.

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.
- CI refers to confidence interval. The confidence interval gives the range of rates in which it is likely to be the true value 95% of the time – that is, that we are confident that 95% of the time, the true value or rate would be within the given range of confidence interval (CI).

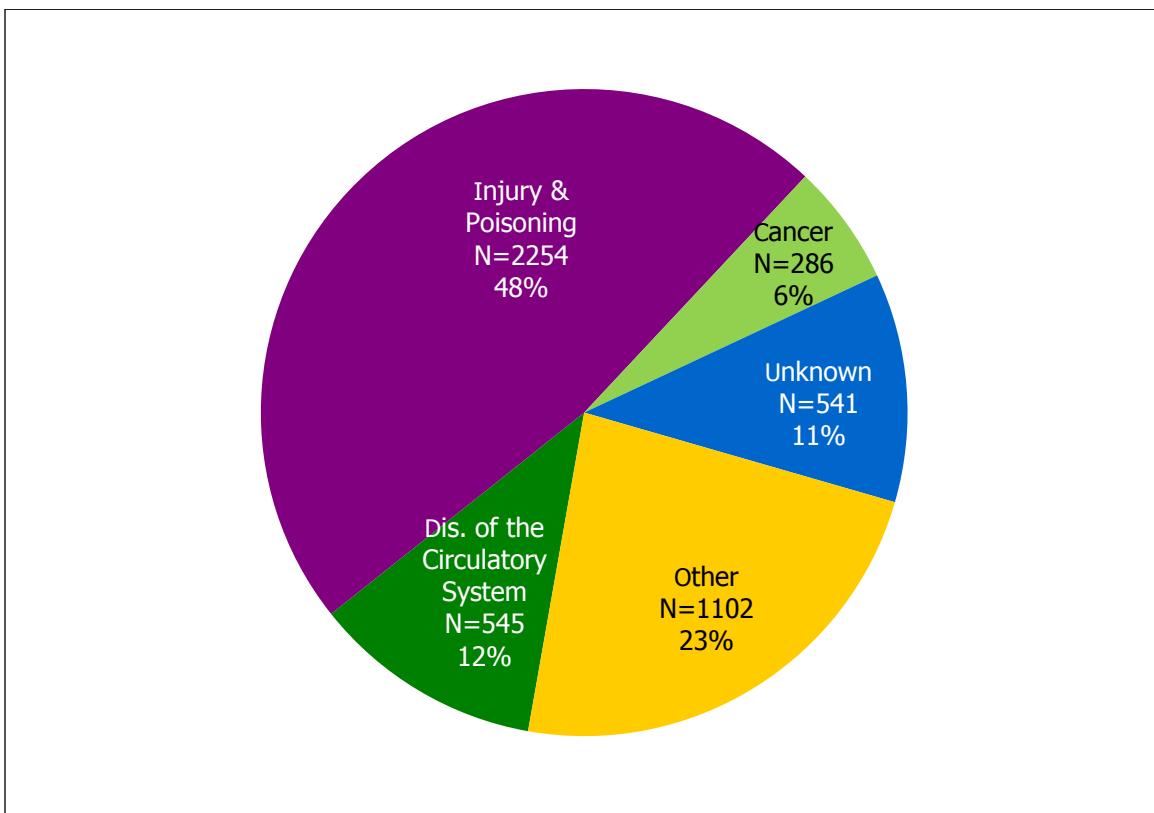
Figure 3-11: Premature Mortality Rates by Area (1998-2006)

While diseases of the circulatory system were the leading cause of all KCNs resident deaths, when only premature deaths (those that occurred before age 75) were reviewed, there are different trends. Injury and poisoning, which are almost totally preventable, accounted for 2,254 or 48% of all PYLL between 1980 and 2005. Diseases of the circulatory system was second accounting for 12% of PYLL and unknown causes were third accounting for 11% of PYLL. This shows that while diseases of the circulatory system account for the most deaths and are very important, many of these deaths occur at an older age and may not be preventable. Injury deaths however, impact younger residents and are preventable for the most part (see Figure 3-12 and Table 3-7) which lists all causes of death presented in the category of “other” in the pie chart).

Among KCNs females, the leading cause of death was diseases of the circulatory system but the leading cause of PYLL was injury and poisoning accounting for 38.9% (or 731 potential years of life lost) of all PYLL. Unknown deaths were second accounting for 11.9% of PYLL and disease of the nervous system was third at 9.3% (174 PYLL) of PYLL among KCNs females.

Among KCNs males, injury and poisoning is a very important cause of PYLL accounting for more than half (53.4%) of all PYLL among KCNs males (or 1,523 PYLL). The next leading cause of PYLL is diseases of the circulatory system at 14.4% of PYLL followed by unknown causes at 11.2%. While

injuries and diseases of the circulatory system combined accounted for almost half of all deaths among KCNs males, they account for almost three quarter of potential years of life lost before age 75.



Source: Health Canada, First Nations and Inuit Health and Regions and Programs Branch (In-house data).

Note:

- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

Figure 3-12: Causes of PYLL in Keeyask Cree Nations Communities, All Residents (1980-2005)

Table 3-7: "Other" Causes of PYLL in Keeyask Cree Nations Communities, All Residents (1980-2005)

	Number	%
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	187	4.0%
Diseases of the Nervous System	179	3.8%
Diseases of the Digestive System	176	3.7%
Diseases of the Respiratory System	129	2.7%
Endocrine, nutritional and metabolic diseases	114	2.4%
Diseases of the Genitourinary System	93	2.0%
Congenital malformations, deformations and chromosomal abnormalities	69	1.5%
Mental and Behavioural Disorders	51	1.1%
Pregnancy, Childbirth and Puerperium	49	1.0%
Certain Infectious and Parasitic Diseases	43	0.9%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	12	0.3%
TOTAL	1102	

Source: Health Canada, First Nations and Inuit Health and Regions and Programs Branch (In-house data).

Note:

- All causes are ICD-10 classifications. See Appendix 5A for details of each classification.
- KCNs communities include Tataskweyak Cree Nation, War Lake First Nation, Fox Lake Cree Nation and York Factory First Nation.

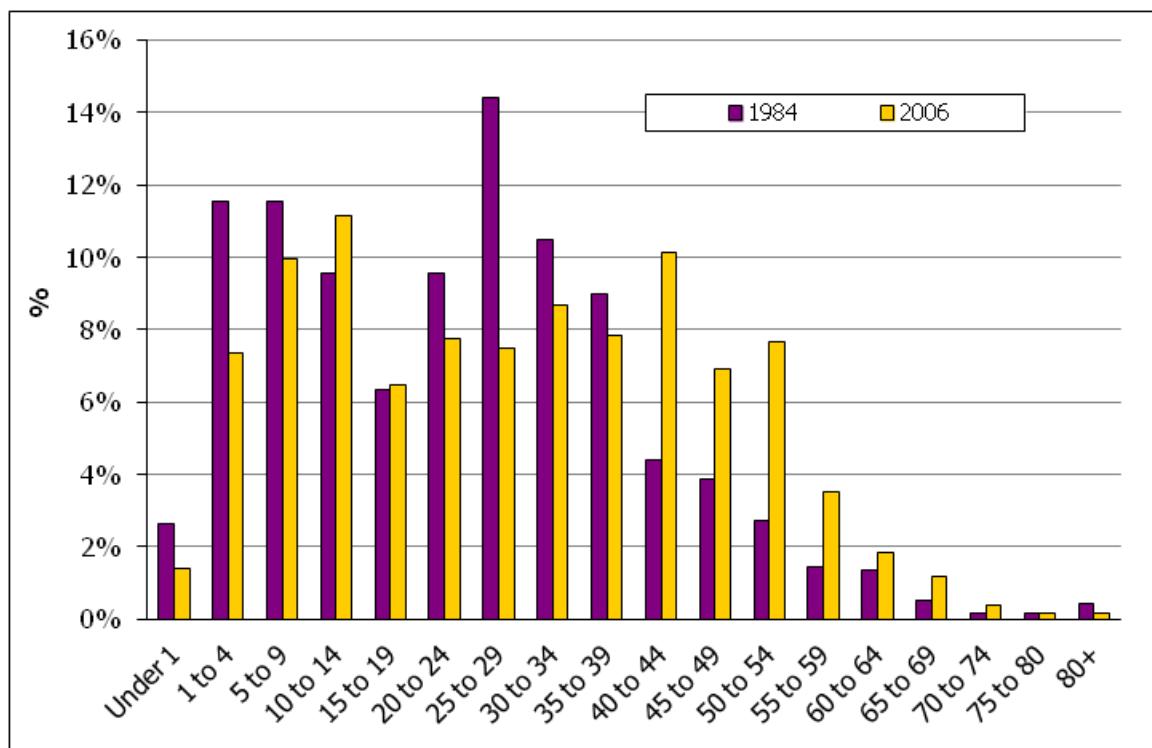
3.2 GILLAM

Gillam is the second largest off-reserve community in the BRHA, and is also home to approximately 500 FLCN Members who can access health services in the community (see Section 4.3.3.1). The following data is inclusive of the FLCN Members residing in Gillam as long as these residents identify to Manitoba Health that Gillam is their mailing address. Because of the way data are collected by Manitoba Health, it is very difficult to separate out FLCN resident data from other Gillam community residents when all have the same postal code.

3.2.1 Health Characteristics Associated with Population Characteristics

Gillam residents account for fewer than three per cent of the BRHA population. While the population of the region has declined, the extent of decline is greater in Gillam. According to Manitoba Health, the population of Gillam in 1984 was 1,403 and the 2006 population of 1,085 representing a decrease of 22.7% residents.

While the population of Gillam is relatively young compared to the rest of Manitoba, it is the younger age groups (particularly age 20 to 34) where the population has experienced the largest decrease since 1984 (see Figure 3-13). According to Manitoba Health, in 1984, 6.7% of the Gillam population was over the age of 50; this increased to 14.9% by 2006. The change in population distribution will likely impact health and service needs in the community and may result in higher rates of chronic disease and cancer being observed in the community.



Source: Manitoba Health.

Figure 3-13: Gillam Change in Population Structure (1984 and 2006)

Gillam residents most commonly are sent to Thompson or Winnipeg to give birth. Birth and pregnancy rates for Gillam residents have declined over time. The birth rate for Gillam residents in 2006 was 14.7 births per 1,000 residents; this is lower than Manitoba First Nations on-reserve rate of 26.5 but higher than the provincial rate of 12.1 per 1,000. The pregnancy rate for Gillam women age 15-49 was 69.3 per 1,000; this was much lower than Manitoba First Nations rate of 135.1 but higher than the provincial rate of 60.7 in 2006.

Some of the birth and pregnancy outcomes reviewed included low and high birth weight rates, spontaneous abortion and infant mortality. In most cases, Gillam rates were similar to, or lower than, comparison areas. In some cases, such as infant mortality, there were no cases at all among Gillam residents. One area where change was observed was in the rate of spontaneous abortions (also known as miscarriage). The 10-year average annual rate increased from 29.3 to 63.6 per 1,000 residents between 1987-1996 and 1997-2006. This appears to be similar to the Manitoba First Nations (on-reserve) rate of 65.4 per 1,000 residents but higher than the provincial rate of 49.0 per 1,000 between 1997 and 2006. However, these rates are based on small numbers and the Gillam rate was not statistically different from the other comparison areas.

In 2006 there were two babies born weighing more than 4000 grams (high birth weight) and no low birth weight babies (less than 2500 grams). Because of the small numbers of births and very small numbers of low and high birth weight infants it is difficult to identify clear trends (for example, low birth weights go up and down in extremes).

CARDIOVASCULAR DISEASE

For several chronic conditions, including cardiovascular disease, patient rates and physician visit rates were higher than the comparison areas but hospitalization rates were often lower. This may indicate that with more access to resources by Gillam residents (either within the community or through travel to Thompson or Winnipeg), patients were better able to manage their chronic illnesses at the community level and were less likely to require hospitalization.

In 2006, there were 133 patients accounting for 344 physician visits for cardiovascular disease recorded among Gillam residents. These visits accounted for 26.3 per cent of all physician visits for conditions of interest in 2006. Overall, between 1984 and 2006, cardiovascular disease accounted for 8,324, or 22.7 per cent of all physician visits. The number of patients treated for cardiovascular disease increased by 35.7% between 1984 and 2006. This indicates that cardiovascular disease is a very important cause of illness as well as driver of medical service use in Gillam communities.

For comparison purposes, rates have also been calculated. The 2006 rate of 113.6 per 1,000 females in 2006 was statistically similar to all other comparison areas. The 2006 patient rate of 131.1 per 1,000 males was statistically similar to all comparison areas with the exception of higher than both BRHA males (98.3 per 1,000) and Manitoba First Nations males living on-reserve (87.5 per 1,000). Overall, the 2006 Gillam patient rate of 122.6 per 1,000 was higher than the BRHA (97.5 per 1,000) and Manitoba First Nations

living on-reserve (86.7 per 1,000). The difference in physician visit rates was more striking with Gillam residents having 317.1 visits per 1,000 residents, which is statistically higher than all comparison areas with the exception of Thompson (at 318.3 visits per 1,000 residents). This may indicate a difference in access to services between Gillam residents and other comparison areas (although similar rates of patients are treated at least once, Gillam residents may have more frequent access to treatment) or it may indicate that Gillam residents tend to be more ill and require more care (but hospitalization rates do not appear to support this).

The average annual 10-year hospitalization rates for cardiovascular disease for all Gillam residents increased slightly from 10.2 to 12.9 per 1,000 between 1987-1996 and 1997-2006. This is similar to the BRHA at 13.7 per 1,000 but statistically lower than Manitoba First Nations living on-reserve at 17.3 per 1,000 as well as KCNs community residents (23.1 per 1,000 in 1997-2006). The Gillam hospitalization rate in this time period was only statistically higher than the rate for Thompson residents at 9.0 per 1,000 residents. For community planning purposes it is noted that the total number of cardiovascular disease hospitalizations among Gillam residents also increased very slightly from 146 to 152 between 1987-1996 and 1997-2006.

DIABETES

While treatment and hospitalization rates were consistently lower among Gillam residents compared to the comparison areas, the trend for Gillam appears to be towards an increase in the rate of residents being treated for diabetes.

In 2006, there were 63 patients accounting for 220 physician visits for diabetes recorded among Gillam residents. These visits accounted for 16.8% of all physician visits for conditions of interest in 2006. Overall, between 1984 and 2006, diabetes accounted for 3,897, or 10.6% of all physician visits.

The actual number of unique patients treated for diabetes among all Gillam residents increased by 320% from 15 patients in 1984 to 63 in 2006. This is the lowest rate of change among the comparison areas. The number of physician visits among Gillam residents also increased, from 52 in 1984 to 220 in 2006 and is an increase of 323.1%.

The patient rate among Gillam residents for diabetes increased from 10.7 patients per 1,000 residents in 1984 to 58.0 per 1,000 in 2006. Both Burntwood and Manitoba First Nations living on reserve also show a sharp and steady increase in patient rates over time. The 2006 rate of 58.1 per 1,000 was statistically lower than Manitoba First Nations living on-reserve (89.6 per 1,000) and KCNs community residents (101.4 per 1,000). The Gillam rate was statistically similar to both Thompson (43.4 per 1,000) and Burntwood (63.4 per 1,000).

Among Gillam females, the 10-year hospitalization rate for diabetes decreased from 5.8 to 4.5 per 1,000 between 1987-1996 and 1997-2006. The most recent rate is statistically similar to the BRHA at 3.8 per 1,000 and Manitoba First Nations living on-reserve (6.8 per 1,000) but statistically higher than Thompson (1.8 hospitalizations per 1,000 residents).

Unlike females, among Gillam males, the 10-year hospitalization rate for diabetes increased somewhat from 2.2 to 3.4 per 1,000 between 1987-1996 and 1997-2006. The most recent rate is statistically similar

to the BRHA at 3.1 per 1,000 but statistically lower than Manitoba First Nations living on-reserve (6.6 per 1,000) and KCNs community residents (6.7 per 1,000).

While physician visits have increased, overall, the 10-year hospitalization rates for diabetes for Gillam remained the same at 3.9 per 1,000 between 1987-1996 and 1997-2006. The most recent rate is statistically similar to the BRHA at 3.4 per 1,000 and statistically lower than Manitoba First Nations living on-reserve at 6.7 per 1,000.

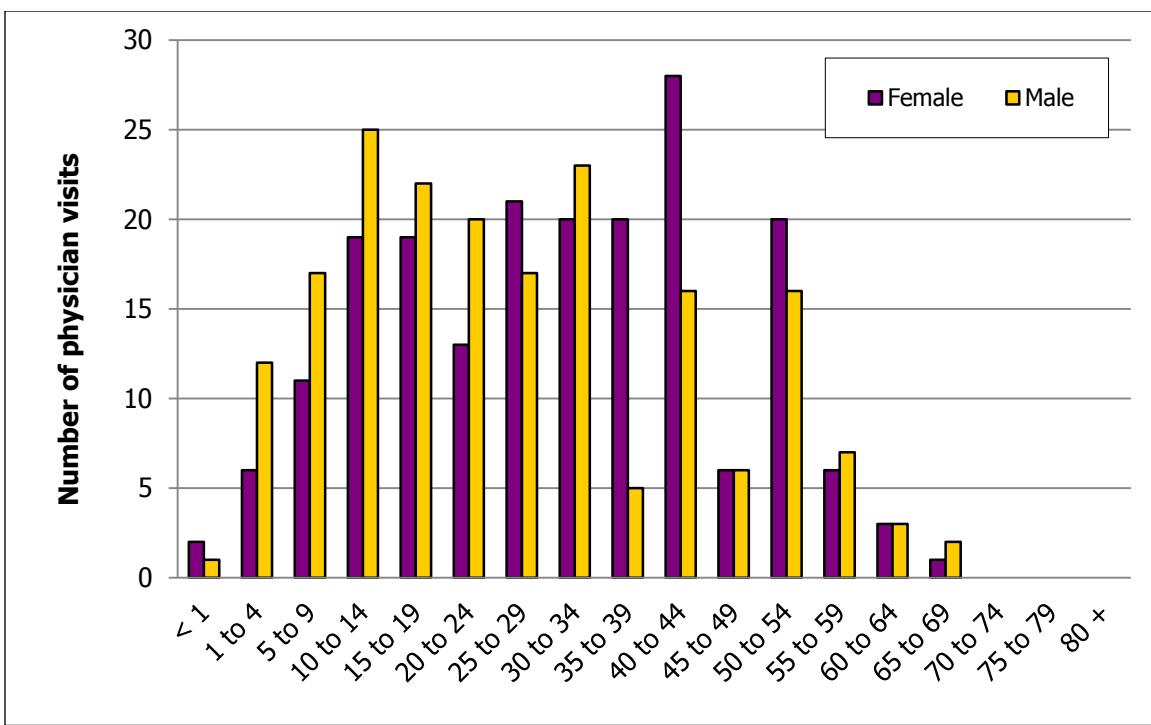
It is important to note that the physician visit data shows that the numbers of people (and resulting need for consulting with a physician) diagnosed with diabetes was increasing, particularly among males. That the hospitalization rate data did not show the same trend may indicate that Gillam residents have had good access to primary health care and physician services to help successfully manage diabetes in the community and avoid health problems that lead to hospitalization.

INJURY

Between 1984 and 2006, injuries accounted for 14,382, or 39.3% of all physician visits. In 2006, there were 218 patients accounting for 387 physician visits for injuries recorded among Gillam residents.

Between 1984 and 2006, Gillam residents accounted for 3.8% of all BRHA physician visits for injuries, which is slightly higher than the 2.9% of the BRHA population that they represent. However, this difference may be more of a result in differences in service provision and submission of data to Manitoba Health (compared to many communities in the region, particularly First Nation communities where services are provided by nurses who do not submit data to Manitoba Health) than an actual difference in rates of physician visits.

In 2006, Gillam residents age 19 and under accounted for about one in three (34.6%) physician visits for injuries. Figure 3-14 shows the number of physician visits by age group and gender for injuries between 1984 and 2006.



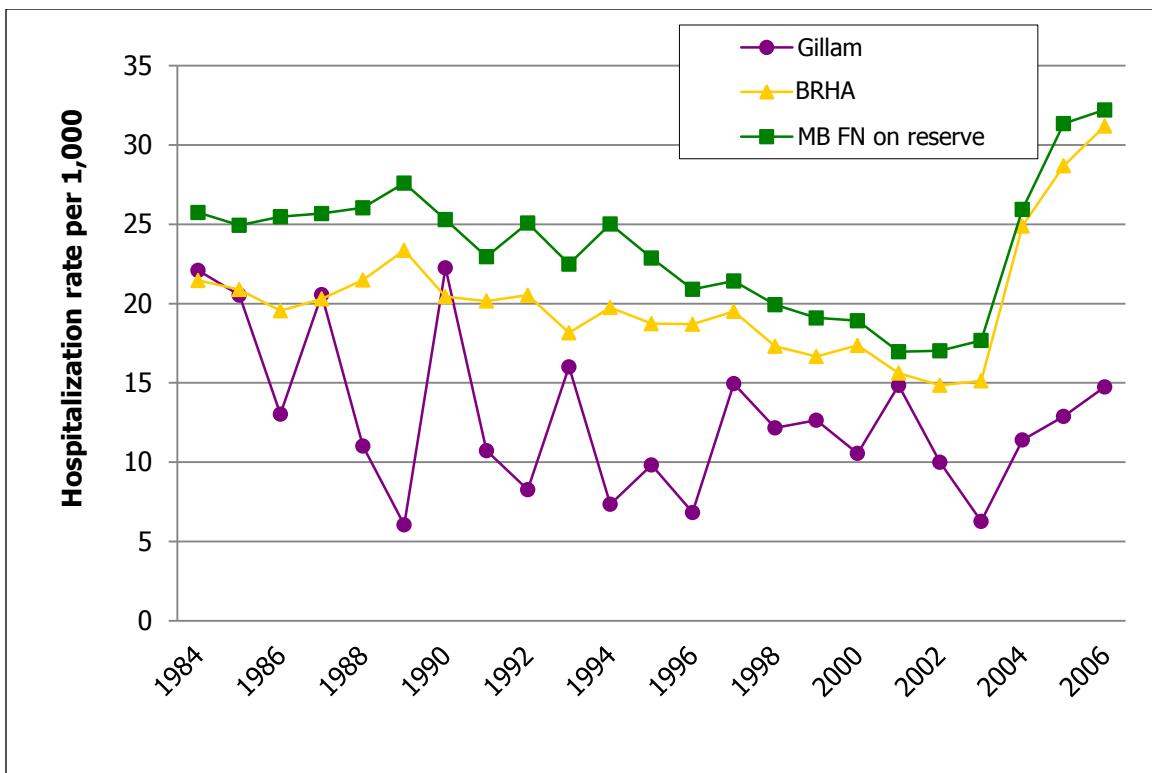
Source: Manitoba Health, special data run 2009.

Figure 3-14: Physician Visits for Injuries by Gender and Age Group, Gillam (2006)

Between 1984 and 2006, Gillam residents accounted for 1.9% of all BRHA hospitalizations for injuries which is lower than the 2.9% of the BRHA population that they represent. As with physician visits, within Gillam, residents age 19 and under accounted for about one third (35.5%) of hospitalizations for injuries.

The patient rate among Gillam residents for injuries decreased from 265.9 patients per 1,000 residents in 1984 to 200.9 per 1,000 in 2006. Manitoba First Nations living on-reserve also showed a slight decrease from 199.2 to 179.1 per 1,000, while the BRHA residents showed a very slight increase from 157.1 to 162.7 per 1,000. However, the Gillam patient rates are typically higher than the comparison areas throughout the time period (but this may be due to better reporting of physician visits).

Figure 3-15 shows a large variation from year to year in injury hospitalization rates among Gillam residents. This variation may be attributed to small population numbers. By comparison, the BRHA and Manitoba First Nations living on-reserve show more clear trends. For community planning, it is noted that the number of actual patients hospitalized for injuries among all Gillam residents decreased by 41.6% from 373 patients in 1984 to 218 in 2006. The number of physician visits for these patients also decreased by 48% from 744 in 1984 to 387 in 2006.



Source: Manitoba Health, special data run 2009.

Figure 3-15: Hospitalization Rates for Injuries by Year, All Residents (1984-2006)

Among females, the 10-year average annual hospitalization rate for injuries remained unchanged at 8.9 per 1,000 between 1987-1996 and 1997-2006. These rates are statistically lower than the most recent rates for the BRHA at 17.5 per 1,000 females and for Manitoba First Nations living on-reserve at 19.6 per 1,000 females. It should be noted that the number of hospitalizations among Gillam females decreased from 61 to 50 between 1987-1996 and 1997-2006 but because the population also decreased during this period, the calculated rates are the same.

A similar trend was evident among Gillam males, with the 10-year average annual hospitalization rates changing very little from 14.5 to 15.0 per 1,000 males between 1987-1996 and 1997-2006. As with females, the most recent rate is statistically lower than the BRHA (22.8 per 1,000 males) and Manitoba First Nations living on-reserve (24.6 per 1,000 males). As with females, please note that the actual number of hospitalizations for Gillam decreased from 108 to 93 between 1987-1996 and 1997-2006. Because the population decreased more than the cases decreased, the calculated hospitalization rate increased slightly.

MENTAL HEALTH

Mental health is an important area to consider as part of overall health characteristics.

In 2006, there were 101 patients accounting for 209 physician visits for mental health disorders recorded among Gillam residents. These visits accounted for 16.0% of all physician visits for conditions of interest

in 2006. Overall, between 1984 and 2006, mental health disorders accounted for 5,469, or 14.9% of all physician visits among Gillam residents.

Between 1997-2006, the calculated 10-year average annual physician visit rate of 220.4 per 1,000 residents for mental health and behavioural disorders was statistically higher than all other comparison areas with the exception of Thompson (at 248.4 per 1,000 residents) (but this difference may be a result of better reporting of data to Manitoba Health by physicians).

The number of physician visits for mental and behavioural disorders among Gillam females stayed very stable, increasing by just 1.9% between 1984 and 2006 (from 54 to 55). The 2006 calculated rate, for community comparison, of 104.2 per 1,000 Gillam females in 2006 is statistically higher than the BRHA at 93.1 per 1,000 and similar to Manitoba First Nations living on-reserve (105.1 per 1,000). The number of physician visits among Gillam males for mental and behavioural disorders increased by 58.6% between 1984 and 2006 (from 29 to 46). The 2006 calculated rate of 82.6 physician visits per 1,000 Gillam males is similar to both the BRHA (82.4 per 1,000) and Manitoba First Nations living on-reserve (78.1 per 1,000).

There were a small number of hospitalizations for mental health and behavioural disorders among Gillam residents. In 2006, there were a total of 12 hospitalizations for mental health disorders recorded among Gillam residents. These visits accounted for 24.5% of all hospitalizations for conditions of interest in 2006. Overall, between 1984 and 2006, mental health disorders accounted for 250 or 17.7% of all hospitalizations for conditions of interest. Overall, Gillam residents accounted for 2.7% of all BRHA hospitalizations for mental and behavioural disorders, which is very similar to 2.9% of the BRHA population that they represent.

Rates have also been calculated for comparison to other areas. Between 1996 and 2007, the 10-year average annual rate of 10.7 hospitalizations per 1,000 Gillam residents was statistically similar to all comparison populations with the exception of Thompson, which was lower at 7.0 per 1,000.

Among Gillam females, hospitalization rates for mental and behavioural disorders have fluctuated over the years but increased from 5.9 hospitalizations per 1,000 in 1984 to 7.6 per 1,000 females in 2006. In 2004, there appeared to be a spike in hospitalization rates for Gillam females (to over 15 per 1,000 females). This may mean that in this year several females were hospitalized or it may indicate that one female was very ill and was hospitalized several times in that year. It is important to note that between 2004/05 and 2006/07 one of the leading reasons for hospitalizations among Gillam females was "behavioural disorders related to alcoholism." This may be related to the spike in hospitalization rates for mental health disorders in 2004.

The fact that physician visit rates are higher in some cases for Gillam community members while hospitalization rates are similar to most comparison areas may indicate that there is better physician visit data being reported for communities such as Thompson and Gillam. It may also mean that there are enough primary health care services in the community to provide support to residents and allow them to be treated at the community level (and avoid hospitalization).

SKIN INFECTION

Hospitalization and physician visit rates among Gillam residents for skin infections appear to be lower than comparison areas, and for the most part, declining.

In 2006, there were 43 patients accounting for 60 physician visits for infections of skin and subcutaneous tissue recorded among Gillam residents. These visits accounted for 4.6% of all physician visits for conditions of interest in 2006. Overall, between 1984 and 2006, these infections accounted for 2,226, or 6.1% of all physician visits.

Physician visits by Gillam residents for infections of skin and subcutaneous tissue accounted for 1.4% of physician visits for all BRHA residents. In comparison to the proportion of the population (2.4%), these visits are proportionally lower than the Gillam population proportion. Between 1984 and 2006 overall, Gillam residents accounted for 3.0% of all BRHA physician visits for infections of skin and subcutaneous tissue, which is very similar to the 2.9% of the BRHA population that they represent in this longer time period.

Among Gillam females, physician visit rates for infections of skin and subcutaneous tissue decreased by 60.5% between 1984 and 2006. The 2006 rate of 28.4 per 1,000 was lower than both the BRHA (51.2 per 1,000) and for Manitoba First Nations living on-reserve (63.3 per 1,000).

Male physician visit rates for infections of skin and subcutaneous tissue for Gillam increased by 33.3% between 1984 and 2006. The 2006 rate of 50.3 per 1,000 in 2006 was similar to the BRHA (54.3 per 1,000) as well as Manitoba First Nations living on-reserve (58.7 per 1,000).

Overall, the total physician visit rates for infections of skin and subcutaneous tissue decreased 27.1% (from 59 visits to 43 visits) between 1984 and 2006. The 2006 rate of 39.6 per 1,000 was statistically lower than both the BRHA (52.8 per 1,000) and Manitoba First Nations living on-reserve (61.0 per 1,000).

The 10-year hospitalization rate for infections of skin and subcutaneous tissue for Gillam residents decreased from 3.8 to 2.3 per 1,000 between 1987-1996 and 1997-2006 (from 54 hospitalizations to 27). This is lower than the BRHA rate at 3.7 per 1,000 and for Manitoba First Nations living on-reserve at 4.6 per 1,000 between 1997-2006. Among females, the 10-year average annual hospitalization rates for infections of skin and subcutaneous tissue decreased from 3.5 to 2.1 per 1,000 between 1987-1996 and 1997-2006; the most recent rate is lower than both the BRHA at 3.3 per 1,000 and for Manitoba First Nations living on-reserve at 4.3 per 1,000 in 1997-2006.

Among males, the 10-year hospitalization rate also declined, from 4.0 to 2.4 per 1,000 between 1987-1996 and 1997-2006. The most recent rate is lower than both the BRHA at 4.0 per 1,000 and Manitoba First Nations living on-reserve at 4.8 per 1,000 in 1997-2006.

MORTALITY

In many northern communities, disease of the circulatory system and injuries are typically among the leading causes of death. Gillam is different in that cancer was the leading cause of death in the community between 1998 and 2006. The second leading cause of death was diseases of the digestive

system. A review of premature deaths indicated that injury was the leading cause of potential years of life lost among males but this was only based on two deaths so must be interpreted with caution.

In Gillam, there were 27 deaths among residents between 1998 and 2006 for a total mortality rate of 2.6 deaths per 1,000 residents. This was lower than Manitoba First Nations living on-reserve at 4.1 per 1,000 and Manitoba at 8.5 per 1,000. Females accounted for 10 (37%) of these deaths while males accounted for 17 (63%). This is a very small number of deaths to make inferences about changes over time or differences between areas.

There were seven deaths among Gillam residents due to cancer, leading to a mortality rate of 0.7 per 1,000 between 1998-2006; this is similar to Manitoba First Nations living on-reserve (0.6 per 1,000) but statistically lower than Manitoba at 2.3 deaths per 1,000.

There were three deaths due to diseases of circulatory system accounting for a mortality rate of 0.29 per 1,000, lower than Manitoba First Nations living on-reserve (1.0 per 1,000) and Manitoba (2.9 per 1,000). There were also three deaths due to diseases of the respiratory system accounting for a mortality rate of 0.3 per 1,000; this is similar to Manitoba First Nations living on-reserve (0.2 per 1,000) but lower than Manitoba at 0.7 deaths per 1,000 residents.

Between 1998 and 2006, there were 19 deaths among residents younger than 75 (considered "premature deaths"). The Gillam rate of 1.8 premature deaths per 1,000 residents was statistically lower than the rate among Manitoba First Nations living on-reserve (3.1 premature deaths per 1,000) but is statistically similar to the other comparison areas.

PYLL among Gillam females increased from 46 to 111 years between 2000-2003 and 2004-2007. Among Gillam males, PYLL decreased from 133 to 63 years for the same time period. The leading cause of PYLL was cancer for males and diseases of the digestive system for females. The causes of premature mortality in Gillam is based on small numbers but is noteworthy as they are different from other northern communities where the leading cause of PYLL and premature mortality overall is typically injury and poisoning.

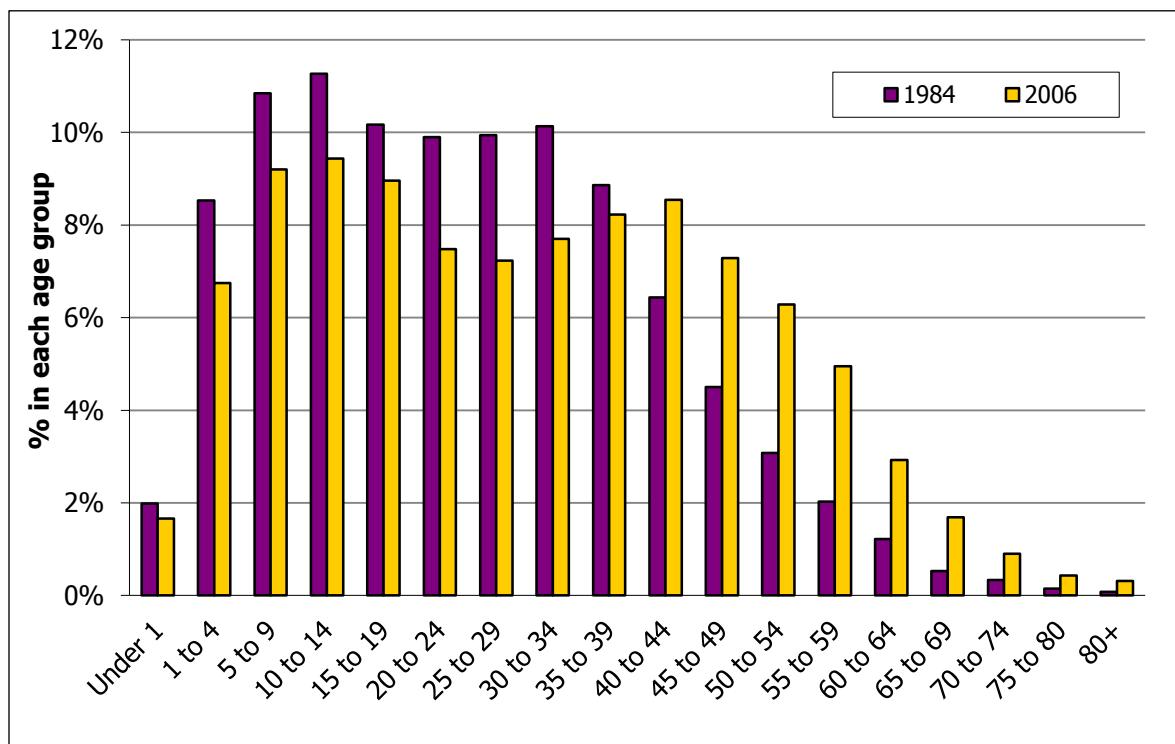
3.3 THOMPSON

3.3.1 Health Characteristics Associated with Population Characteristics

Thompson is the largest community in the BRHA and Manitoba Health reports the 2008 population as being 13,931 residents. Given that the population of the BRHA is 46,818, Thompson residents account for just about one third of all residents in the region. Only 3.3% of the Thompson population is over 65 years old. This is very similar to the Manitoba First Nations rate of 3.4% and much lower than the provincial average of 13.8% in 2008.

According to Manitoba Health, the population of Thompson in 1984 was 14,946 and the 2006 population of 14,074 represents a decline of 5.8%. Although the population of Thompson is still relatively young compared to the rest of Manitoba, Figure 3-16 shows that the population has grown in

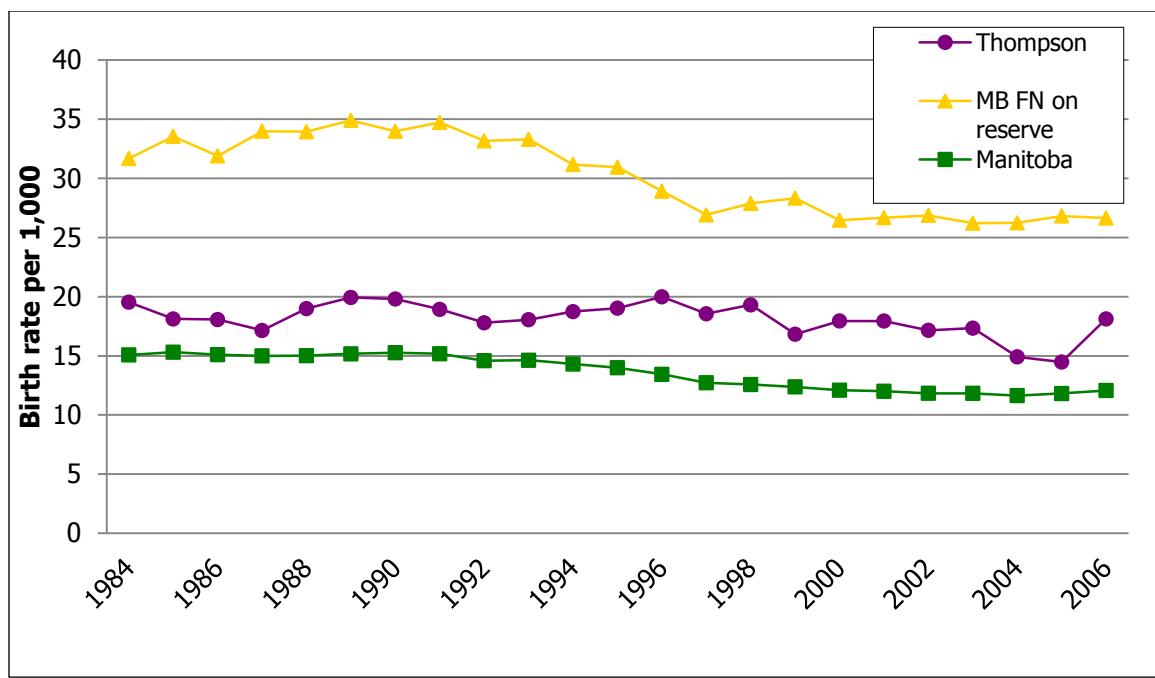
the older age groups, while the younger age groups (particularly age 20 to 34) have experienced the largest decrease since 1984. In 1984, 32.6% of the population was under the age of 15 and 7.4% was over the age of 50. This changed by 2006 to 27% of the population being under age 15 and 17.5% over age 50.



Source: Manitoba Health, special data run, 2009.

Figure 3-16: Thompson Change in Population Structure (1984 and 2006)

The birth rate for Thompson in 2006 was 21.2 births per 1,000 residents; this is statistically lower than the Manitoba First Nations living on-reserve rate of 33.5 but statistically higher than the provincial rate of 14.8 per 1,000 in 2006. As Figure 3-17 shows, the 20-year trend in birth rates for Thompson has been quite stable. The 2006 pregnancy rate for Thompson women age 15-49 was 76.6 per 1,000 females; this is lower than the Manitoba First Nations living on-reserve rate of 135.1 per 1,000 females but higher than the provincial rate of 60.7 per 1,000 in 2006. Like birth rates, the pregnancy rate for Thompson has changed very little between 1984 and 2006.



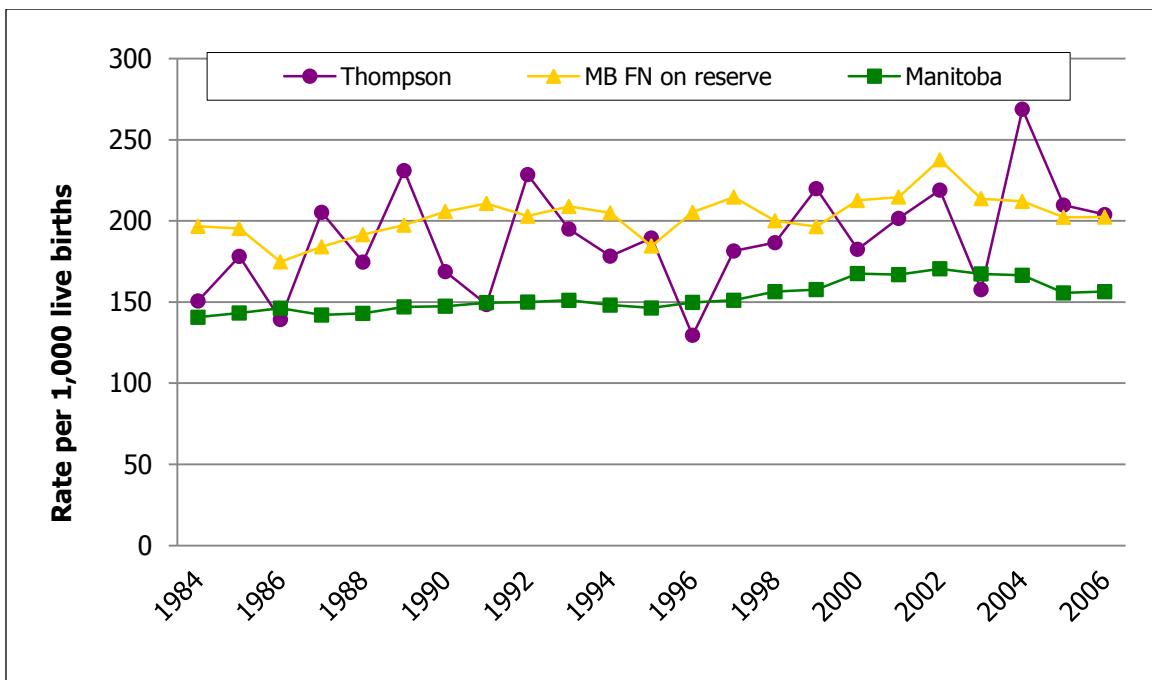
Source: Manitoba Health, special data run 2009.

Figure 3-17: Birth Rates for Thompson, MB First Nations on-Reserve and Manitoba (1984-2006)

In 2006, the rate of low birth weight (less than 2,500 grams) infants in Thompson was 70.6 per 1,000 live births, which is statistically higher than the Manitoba First Nations rate of 59.2 per 1,000 live births and the provincial rate of 56.6 per 1,000 live births. It is important to note that the actual number of low birth weight infants born to residents of Thompson in 2006 was 18 (compared to 74 in Manitoba First Nations communities and 807 in Manitoba overall). This is important, as the small number leads to a large variation in rates from year to year.

The high birth weight rate (greater than 4,000 grams) for Thompson was 203.9 births per 1,000 live births, which is similar to the Manitoba First Nations rate of 202.4 per 1,000 live births but statistically higher than the provincial rate of 156.4 per 1,000 live births. For Thompson, this rate is calculated based on a total of 52 high birth weight infants born in 2006 (accounting for 20% of all births in that year). There appears to be a trend toward an increase in the rate of high birth weight infants in Thompson (see Figure 3-18).

The 10-year average annual rate of reported spontaneous abortions (also known as miscarriage) for Thompson increased from 12.1 to 51.0 per 1,000 reported pregnancies between 1987-1996 and 1997-2006. It is important to note that this increase is based on reported miscarriages and pregnancies. Therefore, it is possible that at least some of the increase in rates for Thompson is due to better reporting of pregnancy and miscarriage. The most recent rate for Thompson is statistically lower than Manitoba First Nations at 65.4 per 1,000 but statistically similar to the provincial rate of 49.0 per 1,000 pregnancies between 1997-2006.



Source: Manitoba Health, special data run 2009.

Figure 3-18: High Birth Weight Rates for Thompson, MB First Nations on-Reserve and Manitoba (1984-2006)

CARDIOVASCULAR DISEASE

For several chronic conditions, including cardiovascular disease, patient rates and physician visit rates were higher than the comparison areas but hospitalizations were much lower. This may indicate that with more resources in a larger community, such as Thompson, patients are better able to manage their chronic illnesses at the community level and are less likely to require hospitalization.

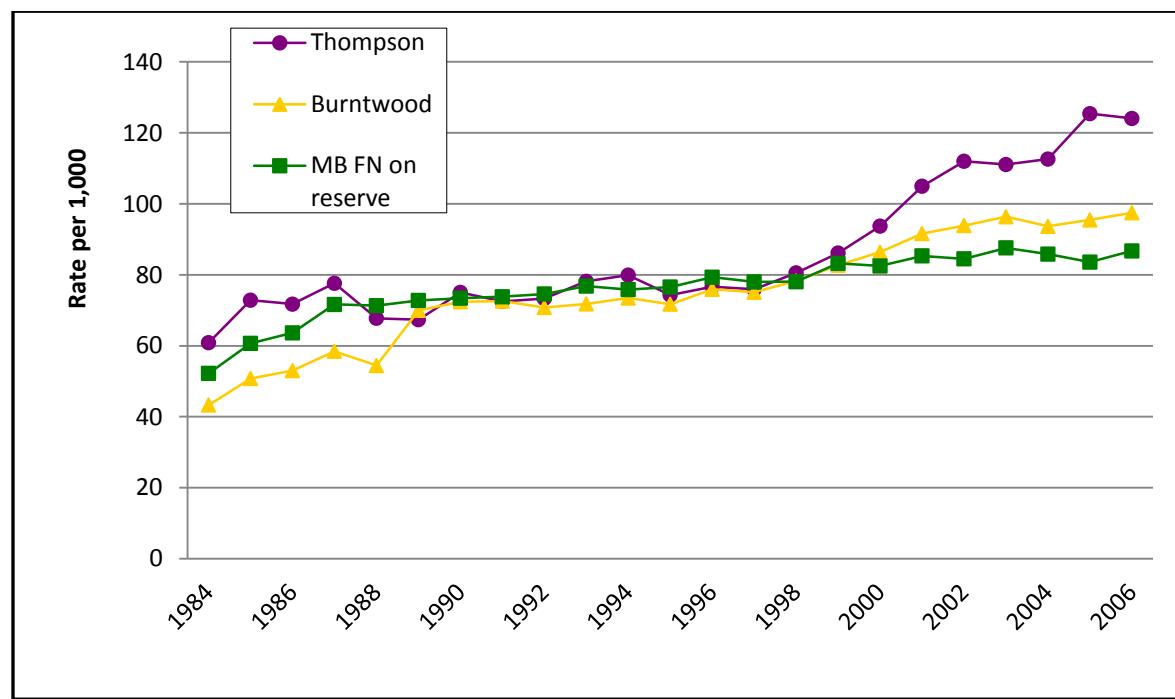
Between 1984 and 2006, cardiovascular disease accounted for 81,990, or 21.5% of all physician visits among Thompson residents. In this time period, Thompson residents accounted for 37.5% of all BRHA physician visits for cardiovascular disease, which is slightly higher than the 33.3% of the BRHA population that the community represented in that time period. This indicates that cardiovascular disease is an important cause of illness as well as a driver of medical service use in Thompson.

Thompson residents age 50 and older accounted for two out of three (66.9%) physician visits for cardiovascular disease, with the highest number of physician visits seen among male residents ages 55 to 59.

The total number of physician visits for cardiovascular disease among Thompson residents increased 57.5% (from 2,844 to 4,480) between 1984 and 2006. While we know the population of Thompson has decreased, it is important to note that the number of unique patients that were treated almost doubled from 910 to 1,746 in this time period.

Among Thompson females, the physician visit rate increased by 95.9%. The 2006 physician visit rate of 127.0 visits per 1,000 was statistically higher than both the BRHA (96.6 per 1,000) and Manitoba First Nations living on-reserve (86.0 per 1,000). The male physician visit rate for cardiovascular disease increased 111.7% between 1984 and 2006. The 2006 rate of 121.2 per 1,000 was statistically higher than both the BRHA (98.3 per 1,000) and for Manitoba First Nations living on-reserve (87.5 per 1,000).

Among Thompson females, the unique patient rate for cardiovascular disease increased from 64.8 patients per 1,000 residents in 1984 to 127.0 patients per 1,000 females in 2006. Thompson males had the highest rate of patients among comparison areas in 1984 and rates steadily increased from 57.3 unique patients per 1,000 in 1984 to 121.2 per 1,000 in 2006. Figure 3-19 shows that as with the rates among the BRHA and Manitoba First Nations living on-reserve, there is a gradual but clear increase over time in patient rates for residents of Thompson. This may be partly due to the increase in the numbers of older residents living in the community.

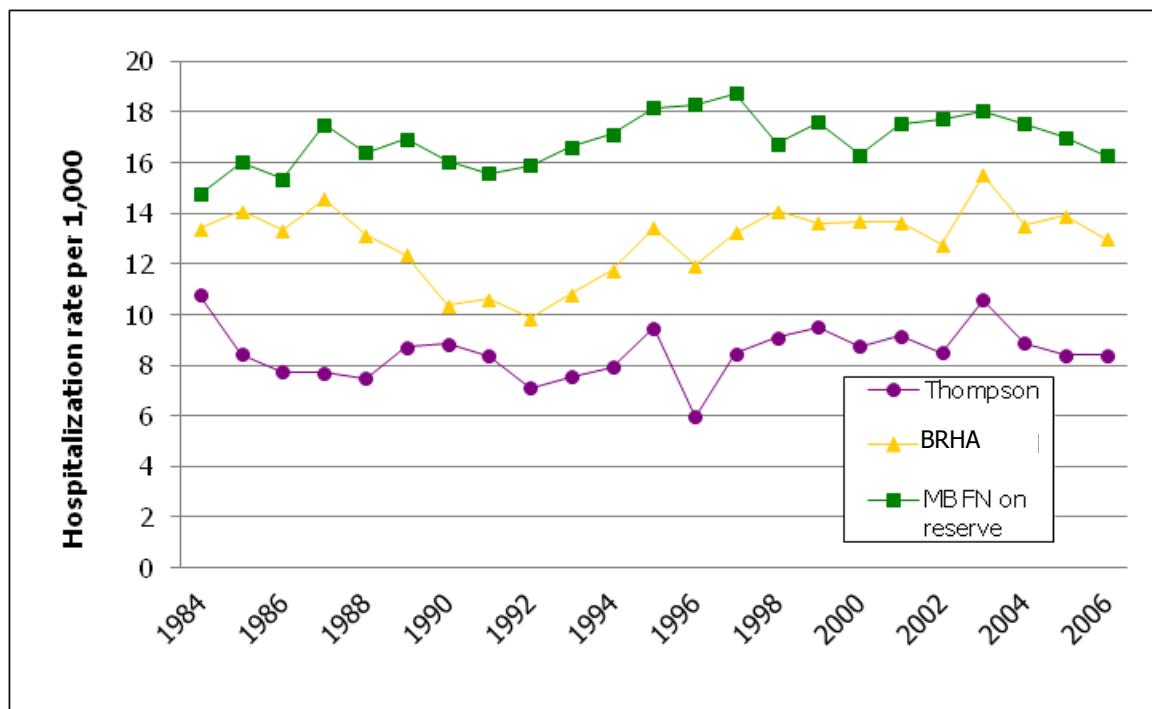


Source: Manitoba Health, special data run 2009.

Figure 3-19: Patient Rates for Cardiovascular Disease by Year, All Residents (1984-2006)

The 10-year average annual hospitalization rate for cardiovascular disease increased very slightly from 7.9 to 9.0 per 1,000 between 1987-1996 and 1997-2006. The slight rate increase for Thompson represents an increase of actual hospitalizations from 1,228 to 1,280 (a much smaller increase than seen for physician visits). As Figure 3-20 shows, hospitalization rates for Thompson residents are consistently lower than rates for BRHA and Manitoba First Nations living on-reserve. For Thompson females, the 10-year average annual hospitalization rate for cardiovascular disease remained quite stable at 6.5 and 7.1 per 1,000 between 1987-1996 and 1997-2006. This was statistically lower than the BRHA at 12.2 per 1,000

females and for Manitoba First Nations living on-reserve at 16.0 per 1,000 females between 1997-2006. For Thompson males, the 10-year average annual hospitalization rate for cardiovascular disease increased slightly from 9.2 to 10.7 per 1,000 between 1987-1996 and 1997-2006. The Thompson male rate is statistically lower than the BRHA at 15.1 per 1,000 males and Manitoba First Nations living on-reserve at 18.6 per 1,000 in 1997-2006.



Source: Manitoba Health, special data run 2009.

Figure 3-20: Hospitalization Rates for Cardiovascular Disease by Year, All Residents (1984-2006)

DIABETES

In 2006, there were 611 patients accounting 1,638 physician visits for diabetes recorded among Thompson residents. These visits accounted for 9.8% of all patients seen for conditions of interest in 2006.

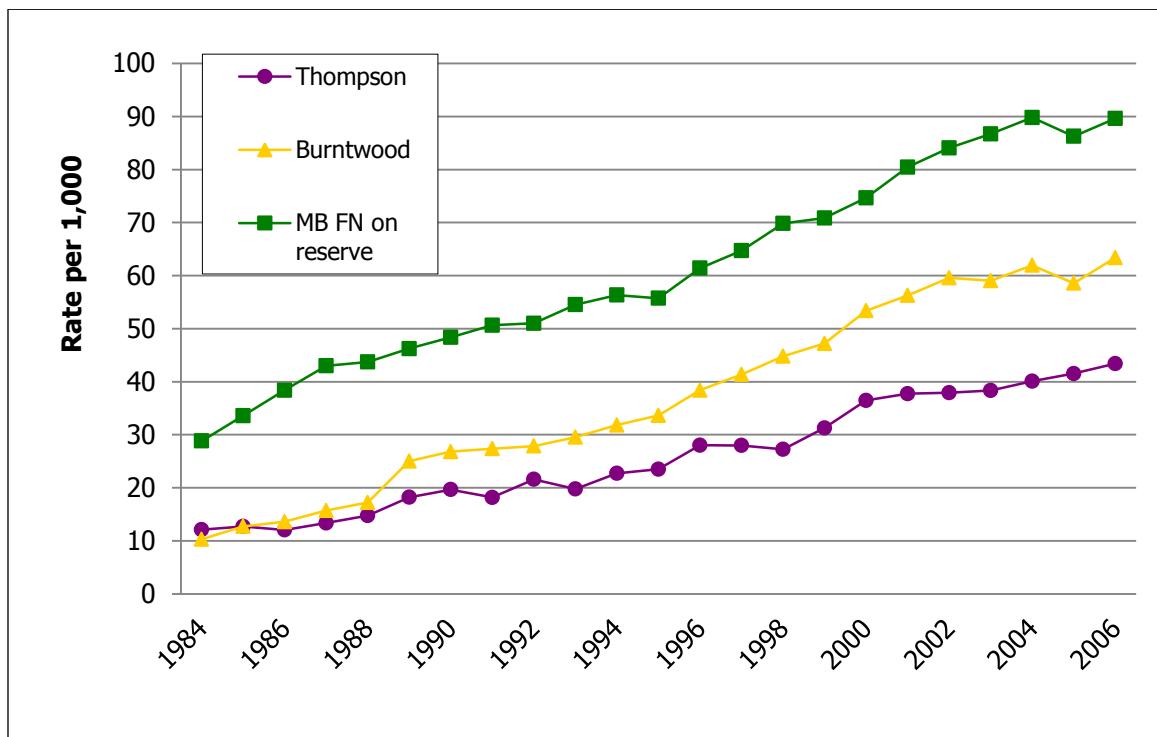
Overall, between 1984 and 2006, diabetes accounted for 26,115, or 6.8% of all physician visits.

In this time period, Thompson residents accounted for 23.2% of all BRHA physician visits for diabetes which is lower than the 33.3 per cent of the BRHA population that they represent.

Thompson residents age 50 and older accounted for two thirds (68.2%) of physician visits for diabetes, with the highest number of physician visits seen among female residents ages 60 to 64 followed by males age 55 to 59.

The patient rate among Thompson residents increased from 12.1 patients per 1,000 residents in 1984 to 43.4 per 1,000 in 2006 (see Figure 3-21). Both BRHA and Manitoba First Nations living on-reserve,

appear to consistently have higher patient rates than Thompson residents and both also show a steady increase in physician visit rates.



Source: Manitoba Health, special data run 2009.

Figure 3-21: Patient Rates for Diabetes by Year, All Residents (1984-2006)

For community planning purposes, it is noted that the actual number of unique patients treated for diabetes among all Thompson residents increased by 237.6% from 181 patients in 1984 to 611 in 2006. This is the lowest rate of change among the comparison areas. The number of physician visits also increased, but less than the number of individual patients, from 694 in 1984 to 1,638 in 2006 - an increase of 136%.

Among Thompson females, patient rates for diabetes increased from 13.1 patients per 1,000 residents in 1984 to 44.0 patients per 1,000 in 2006 (from 94 to 304 patients). The number of physician visits increased by 161.4% from 329 in 1984 to 860 in 2006.

The number of males treated for diabetes increased even more than females at 252.9% (from 87 to 307). The number of physician visits increased from 365 in 1984 to 778 in 2006 and is an increase of 113.2 per cent.

Between 1997-2006, the 10-year average annual hospitalization rate for diabetes among Thompson residents remained very stable at about 1.9 per 1,000 residents. This was statistically lower than both the BRHA (3.4 per 1,000) and Manitoba First Nations (6.7 per 1,000). It is noted that the actual number of diabetes hospitalizations among Thompson residents decreased from 299 to 266 between 1987-1996 and 1997-2006 but the rate did not change due to the decrease in population.

Among Thompson females, the 10-year hospitalization rate for diabetes decreased from 2.4 to 1.8 per 1,000 between 1987-1996 and 1997-2006. This is statistically lower than the BRHA at 3.8 per 1,000 as well as Manitoba First Nations living on-reserve at 6.8 per 1,000 in 1997-2006. Among Thompson men, the 10-year hospitalization rate for diabetes increased slightly from 1.4 to 1.9 per 1,000 between 1987-1996 and 1997-2006. However, these remains statistically lower than both the BRHA at 3.1 per 1,000 and Manitoba First Nations at 6.6 per 1,000 in 1997-2006.

It is important to note that the physician visit data show very clearly that the numbers of people (and resulting need for consulting with a physician) diagnosed with diabetes is increasing steadily. That the hospitalization data does not show the same trend may indicate that Thompson residents have better access to primary health care and physician services to help them successfully manage their diabetes in the community and avoid health problems that would lead to hospitalizations.

INJURY

In 2006, there were 2,642 patients accounting for 4,693 physician visits for injuries recorded among Thompson residents. These visits accounted for 28.2% of all physician visits for conditions of interest in 2006. Overall, between 1984 and 2006, injuries accounted for 144,704, or 37.9% of all physician visits.

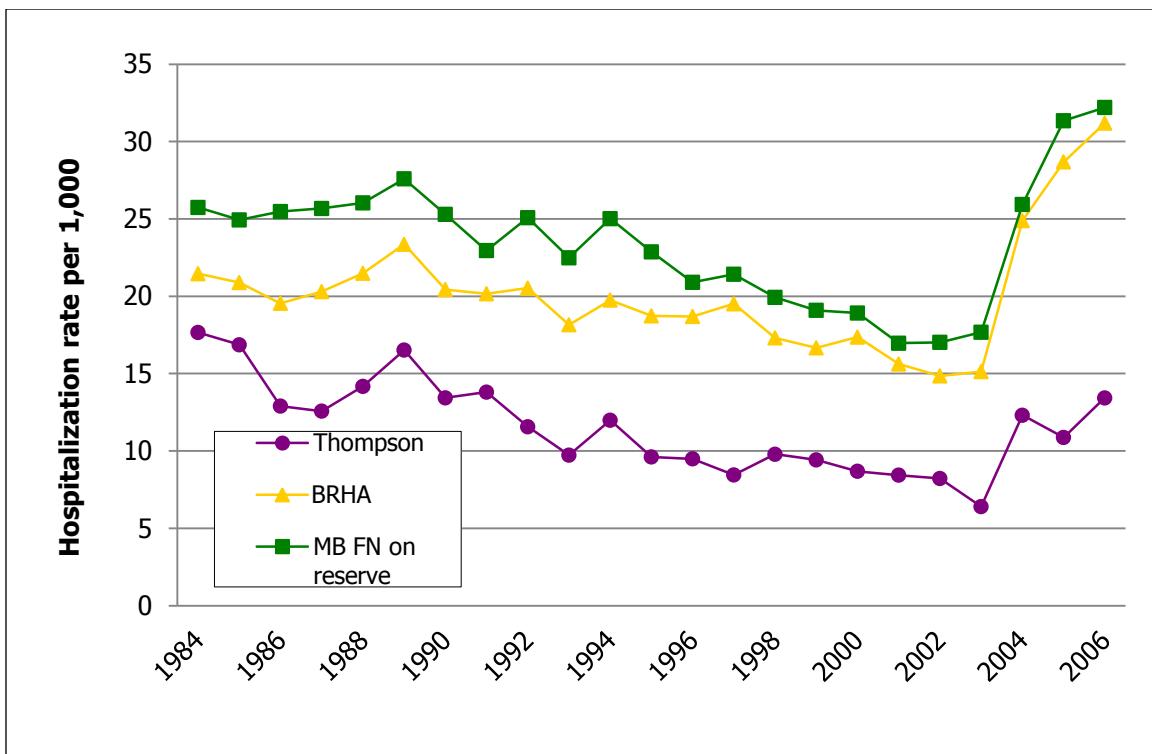
Between 1984 and 2006 overall, Thompson residents accounted for 38.5% of all BHRA physician visits for injuries, which is higher than the 33.3% of the BRHA population that they represent.

Between 1984 and 2006, injuries accounted for 144,704, or 37.9% of all physician visits. In the same time period, Thompson residents accounted for 38.5% of all the BRHA physician visits for injuries, which is higher than the 33.3% of the BRHA population that they represent.

Thompson residents age 19 and under accounted for 34.8% of physician visits for injuries, with the highest number of physician visits seen among male residents ages 15 to 19 and 30 to 34.

Between 1984 and 2006, injuries accounted for 4,002 or 36.6% of all hospitalizations for conditions of interest. In this same time period, Thompson residents accounted for 19.2% of all the BRHA hospitalizations for injuries, which is lower than the 33.3% of the BRHA population that they represent. Within Thompson, residents age 19 and younger accounted for 34.1% of injury hospitalizations.

Figure 3-22 illustrates the calculated hospitalization rates by year between 1984 and 2006 to allow for comparison between Thompson, Manitoba First Nations living on-reserve and BRHA residents. Each of these populations show minor variation from year to year with a trend toward declining rates until 2004 where rates increased again.



Source: Manitoba Health, special data run 2008.

Figure 3-22: Hospitalization Rates for Injuries by Year, All Residents (1984-2006)

Among Thompson females, the 10-year average annual hospitalization rate for injuries decreased slightly from 8.9 to 7.7 per 1,000 between 1987-1996 and 1997-2006. This is statistically lower than BRHA females at 17.5 per 1,000 and Manitoba First Nations females living on-reserve at 19.6 per 1,000 in 1997-2006. The Thompson male 10-year average annual hospitalization rate for injuries also decreased from 15.5 to 11.4 per 1,000 between 1987-1996 and 1997-2006. Similar to rates among females, the most recent rates are statistically lower than BRHA males at 22.8 per 1,000 as well as Manitoba First Nations males living on-reserve at 24.6 per 1,000 males between 1997-2006.

Among Thompson residents, the total 10-year average annual hospitalization rate for injuries decreased from 12.3 to 9.6 per 1,000 between 1987-1996 and 1997-2006 (a decrease from 1,911 to 1,371 hospitalizations).

MENTAL HEALTH

Mental health is another important characteristic of overall health. Rates of patients and treatment with a physician are typically higher than comparison areas and continue to increase over time. While hospitalizations are typically lower than the comparison areas (again likely pointing to increased ability to manage the condition at the community level), these rates are increasing.

In 2006, there were 1,612 patients accounting for 3,737 physician visits for mental health and behavioural disorders recorded among Thompson residents. These visits accounted for 22.4% of all physician visits

for conditions of interest in 2006. Overall, between 1984 and 2006, mental health disorders accounted for 87,626, or 22.9% of all physician visits among Thompson residents.

Between 1984 and 2006 overall, Thompson residents accounted for 47.4% of all BRHA physician visits for mental health and behavioural disorders, which is higher than the 33.3% of the BRHA population that they represent.

Within Thompson, residents age 50 and older accounted for 17% of physician visits for mental and behavioural disorders, with the highest number of physician visits seen among female residents ages 30 to 39.

The patient rate among Thompson residents for mental health and behavioural disorders appears to be consistently higher than the comparison areas and increased from 109.2 patients per 1,000 residents in 1984 to 114.5 per 1,000 in 2006. Both Burntwood and Manitoba First Nations living on reserve show a more pronounced and steady increase in patient rates.

The actual number of patients treated for mental health and behavioural disorders among all Thompson residents decreased by 1.2% 1,632 patients in 1984 to 1,612 in 2006; however, the rate increased slightly due to the decrease in population, which is used to calculate rates. The rate of change in numbers of patients is lower than for Burntwood and Manitoba First Nations living on-reserve. Among Thompson residents, the number of physician visits decreased from 3,755 in 1984 to 3,737 in 2006 and is proportionally a small decrease at 0.5%.

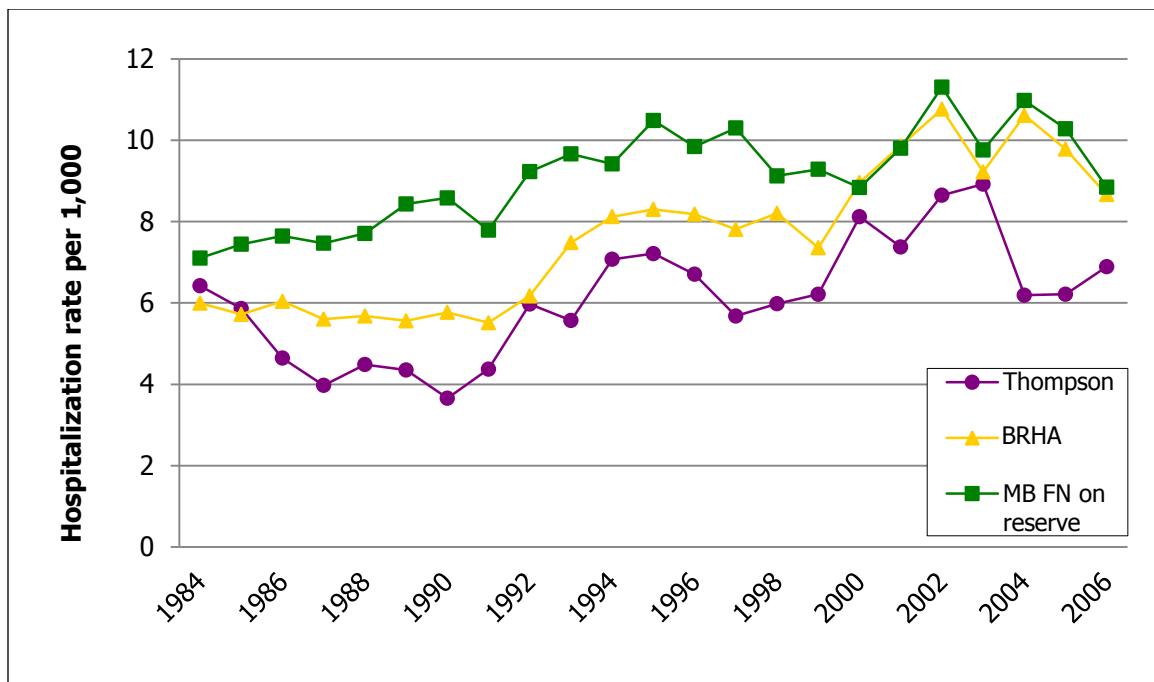
Among Thompson females, the patient rate for mental health disorders appears to have decreased slightly over time (from 131.7 patients per 1,000 residents in 1984 to 122.8 patients per 1,000 in 2006). However, rates are consistently quite a bit higher than the comparison areas.

The actual number of patients among Thompson females decreased by 10.1% between 1984 and 2006 from 943 patients in 1984 to 848 patients in 2006. The number of physician visits decreased by 13.3% from 2,238 in 1984 to 1,940 in 2006. The number of Thompson male patients increased by 10.9% between 1984 and 2006 (from 689 patients to 764 patients). The number of physician visits increased by 18.5% from 1,517 in 1984 to 1,797 in 2006.

The female physician visit rate among Thompson residents for mental and behavioural disorders decreased by 6.8% (from 943 to 848 physician visits) between 1984 and 2006 to 122.8 visits per 1,000 in 2006. However, this rate remains statistically higher than BRHA females (93.1 per 1,000) and Manitoba First Nations females living on-reserve (105.1 per 1,000). The opposite trend is seen for males where male physician visit rates for mental and behavioural disorders increased by 20.5% between 1984 and 2006 to a rate of 106.6 visits per 1,000. This rate is higher than for BRHA males (82.4 per 1,000) and for Manitoba First Nations living on-reserve (78.1 per 1,000 males). Overall, the total physician visit rate for mental and behavioural disorders increased by 4.9% between 1984 and 2006 to 114.5 per 1,000 in 2006. This rate is higher than the BRHA at 87.7 per 1,000 residents as well as for Manitoba First Nations living on-reserve at 91.3 per 1,000 residents.

Between 1984 and 2006, mental health disorders accounted for 2,082 or 19.0% of all hospitalizations for conditions of interest. Thompson residents accounted for 26.5% of all BRHA hospitalizations for mental and behavioural disorders, which is lower than the 33.3% of the BRHA population that they represent.

The hospitalization rate for mental and behavioural disorders increased very slightly from 6.4 hospitalizations per 1,000 in 1984 to 6.9 per 1,000 in 2006 (see Figure 3-23). Both BRHA and Manitoba First Nations living on-reserve also show relatively stable trends in hospitalization rates with slight increases for BRHA residents (from 6.0 per 1,000 in 1984 to 8.7 per 1,000 in 2006) and for all Manitoba First Nations living on-reserve (from 7.1 per 1,000 to 8.8 per 1,000).



Source: Manitoba Health, special data run 2009.

Figure 3-23: Hospitalization Rates for Mental and Behavioural Disorders by Year, All Residents (1984-2006)

The 10-year average annual rate of 7.0 hospitalizations per 1,000 Thompson residents was statistically lower than all comparison populations. As noted in the physician visit data, treatment prevalence rates were much higher than the comparison areas in the same time period. This suggests that Thompson community residents have more support at the community level through access to physicians, and likely other support services, to manage mental health conditions in out-patient settings and are less likely to become ill enough to require hospitalization.

SKIN INFECTION

In 2006, there were 719 patients accounting for 1,209 physician visits for infections of skin and subcutaneous tissue recorded among Thompson residents. These visits accounted for 7.3% of all physician visits for conditions of interest in 2006. Overall, between 1984 and 2006, these infections accounted for 24,091, or 6.3% of all physician visits.

Between 1984 and 2006 overall, Thompson residents accounted for 32.3% of all BRHA physician visits for infections of skin and subcutaneous tissue, which is very similar to the 33.3% of the BRHA population that they represent.

Among Thompson residents, the total number of physician visits for infections of skin and subcutaneous tissue increased by 9.6% from 656 to 719 between 1984 and 2006. The calculated 10-year average annual physician visit rate for Thompson residents between 1997 and 2006 was 70.9 visits per 1,000 residents. This rate was statistically lower than both the BRHA (76.7 visits per 1,000) and Manitoba First Nations living on-reserve (106.3 visits per 1,000), but higher than Gillam (62.9 visits per 1,000) as well as the combined KCNs rate.

Overall, the 10-year hospitalization rates for infections of skin and subcutaneous tissue for Thompson remained relatively stable, changing from 2.1 to 1.9 per 1,000 between 1987-1996 and 1997-2006 (from 329 to 267 hospitalizations). The most recent 10-year average annual hospitalization rate of 1.9 per 1,000 for Thompson residents was statistically lower than for all comparison areas with the exception of Gillam.

MORTALITY

According to Manitoba Health, there were a total of 362 deaths among Thompson community residents in the nine year period between 1998 and 2006 for a total mortality rate of 2.8 deaths per 1,000 residents. This is statistically lower than both Manitoba First Nations (4.1 per 100,000) and Manitoba (8.5 per 100,000). Females accounted for 134 (37%) of these deaths while males accounted for 228 (63%).

Similar to Gillam and unlike many northern communities, cancer was the leading cause of death accounting for almost one in three deaths (30%) between 1998 and 2006. This was followed by diseases of the circulatory system, which accounted for 23% of deaths and injury at 16% of deaths. Overall, cancer and diseases of the circulatory system account for just over one half of deaths among Thompson residents.

Within Thompson, nine per cent of deaths among females and seven per cent among males occurred before the age of twenty. The leading causes of death for both young males and females were injury and poisoning.

According to Manitoba Health, there were 362 deaths among Thompson community residents in the nine year period between 1998 and 2006. This means that there were on average 40 deaths per year. Females accounted for 134 (37%) of these deaths while males accounted for 228 (63%).

Among Thompson residents, the total mortality rate was 2.8 deaths per 1,000 residents between 1998-2006. The 95% confidence intervals, ranging from 2.6 to 3.1 deaths per 1,000 for Thompson residents, illustrates that the rate in Thompson is statistically lower than Manitoba First Nation on-reserve (4.1 deaths per 1,000 residents) and Manitoba overall (8.5 deaths per 1,000 residents).

The average annual mortality rate due to **Neoplasm** (cancer) in Thompson was 0.8 deaths per 1,000 residents between 1998 and 2006. This is statistically higher than the Manitoba First Nations rate of 0.6 deaths per 1,000 but statistically lower than Manitoba overall at 2.3 deaths per 1,000.

The average annual mortality rate due to diseases of the circulatory system for Thompson residents was 0.7 deaths per 1,000 residents between 1998-2006. This is statistically lower than Manitoba First Nations at 1.0 deaths per 1,000 and Manitoba overall at 2.9 death per 1,000 residents.

The average annual mortality rates due to **endocrine and metabolic disorders** (including diabetes) among Thompson residents was 0.1 deaths per 1,000 residents between 1998 and 2006. This is statistically lower than both Manitoba First Nations and Manitoba overall, both of which had rates of 0.34 deaths per 1,000.

External causes (injury) accounted for 57 deaths among Thompson residents between 1998 and 2006 for a calculated rate of 0.4 deaths per 1,000 residents. The Thompson rate is statistically higher than Manitoba First Nations living on-reserve (0.2 deaths per 1,000) and Manitoba overall (0.1 deaths per 1,000). PYLL among Thompson females decreased from 1,270 to 1,120 between 2000-2003 and 2004-2007. Among Thompson males, PYLL increased from 1,695 to 2,664 between 2000-2003 and 2004-2007. The leading cause of potential years of life lost was injury and poisoning for both males and females. However, rates among males were much higher than females in the most recent time period. Cancer was the second leading cause of potential years of life lost for both males and females in Thompson.

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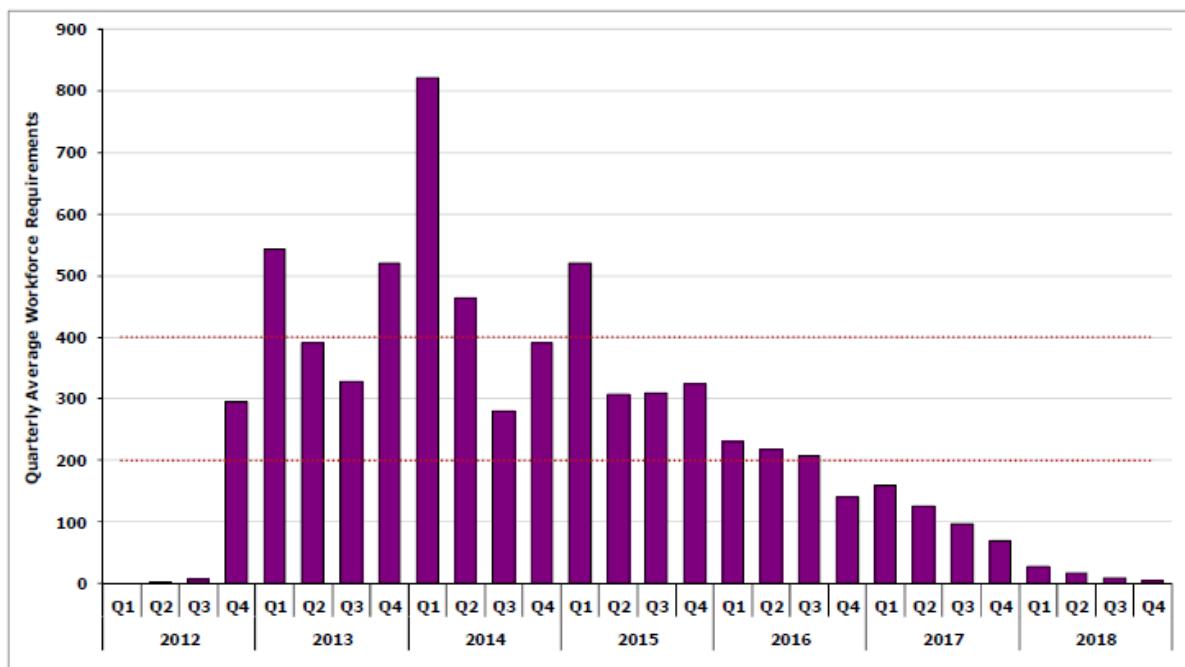
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APPENDIX 1

Gillam Area Anticipated Workforce

It is anticipated that over the next several years there will be an increased work force in the Gillam area due to planned Manitoba Hydro projects (see Figure A1-1 illustrating the workforce schedule for Bipole III). Fox Lake Cree Nation, Manitoba Hydro and the Town of Gillam share a desire to work proactively to limit potential negative impacts related to the increased workforce. As such, Manitoba Hydro has worked with the Town of Gillam and Fox Lake Cree Nation to establish a Terms of Reference for a worker interaction committee. The mandate of this committee is to provide a forum for information sharing and communication related to the anticipated increased workforce in the Gillam area with the intent of: early identification of potential issues, preventing incidents to the extent possible, and identifying ways and means to work cooperatively to address issues as they arise. Membership will include Fox Lake Cree Nation, Manitoba Hydro, the Town of Gillam, as well as other stakeholders and service providers such as the RCMP and Gillam Hospital. This subcommittee will remain in effect until the constructions of Manitoba Hydro planned projects in the area are concluded.



Notes: The above figure is taken from the July 2012 Supplemental Material to the Bipole III Transmission Project EIS

- Derived from data provided by Manitoba Hydro (June 4, 2012).
- The numbers include average quarterly workforce requirements for Section N1 - Clearing, Section N1 -Construction, Keewatinoo Construction power (138 kV) KN 36 Extension, Keewatinoo AC Collector Lines (230kV), Northern Electrode Line, Henday AIS 230 kV Switchyard Expansion, Long Spruce GIS Switchyard upgrades, Keewatinoo Construction Power Station and Keewatinoo Converter Station.

Figure A1 -1: Bipole III Construction Quarterly Average Workforce Requirement in the Gillam Area