



# JOINT SPECIAL REPORT

## Health and Well-Being of Children in Care in British Columbia: Report 1 on Health Services Utilization and Mortality



Ministry of Health  
Office of the  
Provincial Health Officer



September 2006

Honourable Wally Oppal, QC  
Attorney General of British Columbia

As part of my role as Child and Youth Officer for British Columbia to independently observe services for children and youth and advise government about them, and in accordance with the provision of Section 8(3) of the *Office for Children and Youth Act*, I have prepared, jointly with Dr. Perry Kendall, the Provincial Health Officer, this special report, entitled *Health and Well-Being of Children in Care in British Columbia: Report 1 on Health Services Utilization and Mortality*. The Provincial Health Officer has the responsibility, under the *Health Act*, to provide independent advice on health issues and report to British Columbians on the health of the provincial population.

This joint special report is the first of a planned series arising from an initiative that our two offices have been involved in for over a year and a half. The aim of the initiative is to use routinely collected, cross-ministerial administrative data to better understand health and well-being outcomes for the population of children and youth who are currently or have been in government care. The Provincial Health Officer and I have made 13 joint recommendations in this report on how to improve health and well-being outcomes for children in care, drawing from both the data in the report and other work that we have done in this area.



Jane Morley, QC  
Child and Youth Officer for British Columbia



## Acknowledgments

We would like to acknowledge a number of people who have worked long hours in overcoming the innumerable challenges of collecting the data, matching and analyzing it. In particular, we would like to recognize former Associate Child and Youth Officer Hendrik Roelants, who was the initial project manager, and Associate Child and Youth Officer Michael Egilson, who took over that responsibility in April 2006; Dr. Robert Fisk and his team at the Ministry of Health, particularly for their work on the mortality data; and Bill Warburton, the Executive Director of the Child and Youth Development Trajectories Research Unit of the University of British Columbia, who volunteered many hours to assist us with data reconciliation, matching and significance testing.

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# Executive Summary

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Like all children, children in the care of the government have hopes, dreams and aspirations; many have the resilience to overcome the obstacles they face and to live happy and healthy lives. However, children in care are known to have generally poorer outcomes than children who have never been in care. As the guardian of these children (through the Director under the *Child, Family and Community Service Act*), government has a special responsibility to develop strategies to improve these outcomes. In order to assess government's progress in improving outcomes, we need to develop a better understanding of what those outcomes are and establish a baseline against which to measure progress.

This report is the first in a planned series arising from a joint initiative of the Child and Youth Officer and the Provincial Health Officer for British Columbia, aimed at furthering our understanding of outcomes for children and youth in care by looking at and linking routinely collected data on their use of government-funded services over time. The initiative looks at data from administrative databases on services provided for children and youth in care in the following areas:

- health services utilization
- mortality
- experience within the education system
- employment and income assistance services utilization, and
- encounters with the criminal justice system.

This first report presents data in the first two of these areas: health services utilization and mortality. It focuses predominantly on children and youth who are or were in continuing care at any point between April 1, 1997 and November 1, 2005. (In continuing care, as distinguished from temporary care, the government is sole guardian of the child.) Wherever possible, comparisons are made to the general population of children and youth in British Columbia.

## What the data showed

In October 2005, there were 9,080 children in care, accounting for approximately 1% of all children in British Columbia. Sixty per cent of the children who were in care were in continuing care, while 40 per cent were in temporary care.

The number of Aboriginal children in care was significantly disproportionate to the number of Aboriginal children in the general population. Of the total children in care, 49% were Aboriginal children, even though Aboriginal children constitute only 7% of the general population of children in the province (based on 2001 census figures).

Children in continuing care and children in the general population experienced the same common health conditions. However, children in continuing care were diagnosed for these conditions 1.2 to 1.4 times more often than were children in the general population. While mental disorders are not a common diagnosis for children in the general population, they are experienced by approximately 65% of children in continuing care – approximately four times the rate for children who have never been in care. For other, less common conditions, children in continuing care were diagnosed more frequently and at a greater rate than were children in the general population. For example, young women in continuing care became pregnant at a rate more than four times that of young women who had never been in care. In addition, children in care required more services to address the health conditions with which they were diagnosed.

The prescribing of medications for children in continuing care followed a similar pattern: they were prescribed more medications much more frequently and for longer periods of time than were children who had never been in care. For example, 1.3 to 1.9 times more children in continuing care were prescribed medications from the four most commonly prescribed medication classes than were children in the general population. Children in care were prescribed mental health–related drugs at much higher rates: for example, they were prescribed Ritalin-type medications at a rate 8.5 to 12 times higher than were children who had never been in care, and psychotherapeutic agents at a rate 5.5 to 8 times higher.

Children in continuing care were admitted to hospital mostly for the same reasons as were children in the general population, but they were hospitalized 2 to 3.5 times more frequently, and generally for longer periods.

Certain elements of the data cause particular concern for children and youth in care, and raise issues for further study. These are:

- the higher prevalence of respiratory conditions
- the higher rates of death and intentional and unintentional injury and poisoning, caused by motor vehicle accidents, suicide and poisoning, especially among adolescents
- the higher prevalence of depression and anxiety
- the higher prevalence of hyperkinetic syndrome and the high use of cerebral stimulants to treat it
- the earlier and higher rates of pregnancy and use of contraception among females
- the poorer health indicators for youth between the ages of 19 and 25 who were previously in care.

While death rates are not ideal indicators of children's health, they are traditionally and internationally accepted measures. They also represent the most extreme adverse outcome.

Data for the period 1986 to 2005 show the gap between mortality rates for children in care and children in the general population narrowing considerably for all causes. However, the mortality rate for children in care has remained substantially higher: between 1986 and 2005, children in care died of natural causes at a rate more than four times the rate for the general population, and they died of external causes at more than three times the rate for the general population. Between the ages of 19 and 25, young people who had been in care died at a rate 6.5 times higher than the general population.

## Improving outcomes

Although our mandates as Child and Youth Officer and Provincial Health Officer, and therefore our perspectives, differ somewhat, we hold common views about effective approaches to improving health and well-being outcomes for children and youth. These include the following:

- Investment in health promotion and prevention brings with it the greatest promise for improving health and well-being outcomes for all children, including children in care.
- Early diagnosis of disabilities and appropriate interventions can make a significant difference in improving outcomes for affected children and their families.

## Executive Summary

- The most effective way to promote the health and well-being of children, especially vulnerable children (which children in care generally are), is through early childhood development strategies.
- The most effective strategies to improve outcomes for high-risk youth, both in and out of care, are those that enhance their resiliency and acknowledge and build on their strengths.
- Special strategies are required for Aboriginal children and youth in British Columbia, and these strategies must be developed in partnership with Aboriginal communities.

## Recommendations

- 
- 1** For the Ministry of Children and Family Development – Introduce a policy of no smoking inside foster homes.
- 
- 2** For the Ministry of Children and Family Development – Engage in a renewed effort to connect Aboriginal children and youth in the continuing care of the government with their cultural and community roots to enhance their sense of belonging.
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- 3** For the Ministry of Children and Family Development – Promote education of youth in care about managing the risks of alcohol and drug use.
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- 4** For the Ministry of Children and Family Development – Using the expertise connected with the Child and Youth Mental Health Plan, conduct a review of the current status of identification and treatment of children and youth in care with anxiety and depression disorders, and develop a strategy to implement identified best practices.
- 
- 5** For the Ministry of Children and Family Development – Educate children and youth in care, foster parents and guardianship social workers about anxiety and depression, and the identification and management of them.
- 
- 6** For the Ministry of Children and Family Development – Consult with the College of Physicians and Surgeons, and other appropriate professional organizations, about steps that could be taken to determine whether the prescribing practices of physicians treating children in care are appropriate.
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- 7** For the Ministry of Children and Family Development – Take immediate steps to engage and collaborate with academics to conduct research into the issue of whether children in care are being appropriately medicated with cerebral stimulants.
- 
- 8** For the Ministry of Children and Family Development – Address sexuality issues of children and youth in care proactively by working in conjunction with public health authorities and other resources to:
- make sex and parenting education and supports available both during and on leaving care, and
  - provide foster parents with training on sex and parenting education and early pregnancy interventions.
- 
- 9** For the provincial government – Invest in and develop a cross-ministry plan for post-majority supports for youth leaving care who require adult services, with the Ministry of Children and Family Development taking the lead role.
- 
- 10** For the Ministry of Attorney General – Propose amendments to the *Representative for Children and Youth Act* that make clear the Representative’s immediate entitlement to cross-ministry data required for the purposes of the act.
- 
- 11** For the new Representative for Children and Youth – In collaboration with the Provincial Health Officer, develop a regular report card on identified and generally accepted indicators of the health and well-being of children in care, using the data in this report (and in the others planned for this series) as a baseline.
- 
- 12** For the Ministry of Children and Family Development and the provincial government – Consider using outcome measures from the data generated by this initiative as a baseline against which to evaluate programs and policies designed by the ministry to better the health and well-being of children in care.
- 
- 13** For the Ministry of Children and Family Development and the provincial government – Engage in collaborative research with research communities outside of government to dig more deeply into the causes of poorer outcomes for children in care and to study the impact, if any, of being in care on specific outcomes for children in care.
-



# 1.

## Introduction: A Joint Initiative

Children in the care of the government are not statistics; they are human beings. They have hopes, dreams and aspirations, like all children and youth. Many children in care have the resilience to overcome the obstacles they face. Many live happy and healthy lives, filled with amazing personal achievements.

However, children in care are known to have generally poorer outcomes than children in the general population. They come into government care for a variety of reasons that put them at high risk of poorer outcomes. They are more likely than children in the general population to have come from socially and economically disadvantaged circumstances. They may have experienced parental abuse and neglect, as a result of which they have suffered psychological or emotional injuries. They may have serious medical conditions or disabilities that their parents are unable to manage. In short, they are vulnerable. The extent to which government care mitigates the adverse impact of this vulnerability, or exacerbates it, is not known.

Regardless of the cause of the poor outcomes for children in care, government has a special responsibility as the guardian of these children (through the Director under the *Child, Family and Community Service Act*) to develop strategies to improve them. While the Ministry of Children and Family Development has a major and crucial role in the lives of the children in government care, effective strategies to improve their outcomes will be multi-faceted and must involve other ministries and agencies, both within and outside government. Ultimately, it will take the whole community to support children in care in achieving their dreams.

Both the Child and Youth Officer and the Provincial Health Officer have legislated authority to comment publicly on the health and well-being of children and youth in British Columbia. Under the *Office for Children and Youth Act*, the Child and Youth Officer is mandated to independently observe government-funded services for children and youth and to advise government on how to improve those services. The Provincial Health Officer's responsibilities, outlined in the *Health Act*, include providing independent



advice on health issues and reporting to British Columbians on the health of the provincial population.

This report is the first in a planned series arising from a joint initiative of the Child and Youth Officer and the Provincial Health Officer for British Columbia. The initiative is aimed at using routinely collected administrative data on government services to better understand health and well-being outcomes for the population of children and youth who are currently or have been in government care.

One way to measure child health and well-being is to look at death rates. However, in his 2001 report *Health Status of Children and Youth in Care in British Columbia: What do the Mortality Data Show?*, the Provincial Health Officer noted that while death rates are traditional and internationally accepted measures, and the only health status information that is available over a long period of time, they “are not ideal indicators of child health, a term that encompasses physical, mental, emotional and social well-being.” Death rates tell us whether children and youth in care are surviving their childhood years, and as such provide a starting point for measuring their health and well-being. However, the development, improvement and strategic linkage of a wide range of data on children and youth will tell us more about their lives than the study of mortality.

In order to assess government’s progress in improving health and well-being outcomes, we need to develop a better understanding of what those outcomes are and establish a baseline against which to measure progress.

Since 1996, provincial and territorial directors of child welfare across Canada have been working on developing a matrix of outcome indicators for children involved with the child welfare system in four broad domains: child safety, child well-being, permanence, and family and community support. Another approach to looking at outcomes is to consider the social determinants of health. These are the complex set of interactions throughout life that affect physical health and well-being. They have been identified as including early childhood care; education, social inclusion, employment and job security, income inequality, housing, and food security.

This joint initiative of the Child and Youth Officer and the Provincial Health Officer is an effort to further our understanding of outcomes for children and youth in care by linking government-funded service utilization over time. Specifically, the initiative aims to:

- describe the health and social well-being of children in government care using currently available and accessible government data
- develop a baseline from which to observe changes in government-funded service utilization and other indications of outcomes over time, including what happens to children and youth after leaving care
- raise issues for further research and consideration
- make recommendations to improve outcomes for children in care, based on the data and on the work of the Child and Youth Officer and the Provincial Health Officer, and
- through the experience gained in these activities, inform the development of a plan for the ongoing monitoring of health and well-being of children and youth in British Columbia, including but not restricted to children who are or have been in care.

The initiative looks at data from administrative databases on services provided for children and youth in care in the following areas:

- health services utilization
- mortality
- experience within the education system
- employment and income assistance services utilization, and
- encounters with the criminal justice system.

This report presents data in the first two of these areas: health services utilization and mortality. On completion of area-specific reports on data in the three remaining areas, the plan for the initiative is to explore correlations of outcome measurements across ministries.

Part 2 of this report presents the data. It contains Medical Services Plan (MSP), PharmaNet, Vital Statistics and hospitalization data for the period 1995 to 2005 on both children in care and children in the general population, and observations about the data.

Part 3 presents reflections and recommendations of the Child and Youth Officer and the Provincial Health Officer on how to improve health and well-being outcomes for children in care, drawing from both the data in the report and other work they have done in this area.



# 2.

## The Data: Health Services Utilization and Mortality

This part of the report contains Medical Services Plan, PharmaNet, Vital Statistics and hospitalization data for the period 1995 to 2005 on both children in continuing care and children in the general population, and observations about the data.

The data observations are presented under three headings:

- 2.1 The children in care population
- 2.2 Health status and health services utilization
- 2.3 Mortality

### Why children in “continuing care”?

This report focuses predominantly on children and youth who are or were in “continuing care” between April 1, 1997 and November 1, 2005. Of the approximately 37,000 children and youth who were in government care at any point during this period, approximately 12,200 were identified as being in continuing care.

The group of children who were in continuing care at any point during the period 1997–2005 was selected for the following reasons:

- After consultation with staff at the Ministry of Children and Family Development, it was determined that the ministry’s Social Work System data were most reliable after April 1997.
- Children in continuing care will have spent a significant amount of time in care, and it is reasonable to assume that this has contributed significantly to their life experience. It is more difficult to draw conclusions about the impact of care on children and youth in temporary care, because the length of time spent in care varies considerably and will have changed over time, as legislation changed the length of time a child could remain in temporary care.

*Continuing care* means the government is the sole guardian of a child with all the rights, duties and responsibilities of a parent and has the right to consent to the adoption of the child. (The Public Guardian and Trustee becomes the guardian of the child’s estate.) Continuing care usually doesn’t end until the child turns 19 or is adopted.

*Temporary care* means the government has custody of the child on a time-limited basis and unless limited by the court carries out the responsibilities of a guardian except the right to consent to an adoption.

Although not included in this report, a limited review of the Medical Services Plan patient data showed similar patterns for children in temporary care as for children in continuing care.

Wherever possible, comparisons are made to the general population of children and youth in British Columbia. By *general population*, we mean children and youth who have never been in care.

### Data sources

While the aim of this report is to understand health and well-being outcomes for children in care by looking at health services utilization and mortality data as a whole, this can only be done by linking individual-level health care records. The Child and Youth Officer obtained this data under the authority of section 11 of the *Office for Children and Youth Act*, which gives the Child and Youth Officer the right to information to perform her duties under the act.

Ministry of Children and Family Development Social Work System data provided individual demographic characteristics for children in care, including Aboriginal status (based on self-identification), legal status, birth date, gender, office and region.

Ministry of Health data obtained included client coverage, hospitalization, Medical Services Plan fee-for-service, PharmaNet prescription dispensing, and Vital Statistics Agency birth and death registrations.

The Ministry of Children and Family Development records were then matched with their respective Ministry of Health records. The process of linking and analyzing the health care data was conducted with the assistance and expertise of staff from the University of British Columbia's Child and Youth Development Trajectories Research Unit and Human Early Learning Partnership.

## Protection of privacy

This initiative links individual service records in order to better understand the population of children in care as a whole, their outcomes, and how they utilize government services. To ensure that the privacy and security needs of children in care are met, a privacy impact assessment was performed. A privacy impact assessment is a process designed to ensure that a project or program complies with the government's privacy protection responsibilities, in accordance with the *Freedom of Information and Protection of Privacy Act*.

## Limitations

The data used in this report are limited to routinely collected administrative data on government services. Not all service interventions are recorded, so there will naturally be some under-reporting.

In addition, the information used here is by no means a complete description of all services used by children in care. There are numerous areas where government data are not available for linkage; in addition, within the service areas that form the basis for this report, there are important outcome variables that are not captured or not available. For example, mental health and addictions records do not exist in a format that would allow electronic linkage of records; health services under alternative payments to individual children cannot be linked; and individual client records for Ministry of Children and Family Development contracted services, such as counselling, do not exist electronically.

We are continuing to pursue other linkages, such as birth weight, and as databases evolve it would be helpful to be able to link information on additional services received such as immunizations, placement histories, and numbers of social workers who have been involved with an individual child in care.

Nevertheless, the existing inter-ministry data sets provide considerable opportunities to learn about outcomes for children in care. The trends we noted are congruent across the different health data sets.



# 2.1

## The Children in Care Population

### Numbers and distribution

In October 2005, there were 9,080 children in the care of the Ministry of Children and Family Development (MCFD). As shown in Figure 1, this accounted for approximately 1% of all children in the province under the age of 19 – 0.5% of non-Aboriginal children and almost 7% of all Aboriginal children in the province (2001 census data). This means that Aboriginal children were many more times likely to be in care than non-Aboriginal children were.

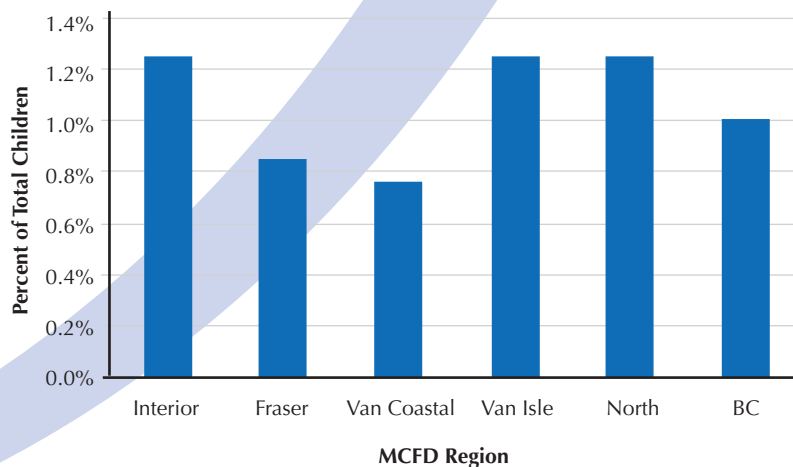
The percentage of the child population in care varied significantly across the Ministry of Children and Family Development regions, from 0.7% in Vancouver Coastal to 1.3% in the Interior and Vancouver Island regions. The percentage of children in care in October 2005 was consistent with the average percentage of children who were in care in the study population between 1997 and 2005.

The 9,080 children in care were geographically distributed across the Ministry of Children and Family Development regions, as shown in Figure 2, with a range of 32% of children in care living in the Fraser region to 11% living in the North region.

In October 2005, there were 9080 children in care, accounting for approximately 1% of all children in British Columbia. Of the total children in care, 49% were Aboriginal children, even though Aboriginal children constitute only 7% of the general population of children in the province.

Figure 1

Children in care by MCFD region<sup>1</sup>

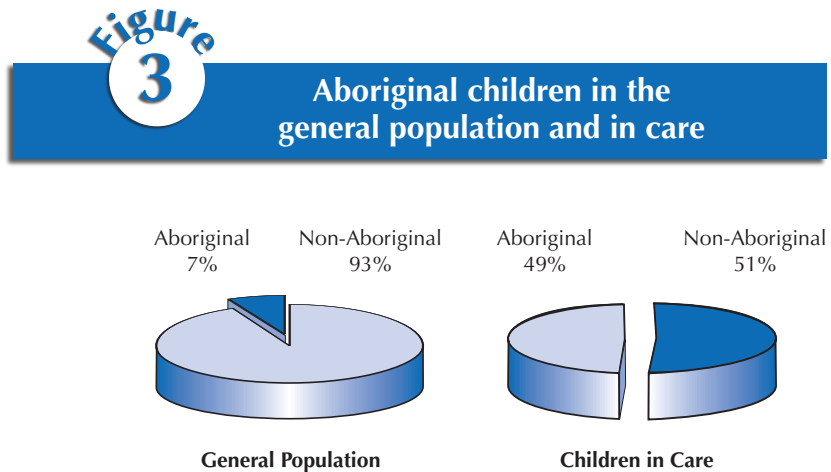
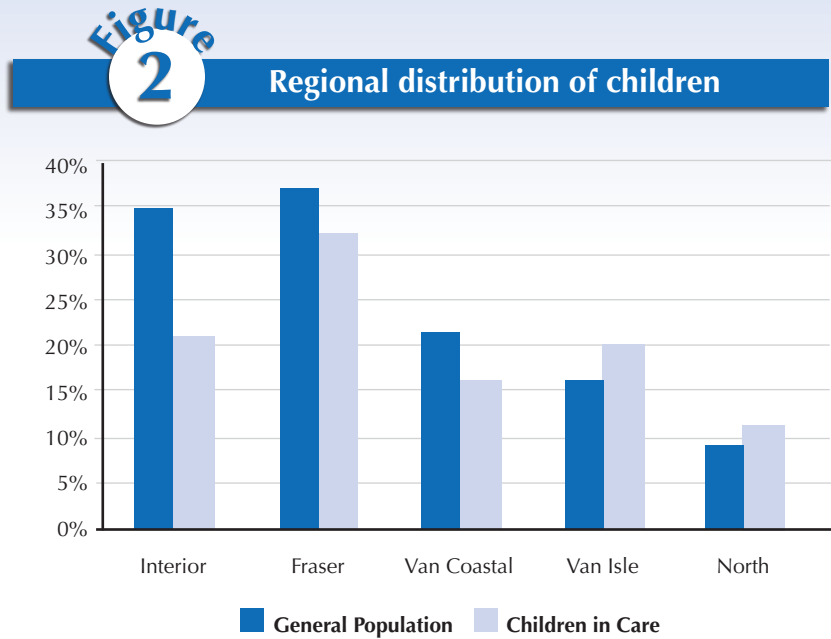


<sup>1</sup> Except for the use of 2001 census data for the general population numbers or as otherwise noted, all data in section 2.1 are from October 2005.



For comparison, Figure 2 also shows the geographic distribution for all children in the province. The Interior, Vancouver Island and the North all had more children in care in proportion to their geographic population of children, whereas the Fraser and Vancouver Coastal region had fewer.

The number of Aboriginal children in care was significantly disproportionate to the number of Aboriginal children in the general population. In 1997, Aboriginal children accounted for 31% of children in care. By 2005, Aboriginal children accounted for 49% of children in care, although they constituted only 7% of the general population.<sup>2</sup> Underlying the increase in the rate of Aboriginal children in care are two factors: the number of non-Aboriginal children in care decreased from 6,309 to 4,655 and the number of Aboriginal children in care increased from 2,901 to 4,425.



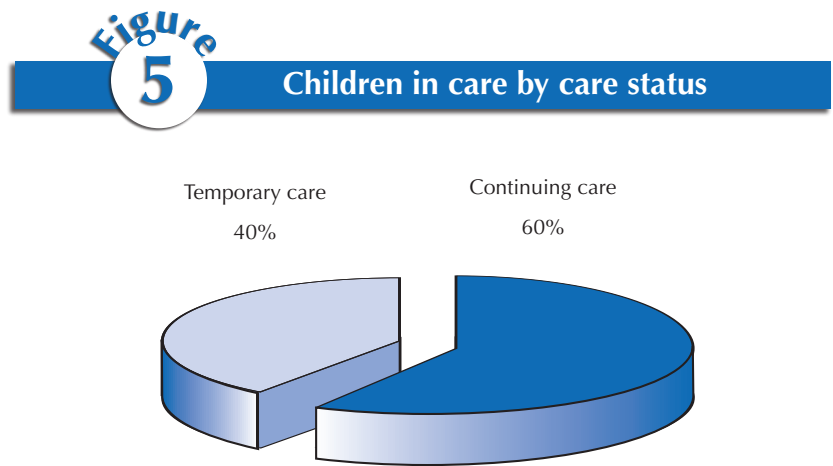
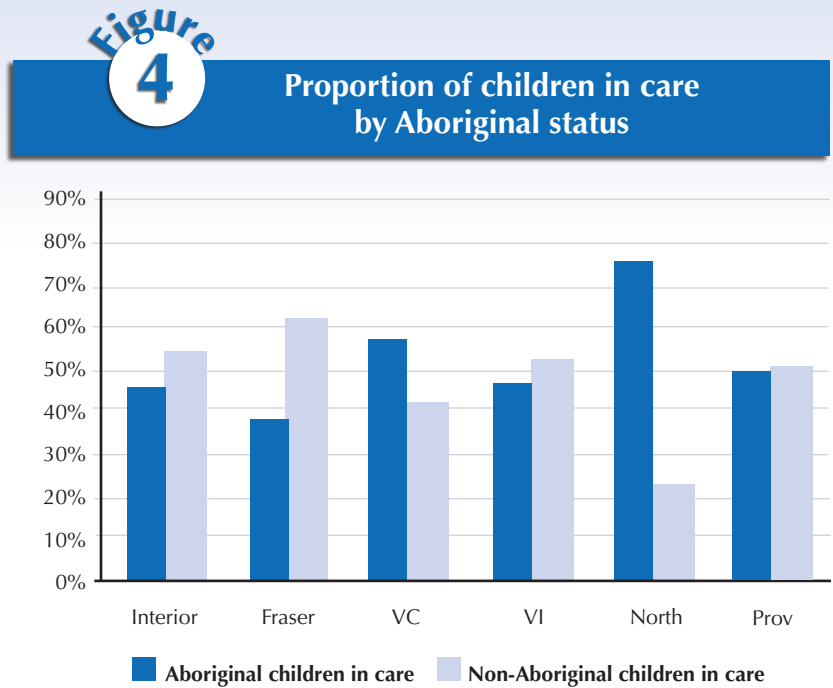
This report uses the same definition of Aboriginal as the Ministry of Children and Family Development uses in its data.

<sup>2</sup> The 7% figure is based on 2001 census data. Population projections for 2006 suggest that almost 9% of children in the general population in the province is of Aboriginal descent.

Figure 4 shows that there was considerable regional variation in the percentage of children in care who were Aboriginal, ranging from 77% in the North down to 37% in the Fraser. The fact that there was a higher proportion of Aboriginal children in care in the North region is likely a reflection of the fact that Aboriginal people make up a higher proportion of the population of the region, although the rate in the North remains disproportionately high.

**Care status**

Children come into the care of the government through various types of agreements and court orders. Figure 5 shows that 60% of the children who were in care were in continuing care. Forty per cent of the children in care were in temporary care.

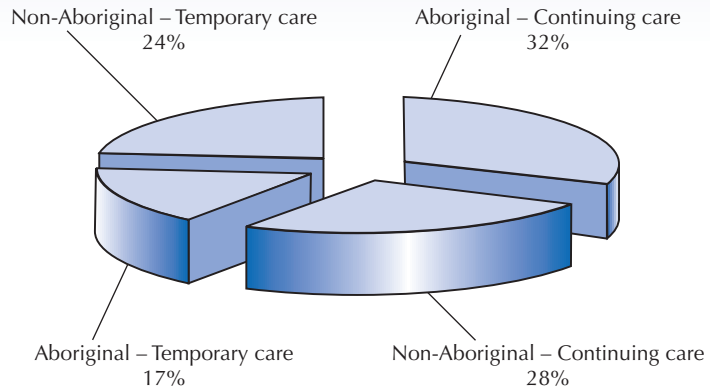


The single largest group of children in care was Aboriginal children in continuing care (Figure 6).

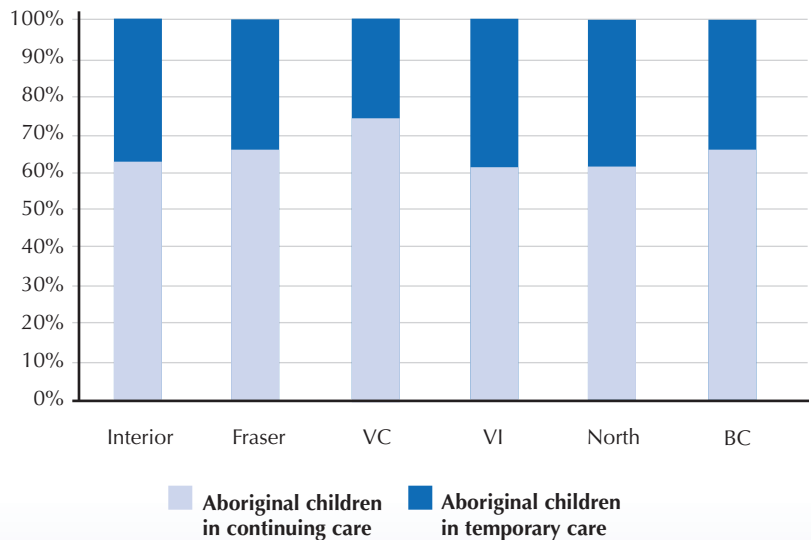
Figure 7 shows the percentage of Aboriginal children in care by care status and by region. Provincially, 66% of Aboriginal children in care were in continuing care – which compares with an overall rate of 54% of non-Aboriginal children.

Although the North region had the highest percentage of Aboriginal children in care, it had the lowest percentage of Aboriginal children who were in continuing care, at 61%. The highest percentage of Aboriginal children in continuing care was in the Vancouver Coastal region, where 75% of all Aboriginal children in care were in continuing care. In the study population (1997–2005), 40% of Aboriginal children in care were in continuing care and 30% of non-Aboriginal children in care were in continuing care.

**Figure 6** Children in care by Aboriginal status and care status



**Figure 7** Aboriginal children in care by care status



## Age of children in care

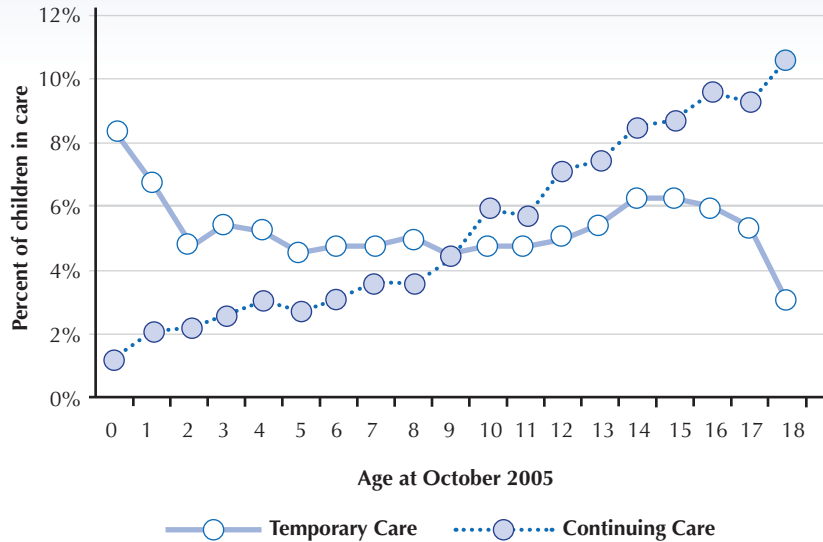
The average age of children in temporary care was lower than for children in continuing care, which is not surprising, given that most children in continuing care would have been in temporary care first (Figure 8).

The average age of Aboriginal children was lower than that of non-Aboriginal children (Figure 9). This is consistent with the study population (1997–2005). One implication of Aboriginal children being younger than non-Aboriginal children is that those in continuing care will likely be in care longer and will constitute a higher percentage of children in continuing care in the future.

Males made up just over half (52%) of children in care. The average age of children in care was the same for males and females.

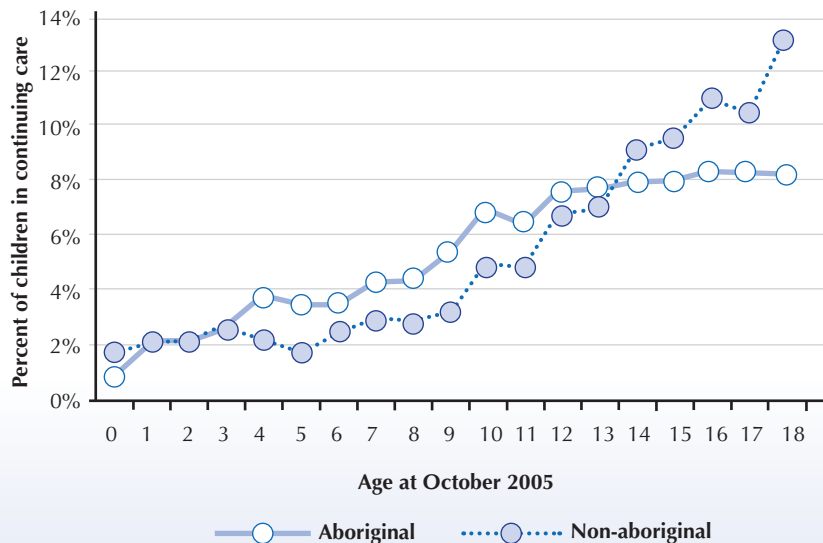
**Figure 8**

**Age distribution of children in care by care status**



**Figure 9**

**Age distribution of children in care by Aboriginal status**



### **Differences between October 2005 and the 1997–2005 descriptions**

The October 2005 description of children in care looks quite different from the study population (1997–2005). In the study population, 33% had been or were in continuing care, versus 67% in temporary care. Thirty-four per cent of the study population was Aboriginal and 66% was non-Aboriginal. The primary reason for this difference is that the October 2005 population of children in care was taken from a month-end census and the study population is a cumulative total.<sup>3</sup>

<sup>3</sup>Month-end census versus cumulative totals: On any given day, if the number of children in care are counted, about 60% of them are in continuing care and 40% are in temporary care. But if the number of children in care are counted over several months or years, the children in temporary care change far more frequently than the children in continuing care. This means that over time a greater number of different children will have been in care on a temporary basis than children who are in care on a continuing basis.

## 2.2

# Health Status and Health Services Utilization

The observations in this section are based on:

- a review of Medical Services Plan data (Tables 1 and 3), and Aboriginal comparison (Table 2)
- a review of PharmaNet data (Tables 4 and 6) and Aboriginal comparison (Table 5)
- a review of hospital data (Tables 7 and 9) and Aboriginal comparison (Table 8)
- major themes arising across the data sets.

In order to identify the most common diagnoses for children, and where health care usage differs the most between children in continuing care and the general population, we looked at both the percentage of individual children diagnosed and the average volume of health services used in three areas: medical practitioner visits (Tables 1 and 2), prescriptions dispensed (Tables 3 and 4) and hospital admissions (Tables 5 and 6).

The numbers in Tables 1, 2, 4, 5, 7, and 8 represent the cumulative percentage of children under the age of 19 accessing health services between 1995 and 2005. The cumulative percentages would change by shortening or extending the time period, but they provide an indication of the major categories of health conditions that affect children.

Tables 3, 6, and 9 provide a picture of how much service the populations used between 1995 and 2005. Tables 2, 5 and 8 contrast Aboriginal and non-Aboriginal children in continuing care.

The most meaningful statistic in each of the tables is the difference ratio between children in continuing care and in the general population, which shows where the two populations are similar and where they differ.

Children in continuing care received services for the same kinds of conditions as children who had never been in care. Overall, however, more children in continuing care used more health care services more often than children not in care.

Patterns of health care service use were similar for Aboriginal children in continuing care and non-Aboriginal children in continuing care in most instances – with some notable exceptions, such as use of services related to perinatal conditions and pregnancy.

### Notes about the health services utilization data

The data and observations in this section are for children under the age of 19 who were in the continuing care of the Ministry of Children and Family Development for all or part of the period 1997–2005 and for children under the age of 19 in the general population during this same period. (For more information on how these numbers were calculated, see Appendix A.) However, the health records analyzed were for services received during the period 1995–2005.

In the report, when we refer to children in continuing care receiving health care services, these services could have been received before, while or after the children were in care, anytime between 1997 and 2005.

The data are presented in tables and figures.

All data in the tables and figures in section 2.2 are for children under age 19 and for the period 1995–2005, unless otherwise noted.

In addition, to avoid the effect of any age discrepancies between the populations of children in continuing care and children who have never been in care, the data in the tables in section 2.2 as well as Figures 10, 13, 16, 26, 33, 37 and 38 have been age-standardized. As well, statistical testing was done to identify those differences between the two populations that are unlikely to be due to chance.

Discrepancies in numbers between tables comparing Aboriginal and non-Aboriginal children in continuing care and tables comparing children in continuing care with the general population are due to the Aboriginal tables being age-adjusted to the Aboriginal population and the tables contrasting children in continuing care with the general population being age-adjusted to children in continuing care.

In presenting the data, we have used the International Classification of Disease Revision 9 (ICD9), an international system of disease classification used by both the Medical Services Plan and hospitals.

For the PharmaNet data, we have used the American Hospital Formulary Standard (AHFS). Because the AHFS has such a large number of medication classes, we decided to consider all AHFS therapeutic class level IIs where at least 7% of children were affected. The therapeutic class level II was selected because it provides a level of detail similar to the ICD9 chapter classifications for Medical Services Plan and hospital data; the 7% cutoff was selected because below 7% the numbers of children affected are very small.

## Medical Services Plan (MSP) data

### *Children in continuing care and children in the general population*

Table 1 gives the percentages of children who were diagnosed by a medical practitioner for broad categories of conditions.

The most common conditions for which both children in continuing care and children in the general population were diagnosed by a medical practitioner at least once were:

- general symptoms and ill-defined conditions (e.g., where more specific diagnoses are not made)
- respiratory conditions (e.g., infections, colds, sore throats and bronchitis)
- the nervous system and sense organs (e.g., near/short-sightedness, earaches, pink eye)
- injuries (e.g., sprains, strains and wounds)
- skin conditions (e.g., patchy skin colour, eczema, infections), and
- infectious and parasitic diseases (e.g., intestinal infections, chicken pox, strep throat and viruses).

However, children in continuing care were diagnosed for these conditions 1.2 to 1.4 times more often than were children in the general population.

Table 1 also shows that while mental disorders (e.g., conduct disorder, ADHD, depression, anxiety) were not a common diagnosis for children in the general population, they were experienced by approximately 65% of children in continuing care. This was approximately four times greater than for children who have never been in care.

Although fewer children were diagnosed with the remaining conditions, children in continuing care were diagnosed more frequently and at a greater rate than children who had never been in care in the following circumstances:

- Children in continuing care were more than 1.5 times more likely to be diagnosed with endocrine system conditions (e.g., diabetes, obesity), circulatory system conditions (e.g., hypertension, irregular heartbeat) and congenital anomalies (e.g., heart, musculoskeletal and limbs) than were children who had never been in care.
- Children in continuing care themselves experienced perinatal health conditions (i.e., during gestation and during the first week after birth) more than 3.7 times as frequently as children who had never been in care.

Children in continuing care and children in the general population experienced the same common health conditions. However, children in continuing care were diagnosed for these conditions in greater numbers.

***While mental disorders are not a common diagnosis for children in the general population, they are experienced by approximately 65% of children in continuing care.***



- Young women in continuing care became pregnant at a rate more than four times that of young women who had never been in care.

In general, with the exception of neoplasms (cancer), children in continuing care were 1.2 to 4.1 times as likely to be diagnosed with a medical condition than were children who had never been in care.

**Table 1: Children who have ever received services, by ICD9 chapter**

ICD9 chapter and description	Females general population	Females continuing care	Difference ratio	Males general population	Males continuing care	Difference ratio
1. Infectious and parasitic diseases	43%	62%	1.4*	41%	51%	1.3*
2. Neoplasms	8%	9%	1.1*	7%	7%	1.0
3. Endocrine system	6%	10%	1.7*	5%	8%	1.5*
4. Blood disorders	4%	6%	1.5*	3%	4%	1.2*
5. Mental disorders	17%	63%	3.8*	17%	67%	3.9*
6. Nervous system and sense organs	68%	87%	1.3*	66%	82%	1.2*
7. Circulatory system	5%	9%	1.8*	5%	8%	1.7*
8. Respiratory system	70%	89%	1.3*	69%	84%	1.2*
9. Digestive System	25%	37%	1.5*	24%	33%	1.4*
10. Genitourinary system	31%	55%	1.7*	14%	17%	1.3*
11. Pregnancy/birth	4%	17%	4.1*	N/A	N/A	N/A
12. Skin	51%	64%	1.2*	48%	59%	1.2*
13. Musculoskeletal system	33%	47%	1.4*	33%	42%	1.3*
14. Congenital anomalies	5%	9%	1.7*	6%	10%	1.8*
15. Perinatal period	3%	13%	4.1*	3%	11%	3.4*
16. Symptoms & signs	73%	95%	1.3*	72%	92%	1.3*
17. Injury and poisoning	51%	73%	1.4*	58%	78%	1.4*

\* Statistically significant at the 95% confidence level.

### **Aboriginal children and non-Aboriginal children in continuing care**

Table 2 compares the percentages of Aboriginal children and non-Aboriginal children in continuing care as diagnosed by a medical practitioner by category of condition and disease.

In general, Aboriginal children in continuing care were diagnosed for health conditions in a pattern similar to non-Aboriginal children. This similarity mirrors

our mortality findings, which showed similar rates for Aboriginal children and non-Aboriginal children in care (see 2.3 Mortality).

Notable exceptions to the similarity in diagnoses were:

- blood disorders (e.g., anemias)
- services required during the perinatal period, and
- pregnancy and childbirth.

For these conditions, Aboriginal children in continuing care were diagnosed about 30% more often than were non-Aboriginal children in continuing care.

There are also a number of areas where Aboriginal children were diagnosed about 10% less frequently than non-Aboriginal children were, including neoplasms (cancers), endocrine system conditions, and congenital anomalies.

**Table 2: Children in continuing care who have ever received services, by ICD9 chapter, by Aboriginal status and gender**

ICD9 chapter and description	Females Aboriginal	Females non-Aboriginal	Difference ratio	Males Aboriginal	Males non-Aboriginal	Difference ratio
1. Infectious and parasitic diseases	62%	65%	1.0	55%	55%	1.0
2. Neoplasms	8%	9%	0.9	6%	7%	0.9
3. Endocrine system	9%	10%	0.9	7%	9%	0.7*
4. Blood disorders	7%	5%	1.3*	4%	4%	1.2
5. Mental disorders	63%	63%	1.0	68%	69%	1.0
6. Nervous system and sense organs	91%	86%	1.1*	86%	84%	1.0*
7. Circulatory System	10%	8%	1.2	8%	8%	1.1
8. Respiratory system	91%	89%	1.0*	86%	86%	1.0
9. Digestive system	39%	35%	1.1*	35%	35%	1.0
10. Genitourinary system	49%	48%	1.0	17%	19%	0.9*
11. Pregnancy/birth	15%	12%	1.3*	N/A	N/A	N/A
12. Skin	65%	63%	1.0	60%	59%	1.0
13. Musculoskeletal system	43%	43%	1.0	39%	40%	1.0
14. Congenital anomalies	9%	10%	0.9	10%	12%	0.9
15. Perinatal period	16%	12%	1.4*	15%	12%	1.2*
16. Symptoms & signs	95%	95%	1.0	93%	93%	1.0
17. Injury and poisoning	75%	71%	1.0*	79%	77%	1.0

\* Statistically significant at the 95% confidence level.

## Services

Not only were children in continuing care more likely to be diagnosed with a health condition in general, they also required more services to address that condition.

Table 3 shows the average number of services per patient and the difference in service use between children in continuing care and children who had never been in care.

Children in continuing care required 1.3 to 2.7 times more services for conditions related to the endocrine system, perinatal period, congenital anomalies, mental disorders, general symptoms and ill-defined conditions, and genitourinary systems (e.g., menstruation disorders, urinary tract disorders, bladder infections, genital organ disorders) and for females, pregnancy and birth-related conditions.

**Table 3: Average number of services per patient, by ICD9 Chapter**

ICD9 chapter and description	Females general population	Females continuing care	Difference ratio	Males general population	Males continuing care	Difference ratio
1. Infectious and parasitic diseases	3.0	3.1	1.0*	3.0	3.1	1.0*
2. Neoplasms	2.7	2.5	0.9*	2.8	2.6	0.9*
3. Endocrine system	3.2	4.0	1.3*	3.1	4.8	1.6*
4. Blood disorders	2.0	2.4	1.2*	2.3	2.9	1.3*
5. Mental disorders	5.1	11.9	2.3*	5.8	15.4	2.7*
6. Nervous system and sense organs	5.4	6.7	1.3*	5.6	6.7	1.2*
7. Circulatory system	1.8	2.3	1.3*	1.9	2.2	1.2*
8. Respiratory system	7.6	8.5	1.1*	8.2	8.0	1.0*
9. Digestive system	2.6	3.3	1.2*	2.7	3.4	1.3*
10. Genitourinary system	3.2	5.4	1.7*	2.5	2.3	0.9*
11. Pregnancy/birth	3.3	5.5	1.7*	N/A	N/A	N/A
12. Skin	3.7	3.3	0.9*	3.7	3.2	0.9*
13. Musculoskeletal system	6.8	6.2	0.9*	5.2	4.5	0.9*
14. Congenital anomalies	3.7	6.8	1.9*	3.9	6.6	1.7*
15. Perinatal period	3.5	5.8	1.7*	3.5	7.1	2.0*
16. Symptoms & signs	7.4	11.2	1.5*	7.3	9.9	1.4*
17. Injury And poisoning	5.2	6.0	1.1*	5.8	6.5	1.1*

\* Statistically significant at the 95% confidence level.

## PharmaNet data

A common outcome of seeing a medical practitioner is being prescribed medication. Table 4 shows the percentage of children in continuing care and in the general population who had at least one prescription dispensed during the period 1995–2005.

The four most commonly prescribed medication classes for all children, as shown in Table 4, were:

- antibiotics
- anti-infectives (topical antibiotics, topical anti-fungals and topical anti-virals)
- anti-inflammatory medications, and
- analgesics and antipyretics.

In these four classes, 1.3 to 1.9 times more children in continuing care were prescribed these medications than were children in the general population.

Table 4 also shows that children in continuing care were prescribed mental health–related drugs at a much higher rate than were children who had never been in care. Children in continuing care were prescribed respiratory and cerebral stimulants (Ritalin-type medications) at a rate 8.5 to 12 times higher than children who had never been in care, and psychotherapeutic agents (anti-depressants, tranquilizers and anti-psychotics) at a rate 5.5 to 8 times higher. Anxiolytic, sedative and hypnotic medications (anxiety, tension and neurosis medications) were prescribed at a rate 2.5 times that of the general population, and unclassified therapeutic agents more than 1.5 times the general population rate. Analgesic and antipyretic medications (pain relievers) were also prescribed at a rate 1.8 times as often.

In addition, Table 4 and Figure 32 show that birth-control medications (contraceptives and progestins) were prescribed for females in continuing care at rates two to seven times higher than for females who had never been in care.

***Birth-control medications (contraceptives and progestins) were prescribed for females in continuing care at rates two to seven times higher than for females who had never been in care.***

The PharmaNet data show a pattern similar to the MSP data: children in continuing care were prescribed more medications much more frequently and for longer periods of time than were children who had never been in care.

Although they affected fewer children generally, anti-anemia drugs (iron), antiemetics (used to control vomiting) and miscellaneous gastrointestinal drugs (heartburn and ulcerative colitis–type medications) were prescribed for children in continuing care at rates 2.4 to 7 times greater than for children who had never been in care.

**Table 4: Children having at least one prescription dispensed**

AHFS Therapeutic Class Level II	Females general population	Females continuing care	Difference ratio	Males general population	Males continuing care	Difference ratio
08:12 Antibiotics	71%	92%	1.3*	71%	89%	1.3*
08:40 Misc. anti-infectives	24%	42%	1.7*	17%	23%	1.3*
12:12 Adrenergic agents	17%	31%	1.9*	19%	30%	1.5*
20:04 Antianemia drugs	1%	7%	7.0*	1%	3%	5.1*
28:08 Analgesics & antipyretics	25%	48%	1.9*	23%	40%	1.7*
28:16 Psychotherapeutic agents	5%	29%	5.5*	4%	31%	8.1*
28:20 Respiratory & cerebral stimulants	1%	14%	12.1*	4%	33%	8.5*
28:24 Anxiolytics sedatives & hypnotics	7%	19%	2.7*	6%	14%	2.4*
48:08 Antitussives	12%	14%	1.2*	11%	11%	1.0
52:04 Anti-infectives	23%	35%	1.5*	22%	30%	1.3*
52:08 Anti-inflammatory agents	11%	19%	1.6*	13%	18%	1.4*
56:22 Antiemetics	2%	9%	4.5*	1%	3%	2.8*
56:40 Misc. gastrointestinal drugs	5%	12%	2.6*	3%	7%	2.4*
68:04 Adrenals	15%	24%	1.6*	16%	24%	1.5*
68:12 Contraceptives	15%	32%	2.1*	N/A	N/A	N/A
68:32 Progestins	3%	24%	7.2*	N/A	N/A	N/A
84:04 Anti-infectives	23%	51%	2.3*	20%	41%	2.0*
84:06 Anti-inflammatory agents	30%	46%	1.5*	27%	37%	1.4*
92:00 Unclassified therapeutic agents	4%	7%	1.8*	4%	6%	1.5*
92:99 Cmps/Corr/Invest**	17%	26%	1.5*	14%	21%	1.4*

\* Statistically significant at the 95% confidence level.

\*\* Compounds/Corrections Use/Investigational Drugs.

As shown in Table 5, dispensing patterns for Aboriginal children in continuing care resembled those for non-Aboriginal children in care, with a few notable exceptions: Aboriginal children were prescribed antiemetics almost 2.5 times more often than non-Aboriginal children were, and antitussive medications (cough suppressants) were prescribed for Aboriginal children 1.7 times more often than for non-Aboriginal children. In addition, iron supplements were prescribed more than twice as often for Aboriginal children as they were for non-Aboriginal children.

**Table 5: Children in continuing care by Aboriginal status having at least one prescription dispensed**

AHFS Therapeutic Class Level II	Females Aboriginal	Females non-Aboriginal	Difference ratio	Males Aboriginal	Males non-Aboriginal	Difference ratio
08:12 Antibiotics	93%	91%	1.0*	91%	89%	1.0*
08:40 Misc. anti-infectives	41%	40%	1.0	24%	26%	0.9
12:12 Adrenergic agents	31%	31%	1.0	31%	33%	1.0
20:04 Antianemia drugs	10%	4%	2.7*	5%	3%	1.8*
28:08 Analgesics & antipyretics	49%	36%	1.4*	42%	31%	1.4*
28:16 Psychotherapeutic agents	24%	28%	0.9*	27%	33%	0.8*
28:20 Respiratory & cerebral stimulants	14%	16%	0.9	32%	36%	0.9*
28:24 Anxiolytics sedatives & hypnotics	16%	18%	0.9*	13%	15%	0.9
48:08 Antitussives	18%	11%	1.6*	16%	9%	1.8*
52:04 Anti-Infectives	40%	35%	1.1*	35%	31%	1.1
52:08 Anti-inflammatory agents	19%	18%	1.0	18%	19%	0.9
56:22 Antiemetics	12%	5%	2.1*	5%	2%	2.8*
56:40 Misc. gastrointestinal drugs	10%	10%	1.0	7%	7%	0.9
68:04 Adrenals	23%	23%	1.0	25%	26%	1.0
68:12 Contraceptives	25%	27%	0.9	N/A	N/A	N/A
68:32 Progestins	23%	19%	1.3*	N/A	N/A	N/A
84:04 Anti-infectives	58%	46%	1.3*	47%	38%	1.2*
84:06 Anti-inflammatory agents	49%	44%	1.1*	40%	39%	1.0
92:00 Unclassified therapeutic agents	8%	6%	1.3*	8%	6%	1.4*
92:99 Cmps/Corr/Invest**	26%	28%	0.9	24%	21%	1.1

\* Statistically significant at the 95% confidence level.

\*\* Compounds/Corrections Use/Investigational Drugs.

*Children in continuing care were prescribed mental health-related drugs at a much higher rate than were children who had never been in care. Children in continuing care were prescribed Ritalin-type medications at a rate 8.5 to 12 times higher than children who had never been in care, and anti-depressants, tranquilizers and anti-psychotics at a rate 5.5 to 8 times higher.*

**Table 6: Number of days' supply prescribed per patient**

AHFS Therapeutic Class Level II	Females general population	Females continuing care	Difference ratio	Males general population	Males continuing care	Difference ratio
08:12 Antibiotics	60	73	1.2*	64	71	1.1*
08:40 Misc. anti-infectives	26	30	1.2*	29	43	1.5*
12:12 Adrenergic agents	107	134	1.3*	125	163	1.3*
20:04 Antianemia drugs	93	111	1.2*	86	104	1.2*
28:08 Analgesics & antipyretics	23	39	1.7*	17	24	1.4*
28:16 Psychotherapeutic agents	295	564	1.9*	388	882	2.3*
28:20 Respiratory & cerebral stimulants	540	1006	1.9*	704	1262	1.8*
28:24 Anxiolytics sedatives & hypnotics	41	112	2.7*	44	169	3.8*
48:08 Antitussives	22	18	0.8*	24	17	0.7*
52:04 Anti-infectives	14	17	1.2*	15	17	1.1*
52:08 Anti-inflammatory agents	45	46	1.0*	55	52	0.9*
56:22 Antiemetics	29	41	1.4*	31	98	3.2*
56:40 Misc. gastrointestinal drugs	68	136	2.0*	80	220	2.7*
68:04 Adrenals	90	143	1.6*	117	172	1.5*
68:12 Contraceptives	315	314	1.0	N/A	N/A	N/A
68:32 Progestins	240	321	1.3*	N/A	N/A	N/A
84:04 Anti-infectives	30	33	1.1*	28	30	1.1*
84:06 Anti-inflammatory agents	57	55	1.0*	61	58	0.9*
92:00 Unclassified therapeutic agents	124	181	1.5*	153	314	2.0*
92:99 Cmps/Corr/Invest**	54	63	1.2*	52	75	1.4*

\* Statistically significant at the 95% confidence level.

\*\* Compounds/Corrections Use/Investigational Drugs.

In addition to medications being prescribed more often for children in continuing care, medications were also prescribed for longer periods. Table 6 shows the average number of days' supply for prescribed medications.

While children in continuing care were prescribed mental health drugs (psychotherapeutics, cerebral stimulants and anxiolytics) at rates 2.4 to 12 times higher than children never having been in care, they were also prescribed these drugs for periods 1.8 to 3.8 times as long. This could suggest that children in continuing care have more severe mental health issues than children who have not been in care, or that children in continuing care are treated differently from children who have not been in care – for example, with greater reliance on drug therapies than on psychotherapies.

Miscellaneous gastrointestinal drugs were prescribed for more than twice as long for children in continuing care as for patients who had never been in care, and analgesics/antipyretic, adrenals and unclassified therapeutic agents were prescribed for more than 1.5 times as long.

## Hospital data

Children in continuing care were admitted to hospital mostly for the same reasons as children who had never been in care, but more frequently and in general for longer periods of time.

As shown in Table 7, the three most common reasons for admission to hospital shared by all children were digestive conditions, respiratory conditions, and injuries and poisonings, although children in continuing care were admitted at rates almost 2 to 3.5 times greater than the rate for children in the general population.

For children in continuing care, mental health disorders were the second most common reason for admission, at a rate almost 15 to 19 times greater than for children who had never been in care. For females in continuing care, the most common reason for a hospital admission was for a pregnancy or childbirth-related issue, at a rate five times greater than for females in the general population.

Hospital admissions for digestive system conditions were primarily related to dental diseases, disorders and anomalies, and to a much lesser extent appendicitis. Respiratory-related admissions were primarily for children under the age of three, and were for tonsils and adenoids, bronchitis, asthma and pneumonia.

Many fewer children were admitted to hospital than saw a medical practitioner to deal with their health conditions. Acute hospital care is required for more serious health issues where treatment and observation require the patient to be admitted.



The most common injuries and poisonings requiring children in continuing care to be hospitalized were fractures, poisonings by analgesics and antipyretics, and poisonings by psychotropic agents (mood-altering drugs). The most common reason for hospital admission in the general population was also for fractures; however, poisonings were far less common in the general population. Mental disorders requiring hospitalization included adjustment reaction (psychological reaction to profound change in a person's life), affective psychoses (e.g., bi-polar disorder) and neurotic disorders (e.g., anxieties and phobias). Children who had never been in care were also admitted to hospital for the same kinds of reasons as children in continuing care, although less frequently.

Children in continuing care were also hospitalized, although less frequently, for infectious and parasitic diseases (e.g., intestinal infections and viral infections), nervous system and sense organs conditions (e.g., ear tubes, ear infections, crossed eyes and epilepsy), circulatory system conditions (e.g., irregular heartbeat), and congenital anomalies (e.g., anomalies of the genitals, digestive tract, face and cleft palate); during the perinatal period (e.g., disorders due to low birth weight, respiratory conditions, and jaundice); and for signs, symptoms and ill-defined conditions – but at rates 1.8 to 3.4 times greater than for children who had never been in care.

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***For females in continuing care, the most common reason for a hospital admission was for a pregnancy or childbirth-related issue, at a rate five times greater than for females in the general population.***

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**Table 7: Children who have ever been hospitalized, by ICD9 chapter**

Hospital admission by ICD9 chapter and description	Females general population	Females continuing care	Difference ratio	Males general population	Males continuing care	Difference ratio
1. Infectious and parasitic diseases	1.0%	2.3%	2.4*	1.0%	1.9%	1.9*
2. Neoplasms	0.5%	0.7%	1.4*	0.4%	0.4%	1.0
3. Endocrine system	0.3%	0.5%	1.7*	0.3%	0.7%	2.4*
4. Blood disorders	0.2%	0.2%	1.1	0.2%	0.3%	1.4
5. Mental disorders	0.7%	10.8%	14.7*	0.6%	10.8%	19.3*
6. Nervous system and sense organs	1.7%	5.3%	3.1*	2.3%	5.5%	2.4*
7. Circulatory system	0.1%	0.3%	1.9	0.2%	0.4%	2.1*
8. Respiratory system	4.1%	8.4%	2.0*	4.8%	9.0%	1.9*
9. Digestive system	4.7%	10.2%	2.2*	5.3%	11.1%	2.1*
10. Genitourinary system	1.2%	3.7%	3.0*	1.8%	2.1%	1.1
11. Pregnancy/birth	2.7%	13.4%	5.0*	N/A	N/A	N/A
12. Skin	0.4%	0.7%	1.8*	0.5%	0.9%	1.9*
13. Musculoskeletal system	1.0%	1.6%	1.6*	1.0%	1.6%	1.6*
14. Congenital anomalies	0.8%	1.5%	1.8*	1.3%	2.8%	2.1*
15. Perinatal period	0.5%	1.7%	3.4*	0.6%	1.5%	2.4*
16. Symptoms and signs	1.3%	4.3%	3.3*	1.2%	3.5%	2.8*
17. Injury and poisoning	2.6%	9.0%	3.4*	4.5%	9.5%	2.1*

\* Statistically significant at the 95% confidence level.

Aboriginal children in continuing care were admitted to hospital for the same reasons as non-Aboriginal children in continuing care, including digestive system issues, respiratory system, mental health disorders, injuries and poisoning, and for females, pregnancy and childbirth–related issues.

Aboriginal children in continuing care were admitted to hospital at 1.3 times the rate of non-Aboriginal children for digestive system issues (teeth), and Aboriginal females were admitted to hospital at a rate 1.4 times greater than non-Aboriginal females were for pregnancy and childbirth–related issues.

As shown in Table 9, when children in continuing care were admitted to hospital, they were admitted on average for longer periods of time than were children who had not been in care.

**Table 8: Children in continuing care by Aboriginal status who have ever been hospitalized, by ICD9 chapter**

Hospital admission by ICD9 chapter and description	Females Aboriginal	Females non-Aboriginal	Difference ratio	Males Aboriginal	Males non-Aboriginal	Difference ratio
1. Infectious and parasitic diseases	2.1%	2.6%	0.8	2.3%	1.9%	1.2
2. Neoplasms	0.8%	0.6%	1.3	0.3%	0.5%	0.7
3. Endocrine system	0.6%	0.4%	1.6	0.7%	0.7%	1.0
4. Blood disorders	0.2%	0.2%	1.4	0.3%	0.3%	1.1
5. Mental disorders	9.5%	9.8%	1.0	7.6%	11.7%	0.7
6. Nervous system and sense organs	6.3%	6.0%	1.0	5.9%	7.0%	0.8
7. Circulatory system	0.2%	0.3%	0.8	0.5%	0.4%	1.5
8. Respiratory system	9.5%	8.6%	1.1	11.2%	9.8%	1.1*
9. Digestive system	11.8%	8.4%	1.4*	13.0%	10.7%	1.2*
10. Genitourinary system	2.7%	3.8%	0.7*	1.6%	2.6%	0.6
11. Pregnancy/birth	11.9%	8.6%	1.4*	N/A	N/A	N/A
12. skin	0.7%	0.7%	1.0	0.9%	0.9%	1.0
13. Musculoskeletal system	1.4%	1.6%	0.9	1.2%	1.8%	0.7
14. Congenital anomalies	1.8%	1.6%	1.1	2.7%	3.8%	0.7
15. Perinatal period	2.0%	1.4%	1.4	2.1%	1.7%	1.2
16. Symptoms and signs	3.9%	4.7%	0.8	3.1%	4.2%	0.7
17. Injury and poisoning	9.4%	8.0%	1.2	9.9%	8.6%	1.2*

\* Statistically significant at the 95% confidence level.

When admitted for a congenital anomaly, children in continuing care remained in hospital more than twice as long as children who had never been in care and more than twice as long with respect to perinatal health conditions.

In terms of the most common reasons children in continuing care were admitted to hospital, they remained in hospital almost twice as long for respiratory issues as children who had never been in care, 1.5 times as long for injuries and poisonings, and 1.4 times as long for males with respect to digestive system issues. Females remained in hospital 1.7 times longer than females who had never been in care did for pregnancy and childbirth–related issues.

However, with respect to mental health disorders, children in continuing care were admitted on average for shorter periods of time than were children who had never been in care – 30% shorter for females and 20% shorter for males.

**Table 9: Average number of hospital days per case, by ICD9 chapter**

Hospital admission by ICD9 chapter and description	Females general population	Females continuing care	Difference ratio	Males general population	Males continuing care	Difference ratio
1. Infectious and parasitic diseases	2.6	3.9	1.5*	2.7	4.3	1.6*
2. Neoplasms	2.9	5.5	1.9*	3.6	2.0	0.5*
3. Endocrine system	5.5	3.7	0.7*	5.1	5.1	1.0*
4. Blood disorders	4.0	4.3	1.1*	3.8	3.9	1.0*
5. Mental disorders	10.8	7.9	0.7*	12.2	10.2	0.8*
6. Nervous system and sense organs	0.8	1.3	1.6*	0.7	1.3	1.9*
7. Circulatory system	3.8	6.6	1.7*	3.7	5.4	1.4*
8. Respiratory system	1.7	3.1	1.9*	1.8	3.5	1.9*
9. Digestive system	1.0	1.0	1.0*	0.9	1.3	1.4*
10. Genitourinary system	1.9	3.6	1.9*	0.9	1.4	1.5*
11. Pregnancy/birth	1.1	1.8	1.7*	N/A	N/A	N/A
12. Skin	1.7	2.4	1.4*	2.0	2.9	1.5*
13. Musculoskeletal system	1.5	3.2	2.1*	1.6	2.5	1.6*
14. Congenital anomalies	2.4	5.4	2.3*	1.8	4.4	2.5*
15. Perinatal period	8.0	15.5	1.9*	7.7	18.5	2.4*
16. Symptoms and signs	1.9	4.2	2.2*	1.9	2.9	1.6*
17. Injury and poisoning	2.2	3.3	1.5*	2.1	3.0	1.4*

\* Statistically significant at the 95% confidence level.

## Themes arising across the data sets

A number of themes arise across the data sets shown in Tables 1 through 9. While each of the ICD9 chapter headings could become the basis for a separate report, the intention here is to comment on a number of health issues either that affect the majority of children and youth in care or where the differences in health care utilization between children in care and the general population are large.

These themes include:

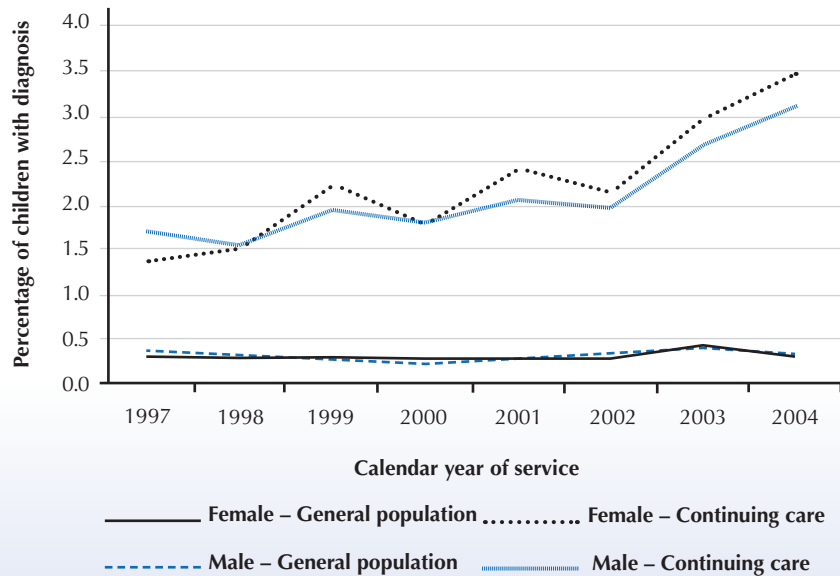
- perinatal health and congenital anomalies
- respiratory conditions
- injuries and poisonings
- mental health disorders, and
- pregnancy and childbirth–related issues.

### Perinatal health and congenital anomalies

As shown in Tables 1, 3, 7 and 9, children in continuing care as a group were more vulnerable in terms of their health – right from birth – than were children in the general population. An average of 12% of children in continuing care had been diagnosed with health concerns during the perinatal period (during the later stages of gestation and up to the first week after birth), as compared with 3% of children in the general population.

The most common perinatal diagnoses were related to the fetus or newborn being affected by maternal conditions (including hypertension, renal and urinary tract diseases, and infections), other

**Figure 10** Children with perinatal conditions by care status (ICD9 codes 740-759)



## Figure 11

### Children who saw an MSP-paid medical practitioner for a congenital anomaly (ICD9 Chapter 14)

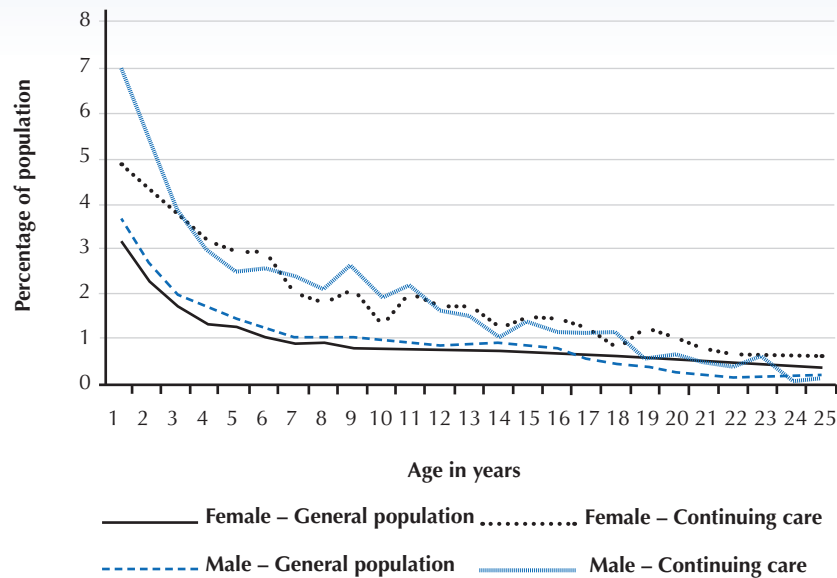
and ill-defined conditions (e.g., convulsions, central nervous system dysfunction, feeding problems and drug withdrawal syndrome), respiratory distress, and disorders relating to low birth weight.

Perinatal health was one of the areas where Aboriginal children in continuing care were more vulnerable than non-Aboriginal children in continuing care (Tables 2 and 8), with 16% of Aboriginal children having been diagnosed with perinatal health conditions (compared with 12% of non-Aboriginal).

Between 1997 and 2004, the rate of children in continuing care diagnosed with a perinatal condition more than doubled – from around 1.5% to 3% – while the rate in the general population remained constant at 0.3% (Figure 10). This might suggest that more children with compromised health are coming into care, which has implications for both services for children and challenges for caregivers.

The most common congenital anomalies for children in continuing care were the same anomalies affecting the general population of children: heart anomalies, musculoskeletal deformities (e.g., deformities of the skull, spine, and feet, and bowed legs), and anomalies in the limbs. Between 1995 and 2005, 10% of males and 9% of females in continuing care had been diagnosed with congenital anomalies (see Table 1). Overall, children in continuing care were diagnosed with a congenital anomaly 1.7 times more often than children in the general population were.

Figure 11 shows that the highest percentages of children seeing a medical practitioner for a congenital anomaly occurred during the first year of life. About 7% of males and 5% of females in continuing care were seen for a congenital anomaly, compared with about 4% of males and 3.5% of females



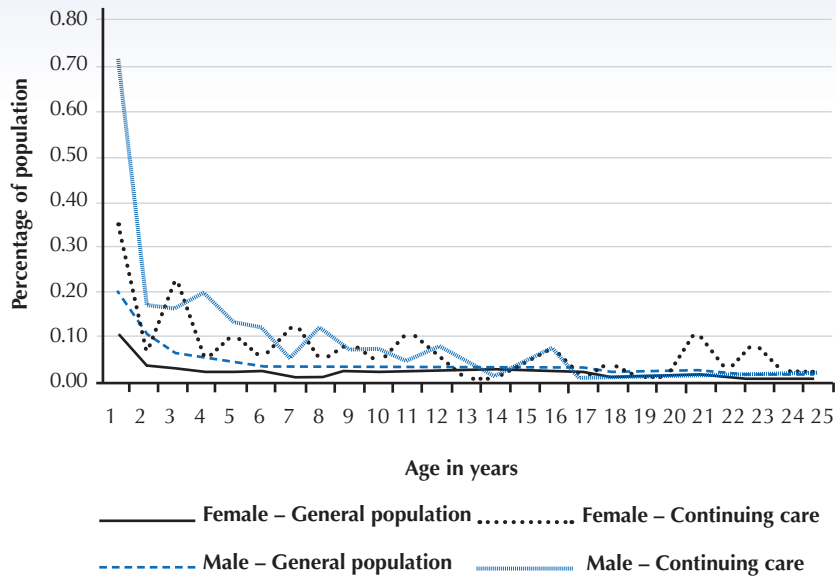
in the general population. By age three, the figure dropped to around 3% for children in continuing care and less than 2% for the general population. As a group, Aboriginal children in continuing care were diagnosed with congenital anomalies about 10% less often than were non-Aboriginal children in continuing care.

Hospitalization rates for congenital anomalies affected a minority of children, with around 20% of children identified with congenital anomalies requiring hospitalization. The highest rate of hospitalization occurred within the first year of life for all children as shown in Figure 12. However, children in continuing care were hospitalized at a rate almost twice that of children who had never been in care (see Table 7).

The most common reasons for hospitalization for congenital anomalies were different from the most common congenital anomaly-related diagnoses by a medical practitioner, and included cleft palate and anomalies of the genital organs, upper digestive tract,

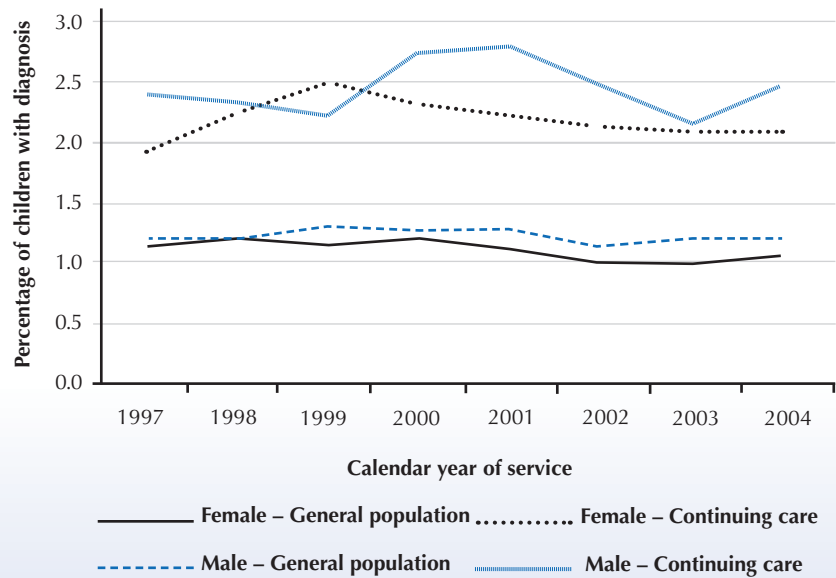
**Figure 12**

**Children hospitalized for a congenital anomaly-related issue (ICD9 Chapter 14)**



**Figure 13**

**MSP-recorded congenital anomaly diagnosis trends (ICD9 codes 740-759)**



ear, face and neck. Hospitalizations were highest within the first two years of life, although children in continuing care continued to be hospitalized throughout their lives at a higher rate than children who had never been in care – possibly suggesting more chronic conditions.

Between 1997 and 2004, the overall rate of children with congenital anomalies remained relatively stable, with children in continuing care being diagnosed at a rate about twice that of children who had never been in care, as shown in Figure 13. (The greater fluctuation in the figures for children in continuing care was likely a result of the relatively small number of children in continuing care with congenital anomalies.)

### Respiratory conditions

Respiratory conditions were the most commonly identified reason why children visited a medical practitioner. The most common respiratory conditions were upper respiratory infections, colds, sore throats, bronchitis, tonsillitis and asthma.

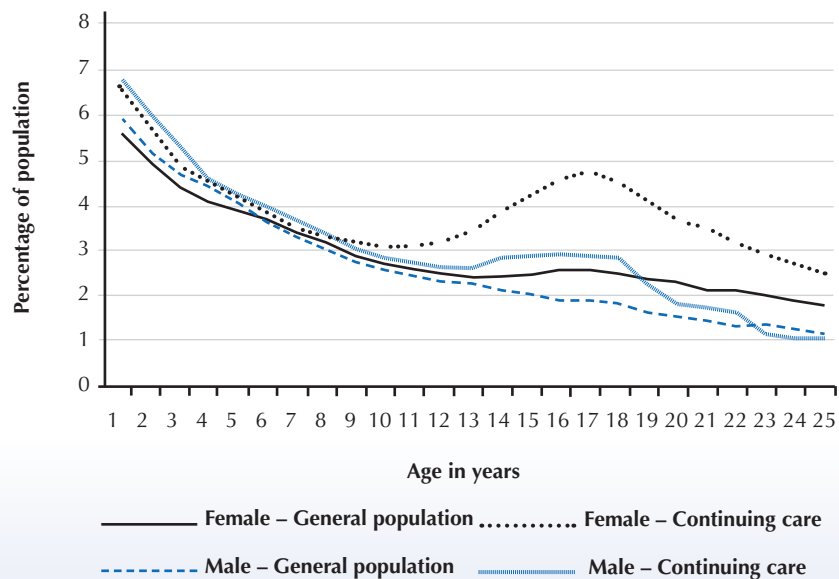
More than 85% of children in continuing care saw a medical practitioner at least once because of a respiratory issue before turning 19, compared with about 70% of children who had never been in care.

Figure 14 shows how respiratory conditions affected children by age. The rate at which children were diagnosed with respiratory conditions dropped steadily for all children from 60% to 70% at birth to around 30% at about age 10. Female children in continuing care then saw a considerable increase in respiratory conditions until age 17, where rates peaked near 50%, while respiratory

Respiratory conditions in children are related to multiple causes, including low birth weight, viruses, bacteria, molds and fungi, and outdoor and indoor air pollution, including second-hand smoke and particulate matter from fireplaces.

**Figure 14**

**Children who saw an MSP-paid medical practitioner for a respiratory condition (ICD9 Chapter 8)**



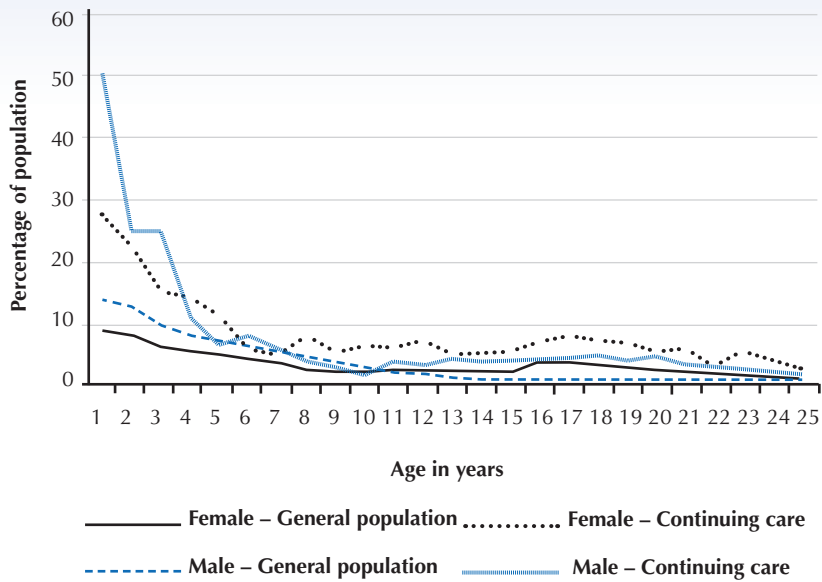


condition rates for other children either continued to decline or remained steady.

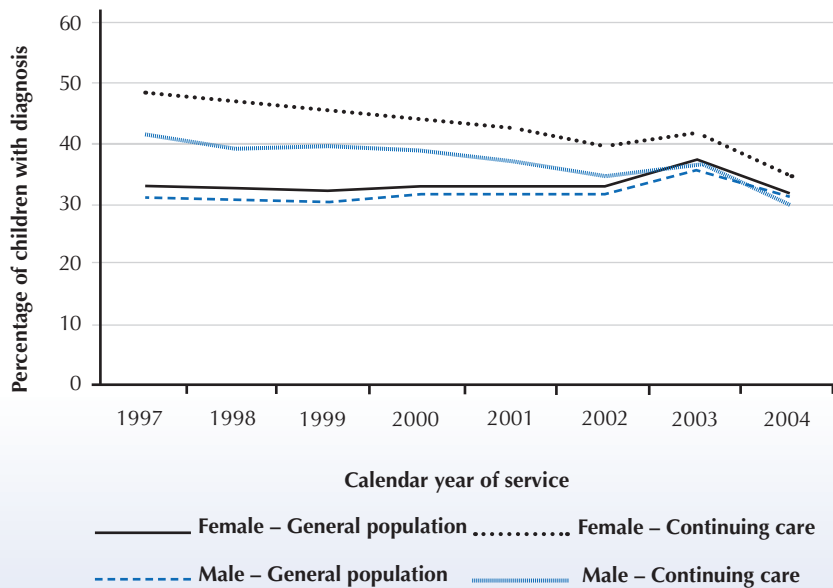
Respiratory conditions continued to decline after age 19, although the rate for females formerly in continuing care remained much higher than for the rest of the population. After age 19, females in the general population saw a medical practitioner for respiratory issues more often than did males who were formerly in continuing care.

The highest rate of hospitalization for a respiratory condition occurred early in life. As shown in Figure 15, the rate at one year of age was 5% for males and 2.7% for females in continuing care, compared with 1.4% for males and 0.8% for females in the general population. By age six, hospitalizations fell to below 1% in all groups, although those in continuing care continued to have rates higher than for the general population. The higher rates of hospitalization among

**Figure 15** Children hospitalized for a respiratory condition (ICD9 Chapter 8)



**Figure 16** MSP-recorded respiratory diagnosis trends (ICD9 codes 460-519)



very young children in continuing care may be related to perinatal health conditions, which often involve the respiratory system.

Over time, respiratory conditions among children in continuing care appear to be improving, with outcomes similar to those in the general population by 2004 (Figure 16). (The increased frequency of respiratory diagnoses in 2003 may have been because of an influenza virus serotype that was noted by the Ministry of Health for causing more serious illness in children.)

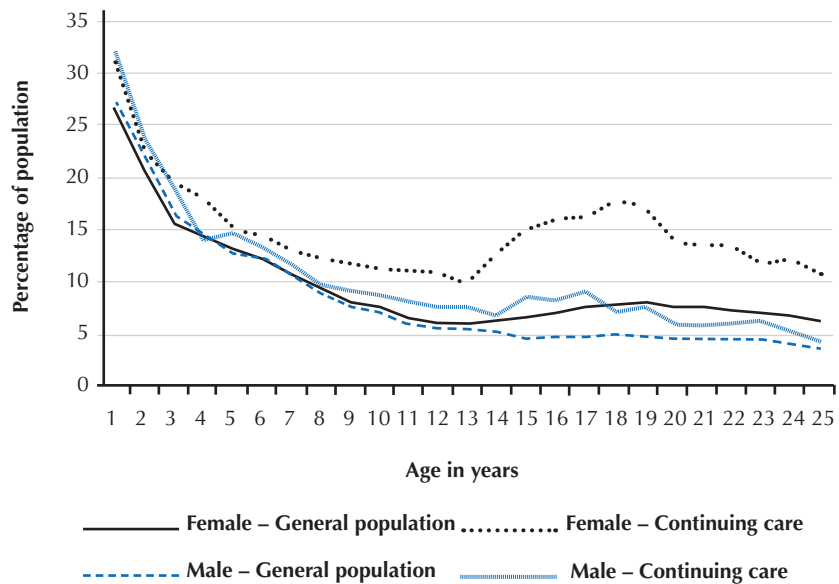
As shown in Figure 17, infectious and parasitic disorders (e.g., viruses, food poisoning, strep throat, chickenpox) followed a pattern similar to respiratory disorders.

About 27% of children in the general population and 32% of children in continuing care saw a medical practitioner in the first year of life for infectious and parasitic disorders, with rates subsequently declining to 5% at age 13 for the

general population and 7–10% for children in continuing care. For females in continuing care, the rate began to increase steadily again at age 13, up to 18% at age 18. There was also an increase for females in the general population at this age, but far less dramatic, with the rate reaching about 8% at age 19.

Cumulatively, around 1% of children who had never been in care and 2% of children in continuing care were hospitalized for infectious and parasitic disorders at some point between 1995 and 2005, which was about one quarter the rate for respiratory conditions.

**Figure 17** Children who saw an MSP-paid medical practitioner for an infectious/parasitic condition (ICD9 Chapter 1)



We do not know why teenage females in continuing care were diagnosed with markedly higher rates of respiratory and infectious or parasitic conditions than males in continuing care were. This may represent a previously unreported susceptibility to these conditions in females, or it may represent miscoding.

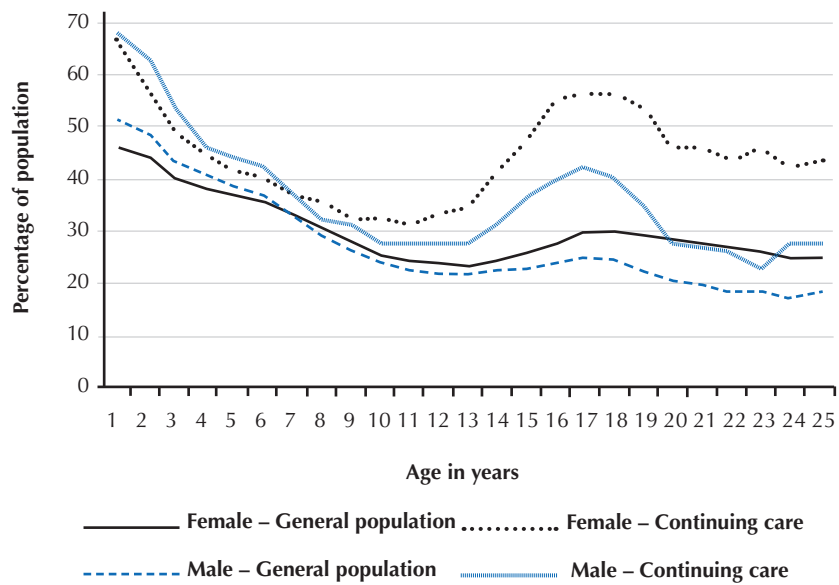
The prescribing of antibiotics also followed a pattern similar to respiratory and parasitic and infectious conditions, although antibiotics are obviously prescribed for other conditions as well.

Figure 18 shows that children in continuing care were prescribed more antibiotics than the general population. The use of antibiotics for both populations steadily declined from birth to around age 11. Again, there was a notable increase in antibiotic prescriptions for female children in continuing care after age 11, peaking at age 17, with an accompanying increase for males in continuing care, although not to the same extent.

In addition to respiratory antibiotics, two other categories of anti-infective medications were also

commonly prescribed for children in continuing care: those for infections related to the ear, nose and throat (35% of females and 30% of males) and topical drugs used to deal with skin infections, viruses and funguses (51% of females and 41% of males). The prescribing of these medications was about 1.3 to 2.3 times the rate for the general population, and in both cases the rates were higher for females than for males (see Table 4).

**Figure 18** Children prescribed an antibiotic medication by age at time of dispensation (AHFS 08:12)



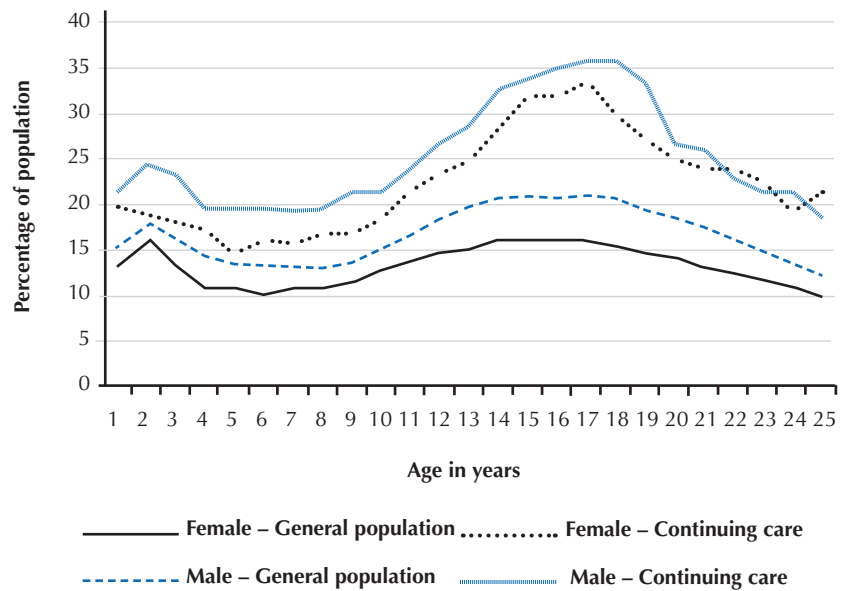
### Injuries and poisonings

As with respiratory issues, children in continuing care had higher rates of injury than the general population had, as shown in Figure 19. The most common types of injuries for which children saw a medical practitioner were sprains and strains, open wounds, contusions and fractures. Poisonings were quite rare for children in the general population, and were not among the 25 most common injuries for which children saw a medical practitioner; however, for children in continuing care, poisonings ranked 19th (MSP billing data for injuries and poisonings, 1995–2005).

For all groups, the rate of injury increased between ages one and two and then declined until around age five. Injuries began to increase again around age eight and peaked in the late teens, before beginning to decline once more. In the

later teen years, females in continuing care were 1.9 times more likely to see a medical practitioner because of an injury than were females in the general population; and males in continuing care were 1.7 times more likely to see a medical practitioner because of an injury than were males in the general population. Males had a higher rate of injury than females in all age groups up to age 19.

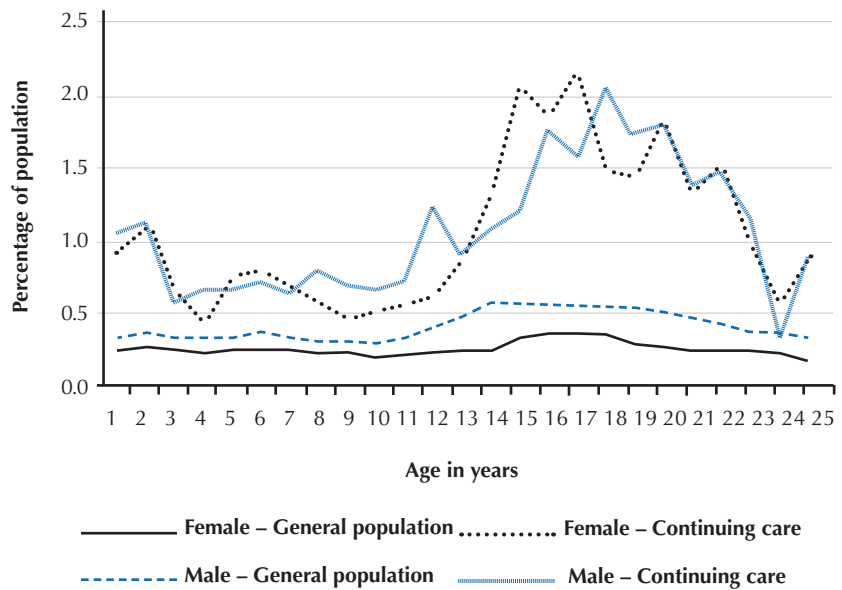
**Figure 19** Children who saw an MSP-paid medical practitioner for an injury or poisoning-related condition (ICD9 Chapter 17)



Relatively few children and youth injuring themselves required hospitalization. In general, as shown in Figure 20, conditions requiring hospitalization differed from conditions prompting a physician visit. The most common reasons for hospitalization for children in continuing care were for fractures, poisonings and complications resulting from medical or surgical procedures.

For the general population, the need for hospitalization because of injuries and poisonings remained quite steady throughout childhood and peaked at around 0.5% through adolescence, again with the rate for males being higher than for females. For children in continuing care, the hospitalization rate was also quite low, peaking at around 2%; however, the rate was three to six times higher for children in their late teens in continuing care than for the general population. From around age 12 the gap between children in continuing care and children who had never been in care became much more pronounced.

**Figure 20** Children hospitalized for an injury or poisoning–related condition (ICD9 Chapter 17)

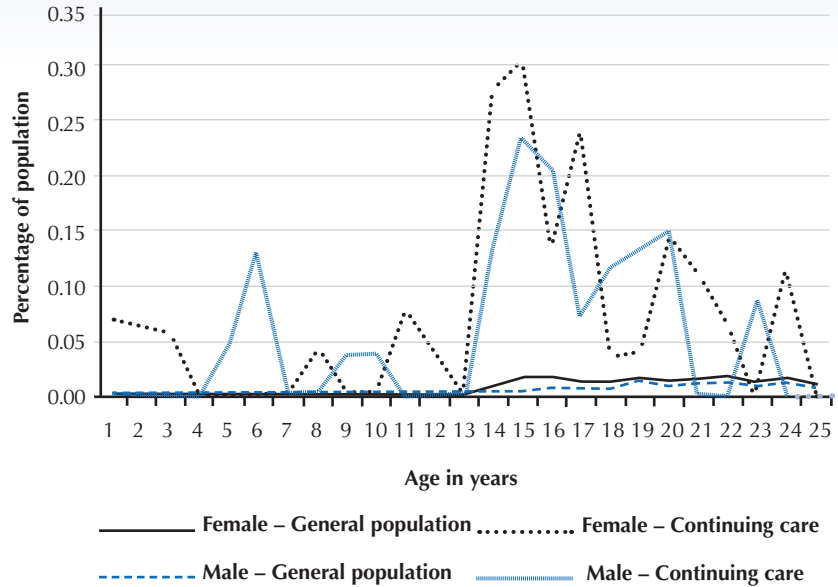


Figures 21 to 25 show injuries requiring hospitalization resulting from such things as falls, motor vehicle accidents, assaults and accidental poisonings. Young children in continuing care were more likely to have injuries caused by falls and accidental poisonings, while motor vehicle accidents and assaults were more common among youth in continuing care.

**Figure 21**

**Children hospitalized for an injury (undetermined whether accidentally or purposely inflicted)**

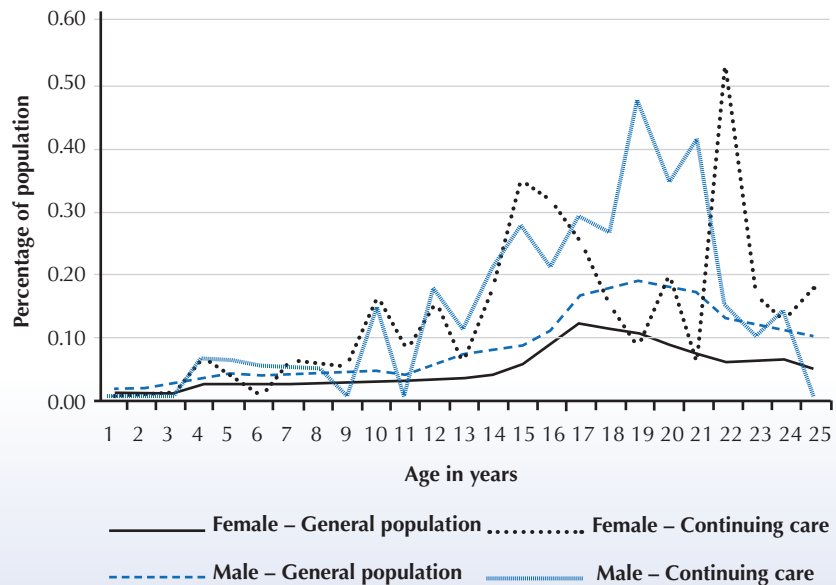
Relative to children who had never been in care, children in continuing care had a higher rate of hospital admissions for injuries where the cause was undetermined (i.e., it was unclear whether the injury was the result of an accident or was purposely inflicted).



**Figure 22**

**Children hospitalized for a motor vehicle accident-related injury**

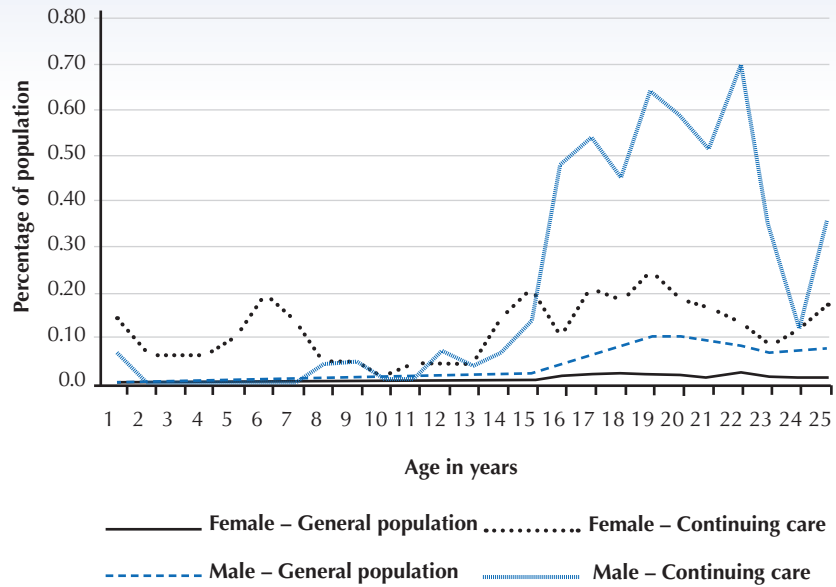
Both male and female youth in continuing care experienced higher rates of hospitalization for injuries related to motor vehicle accidents, although the rate for females dipped below the rate for males in the general population between ages 18 and 19.



**Figure 23**

**Children hospitalized for an assault-related injury**

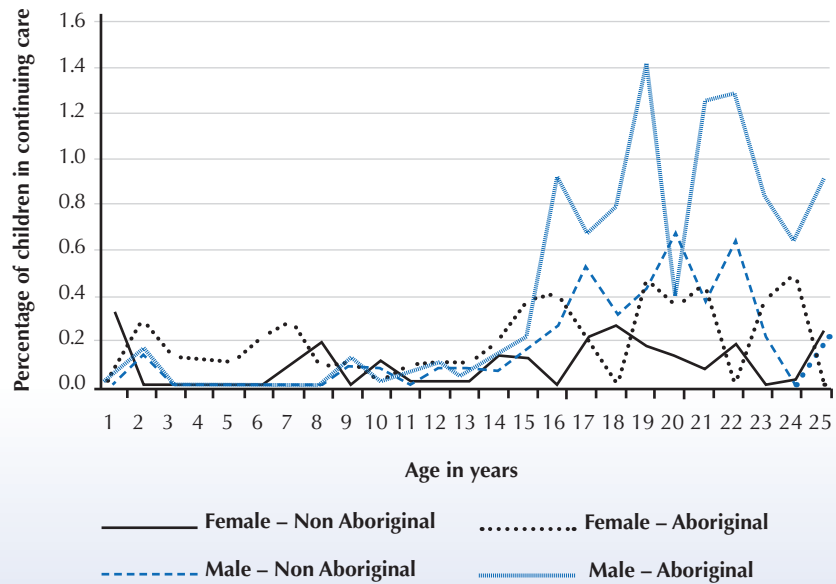
Males in continuing care aged 16 to 19 experienced most of the assault-related injuries and at higher rates than any other group. Females in continuing care had higher assault-related injuries than males in the general population.



**Figure 24**

**Children in continuing care hospitalized for an assault-related injury**

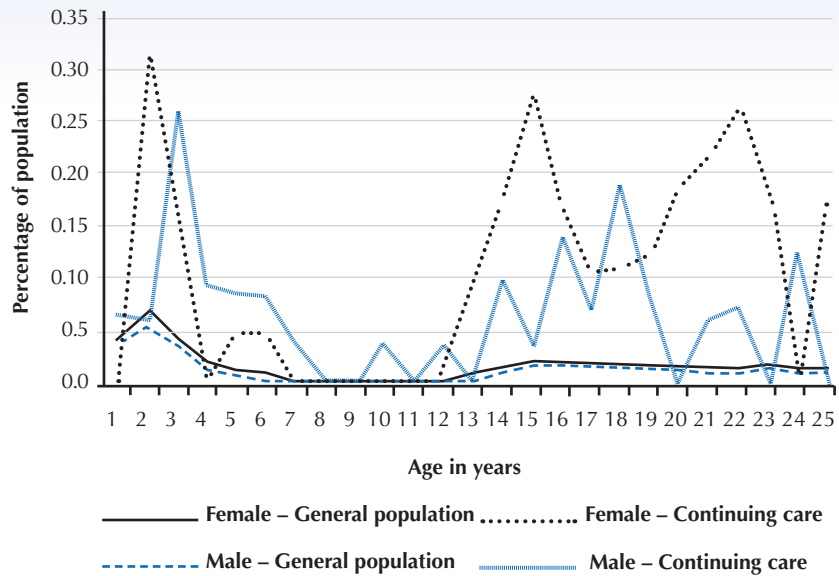
Aboriginal males in continuing care have the highest rates of assault-related injuries of all groups.



**Figure 25**

**Children in care hospitalized for an accidental poisoning**

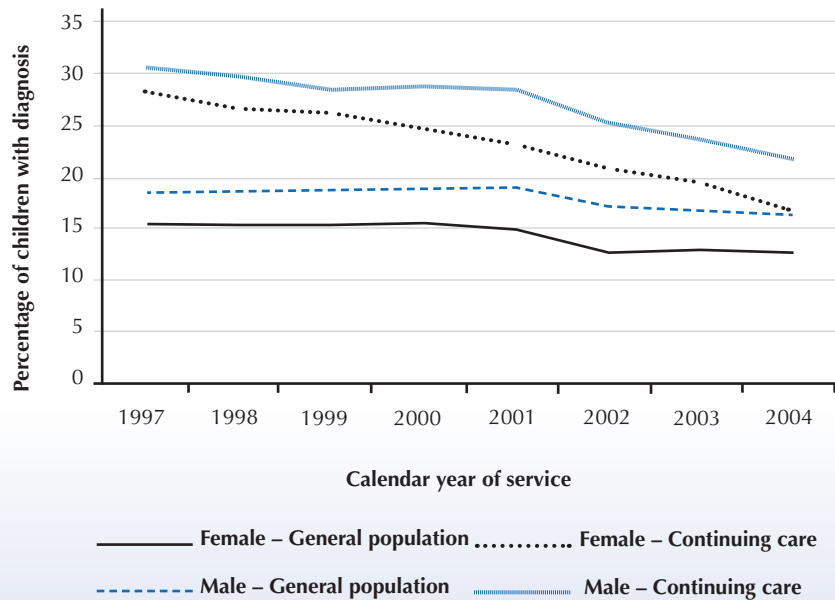
There was also a spike in accidental poisonings among females in continuing care aged 12 to 15; the high number of accidental poisonings in this group, compared with females who had never been in care, raises the question of whether they were accidental poisonings or suicide attempts (see also Figure 32).



**Figure 26**

**MSP-recorded injury and poisoning diagnosis trends**

As shown in Figure 26, injuries and poisonings both for children in continuing care and for the general population declined over time, with proportionally greater declines for children in continuing care than for children who had never been in care.





### Injuries in the post-19 age group

Between the ages of 19 and 25, children formerly in continuing care continued to experience much higher rates of injury (requiring a visit to a medical practitioner) than the general population had – 1.9 times higher for females and 1.5 times higher for males. The rate of injury for youth formerly in continuing care was similar for both males and females, while in the general population women continued to have a lower rate of injury than men (Figure 19).

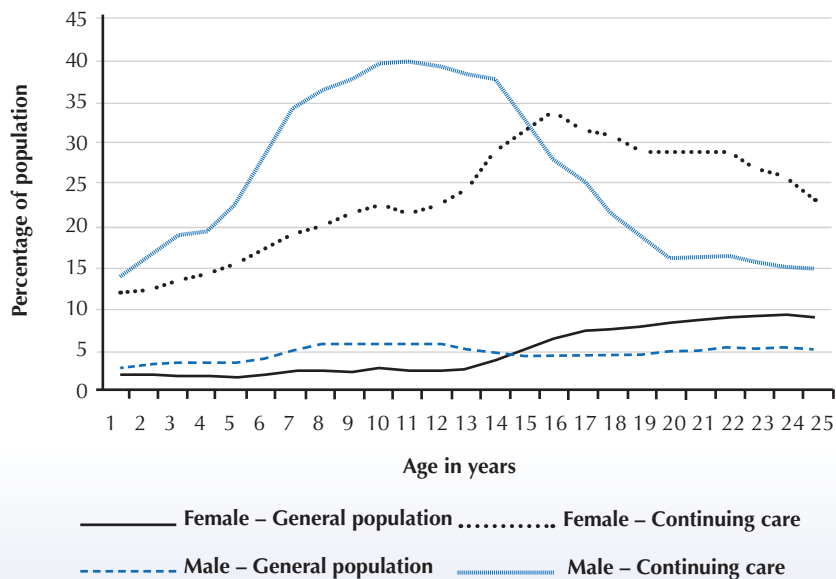
### Mental disorders

As shown in Table 1, approximately 65% of children in continuing care were diagnosed at least once with a mental disorder by a medical practitioner, compared with about 17% of the general population. A child in continuing care was almost four times as likely to be diagnosed with a mental disorder as a child in the general population.

The most common mental disorder diagnoses for children in continuing care were:

- disturbance of conduct (which mainly involves aggressive and destructive behaviour, as well as disorders involving delinquency)
- hyperkinetic syndrome (including short attention span, distractibility, hyperactivity and impulsiveness)
- depression
- neurotic disorders (including anxiety, phobias, and obsessive-compulsiveness)

**Figure 27** Children who saw an MSP-paid medical practitioner for a mental disorder (ICD9 Chapter 5)



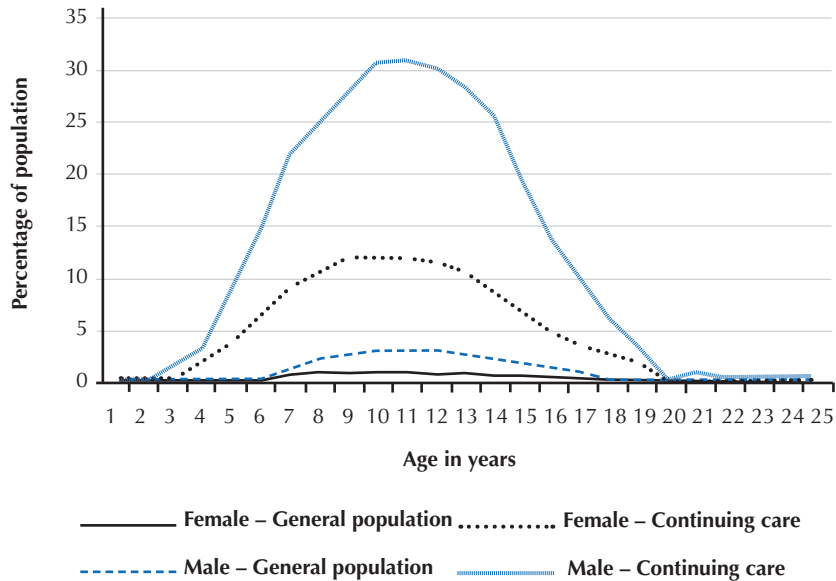
- disturbance of emotions specific to childhood and adolescence
- developmental delays, and
- adjustment reactions.

Figure 27 shows that more males were diagnosed with a mental disorder at a younger age than were females. This trend changed at about age 15, when more females, both in the continuing care population and the general population, were diagnosed with a mental disorder. The differences may be due to the differences in the types of diagnosis: males were more frequently diagnosed with conduct and hyperkinetic disorders than were females, who were more likely to be diagnosed with depression and neurotic disorders.

The prescribing patterns for cerebral stimulants (Ritalin-type medications) shown in Figure 28 are consistent with the age distribution of mental disorders for males. Mental disorder diagnoses appear to be most frequent from about age 7 to 15.

Males in continuing care were almost 10 times as likely to be prescribed a cerebral stimulant medication as males in the general population, and one third of all males in continuing care will have been prescribed one of these medications at least once. Males in continuing care were prescribed cerebral stimulants more than twice as often as females in continuing care were, and females in continuing care were prescribed these medications more than 12 times more often than females in the general population were.

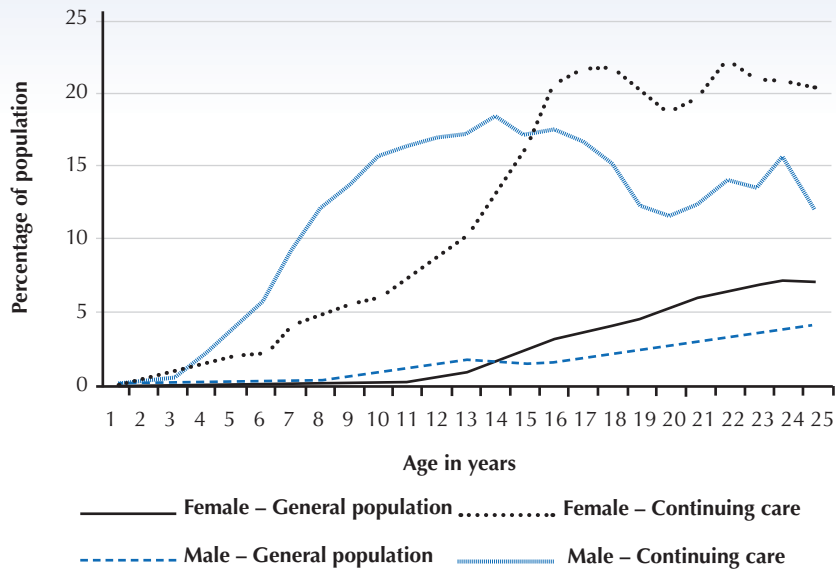
**Figure 28** Children prescribed a respiratory and cerebral stimulant medication by age at time of dispensation



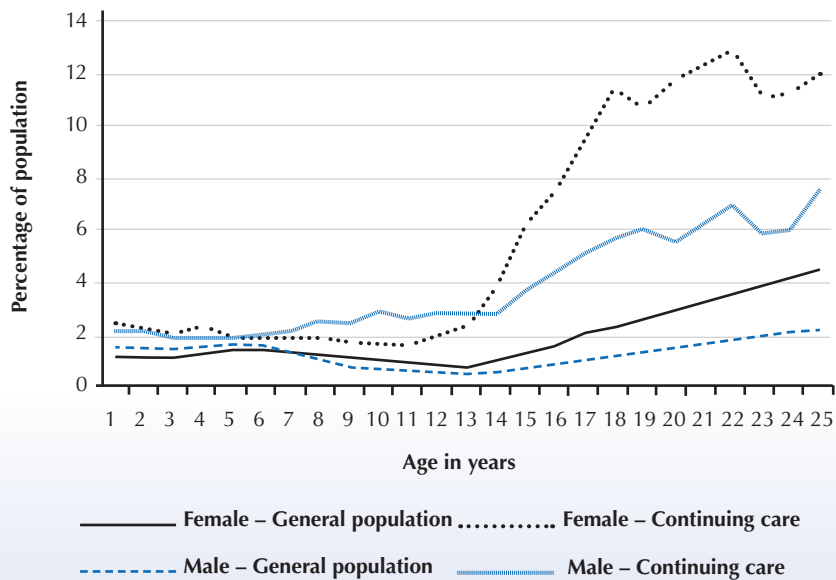
The age distribution for the prescribing of psychotherapeutic drugs (e.g., anti-depressants and tranquilizers), shown in Figure 29, was similar to the age distribution for mental disorders, continuing to rise for females as they aged. As was the case with mental disorder diagnoses, psychotherapeutic medications began to be prescribed for greater numbers of females than males at around age 15. This held true for children both in continuing care and in the general population.

Anxiolytics (medications used to treat the symptoms of anxiety) were not prescribed as often as psychotherapeutic medications although, overall, children in continuing care were prescribed these medications about 2.5 times as often as children in the general population were, as shown in Figure 30. The prescribing of these medications began to increase at around age 14, with a higher prescribing rate for females than for males, and the rate for children in

**Figure 29** Children prescribed a psychotherapeutic medication by age at time of dispensation



**Figure 30** Children prescribed an anxiolytic medication by age at time of dispensation



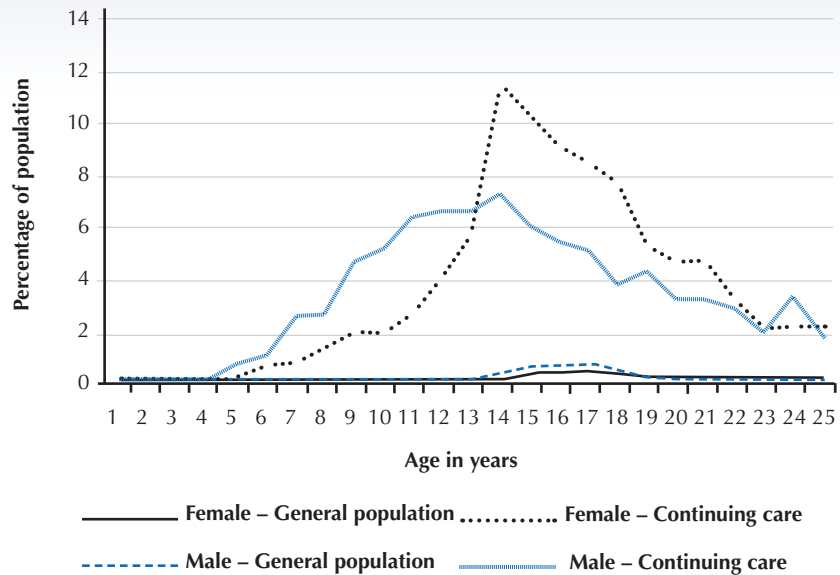
## Figure 31

### Children hospitalized for a mental disorder (ICD9 Chapter 5)

continuing care peaking at about five times that for the general population at age 18.

Hospital admissions (Figure 31) followed a pattern similar to mental disorder diagnoses. Males in continuing care were more likely to be hospitalized earlier in their lives, but the pattern changed around age 13, where more females were hospitalized than males. While children in continuing care were almost four times as likely to be diagnosed with a mental disorder as children in the general population, they were 17 times more likely to be hospitalized for a mental disorder.

While adjustment reactions were the seventh most common mental disorder-related diagnosis by a medical practitioner for children in continuing care, they were the most common reason for hospitalization for a mental disorder-related condition, followed by disturbance of conduct, affective psychoses, neurotic disorders, hyperkinetic syndrome, non-dependent use of drugs, and depressive disorders (MSP billing data for mental disorders, 1995–2005). The most common reason for hospitalization for a mental disorder among children who had never been in care was affective psychoses, followed by adjustment reactions, neurotic disorders and depressive disorders.



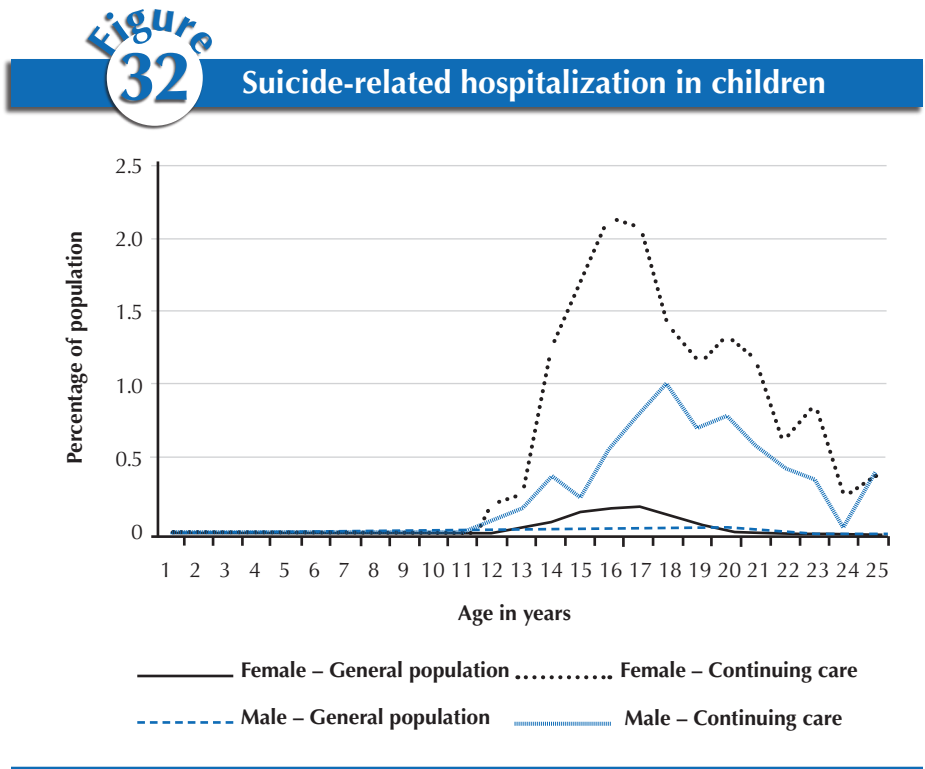
**Overall, children in continuing care were prescribed medications for anxiety about 2.5 times as often as children in the general population were.**

*At ages 16 and 17, just over 2% of females in continuing care were hospitalized at least once for an attempted suicide, which was more than 12 times the rate for the females in the general population.*

Figure 32 shows that the rate of hospitalization for a suicide attempt was much higher in the continuing care population than in the general population. At ages 16 and 17, just over 2% of females in continuing care were hospitalized at least once for an attempted suicide, which was more than 12 times the rate for the females in the general population. Although the rate of hospital admission for suicide-related issues for males was less than for females, males in continuing

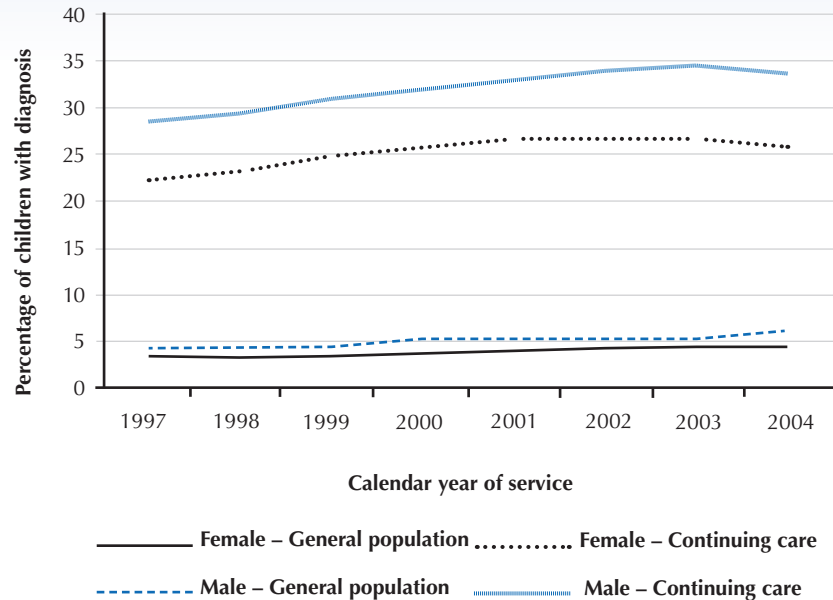
care aged 14–19 were on average 14 times more likely to be hospitalized for a suicide-related issue than were males in the general population.

There was no improvement over time in the area of mental disorders. The trend for mental disorders increased for children and youth between 1997 and 2004. The trend for children in continuing care leveled off for females around 2001 and for males around 2003, while the rate for the general population continued to increase gradually (Figure 33). Overall, the rate for mental disorders for children in care remained six times greater than for the general population, with the rate being higher for males than for females.



## Figure 33

### MSP-recorded mental disorder diagnosis trends (ICD9 codes 290–319)



### *Mental disorders in the post-19 age group*

Between the ages of 19 and 25, young people who had been in continuing care continued to fare more poorly than the general population. With respect to mental disorders, Figure 27 shows that for several years after discharge from care at age 19, rates for both males and females remained stable but high. In the general population of females, the rate increased until age 25, but between the ages of 19 and 25 was more than three times less than the rate for females in continuing care. For males in continuing care, the rate flattened out at age 20 and then remained at about 15% until age 25 – still more than three times higher than for males in the general population.

The prescribing of psychotherapeutic medications remained at its highest level for females who had been in continuing care – about three times greater than for females in the general population, whose prescription rate continued to increase up to age 25, as shown in Figure 29. For males in continuing care, prescription rates declined between ages 14 and 20 and then leveled off at around 13%, which was 3.5 times the rate for males in the general population.

---

***Males in continuing care were almost 10 times as likely to be prescribed a cerebral stimulant medication as males in the general population, and one third of all males in continuing care will have been prescribed one of these medications at least once.***

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Anxiolytic medication prescription rates continued to rise for all groups beyond age 19; however, anxiolytic medications were prescribed more than three times as often for young adults who had been in continuing care (Figure 30).

The rate of hospitalization for mental disorders continued to drop until about age 23 for young people who had been in continuing care, although it remained 10 times higher than for those who had never been in care (Figure 31).

Hospitalization for suicide attempts increased between ages 19 and 20 for young people formerly in continuing care and then declined again (Figure 32). The rate continued to remain higher for youth who had been in continuing care than for the general population.

For males and females who had been in continuing care, the likelihood of being hospitalized because of a suicide attempt was twice as high as for a motor vehicle accident. Females who had never been in care were also more likely (1.5 times) to be admitted for a suicide attempt. Males who had never been in care were almost three times more likely to be admitted to hospital because of a motor vehicle accident than because of an attempted suicide (Figures 22 and 32).

Hospital admissions resulting from assault also continued to drop after age 19 to around age 24, with males having higher rates than females (Figures 23 and 24). However, females in continuing care had a higher rate of hospital admission resulting from assault than males in the general population had. Aboriginal males formerly in continuing care were admitted to hospital for assault-related injuries more than twice as often as non-Aboriginal males formerly in continuing care were. The rate was almost three times higher for Aboriginal females than for non-Aboriginal females.

## Pregnancy and childbirth-related conditions

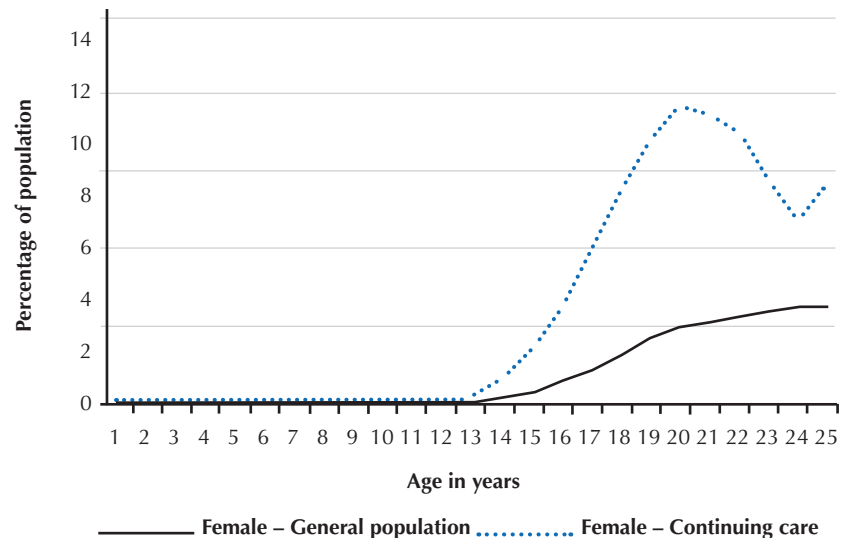
Pregnancy and childbirth-related conditions include abortions, pregnancy and childbirth.

Females in continuing care to age 19 saw a medical practitioner for a pregnancy or birth-related condition more than four times as often as did females in the general population (Figure 34). The most common reasons were related to abortions, normal deliveries and pregnancy complications.

The rate of pregnancy increased until age 20 for females in continuing care, and then began to decline. For the general population, the percentage of females seeing a medical practitioner about a pregnancy or childbirth-related issue continued to rise until age 25, but remained at less than half that of the continuing care population. Aboriginal females in care visited a medical practitioner for a pregnancy or childbirth-related condition at a rate 1.3 times higher than for non-Aboriginal females in continuing care.

**Figure 34**

### Females who saw an MSP-paid medical practitioner for a pregnancy or childbirth-related condition (ICD9 Chapter 11)



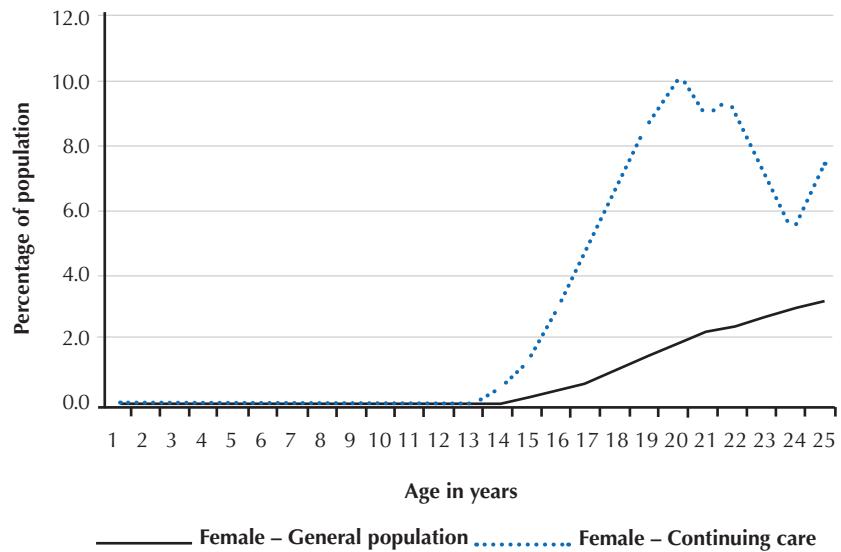
***Females in continuing care to age 19 saw a medical practitioner for a pregnancy or birth-related condition more than four times as often as did females in the general population.***



Females in continuing care between the ages of 13 and 19 were admitted to hospital for a pregnancy or childbirth-related condition approximately nine times as often as females who had never been in care (Figure 35). The most commonly identified services were for abortions, trauma to the perineum and vulva during delivery, and early or threatened labour.

Females in the general population aborted pregnancies 1.4 times more often than females in continuing care did. Females in continuing care experienced trauma to the perineum and vulva during delivery 1.6 times more frequently than females in the general population and experienced early or threatened labour almost twice as often as females in the general population.

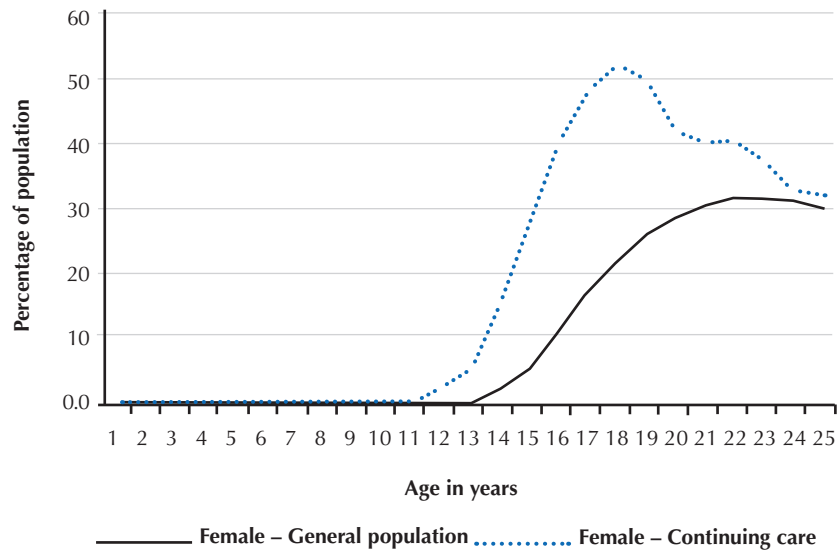
**Figure 35**  
**Females hospitalized for a pregnancy or childbirth-related condition (ICD9 Chapter 11)**



Females in continuing care aged 12 to 19 were also prescribed contraceptive medications (contraceptives and progestins) about 3.5 times more frequently than were females who had never been in care. A sharp increase began at age 14 and peaked at 50% of females in continuing care at age 18. For the general population, the increase in dispensation began at age 15, and by age 24, 30% of both populations were being prescribed contraceptives (Figure 36).

**Note:** This information does not tell us whether contraceptives were prescribed before or after a medical practitioner had been seen about a pregnancy. Figure 21 refers only to prescribed contraceptives. Condoms, spermicides and other over-the-counter contraceptives are not included.

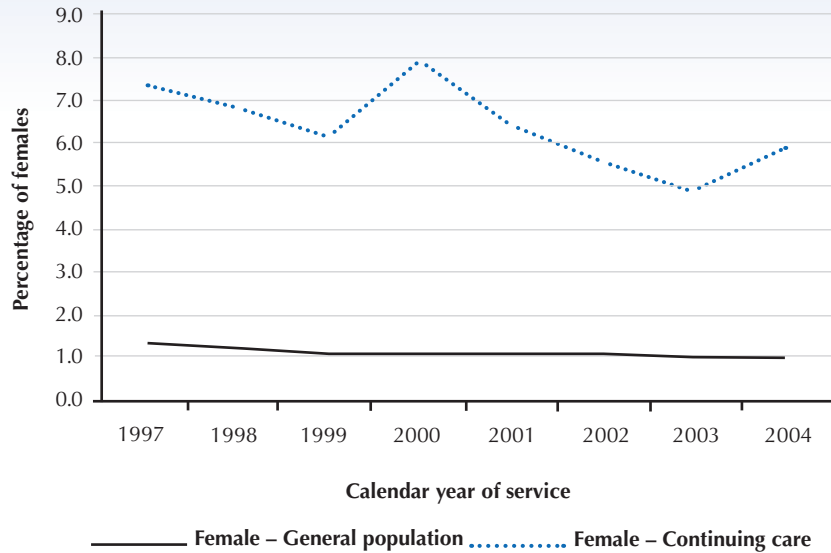
**Figure 36** Females prescribed a contraceptive medication by age at time of dispensation (AHFS 68:12 Contraceptives or 68:32 Progestins)



The pregnancy-related MSP service rate for females in continuing care under age 19 declined from 7.3% to 5.8% between 1997 and 2004 (Figure 37); the rate for the general population fell from 1.2% to 0.9%. Over this same period there was an increase in the prescribing of contraceptive medications for females (Figure 38), the rate having almost doubled for the general population from 4.8% to 9.0%, while increasing from 21.2% to 24.7% for females in continuing care.

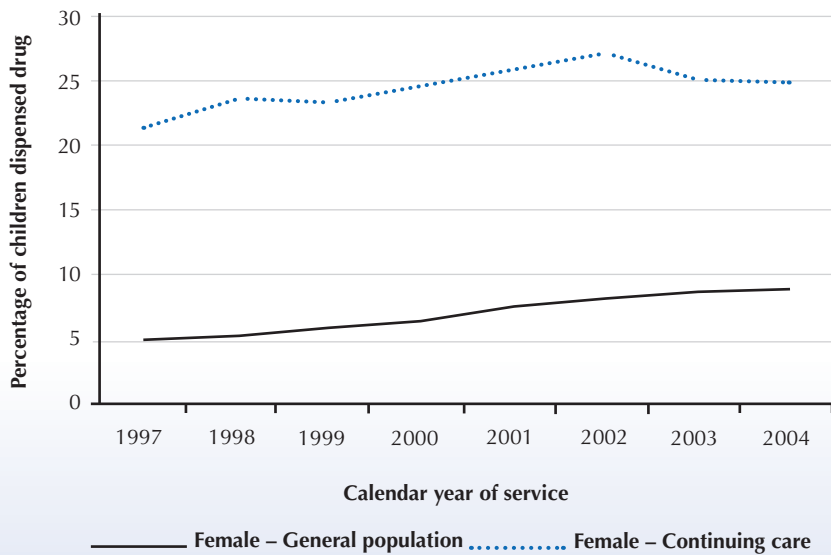
**Figure 37**

**MSP-recorded pregnancy-related diagnosis trends (ICD9 codes 630–679)**



**Figure 38**

**PharmaNet-recorded contraceptive and progestin prescription trends (AHFS codes 68:12 and 68:32)**



## 2.3

# Mortality

As noted earlier in the report, while death rates are not ideal indicators of children's health, they are traditionally and internationally accepted measures. They also represent the most extreme adverse outcome. By looking at death rates in terms of natural and external (i.e., non-natural) causes, we also examine trends in underlying causes of mortality and can track progress in areas where prevention offers opportunities to intervene. For example, deaths resulting from injuries caused by motor vehicle accidents or suicide are all theoretically preventable. Where we can identify preventable deaths, we can also identify appropriate prevention strategies to reduce the number of deaths and improve health outcomes for children.

To better understand the relationship between health outcomes and death rates for children in care, the Provincial Health Officer and the Child and Youth Officer looked at the deaths of all children who died while in the care of the government between 1986 and 2005. This time period was selected for two reasons. First, in 2001, the Provincial Health Officer reported on the mortality experience of children in care for the years 1986–2000, so it made sense to build on what we already knew. Second, although the death rate of children in care is much higher than the death rate for the general population, relatively few children in care die. Expanding the period for which we had data allowed us to take a more extensive look at the mortality of children in care. Again, because of the smaller numbers, we looked at death rates for all children who died while in government care (both temporary and continuing care) between 1986 and 2005. (For a complete review of mortality of children in care from 1986 to 2005, see *A Review of the Mortality Experience of Children and Youth in Care, 1986 to 2005, British Columbia* available at both [www.health.gov.bc.ca/pho/](http://www.health.gov.bc.ca/pho/) and [www.gov.bc.ca/cyo/](http://www.gov.bc.ca/cyo/)). In addition, we were able to look at the causes of death for children and young people who had been in either temporary or continuing care at some point between 1997 and 2005 but who died after they left care.

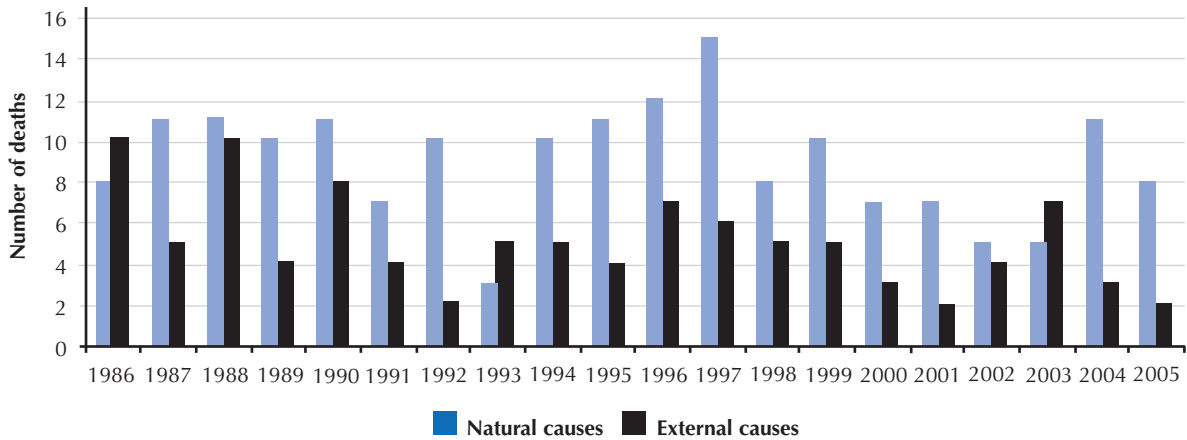
The mortality rate for all children has been declining significantly. The gap between mortality rates for children in care and children in the general population has narrowed considerably for all causes. However, the mortality rate for children in care has remained substantially higher: in the period 1986 to 2005, children who died while in care died of natural causes at a rate more than four times the rate for the general population, and they died of external causes at a rate more than three times the rate for the general population.

Between the ages of 19 and 25, young people who had been in care died at a rate 6.5 times higher than the rate for the general population.

Between 1986 and 2005, 281 children died while in the care of government from either natural or external causes (Figure 39) – an average of about 14 children per year (nine due to natural causes and five due to external causes).

**Figure 39**

**Annual deaths of children while in care by natural and external causes, 1986–2005**



*Aboriginal children accounted for almost 34% of children in care between 1997 and 2004, and almost 36% of the reported deaths of children while in care.*

Almost two-thirds of the deaths reported over this time period resulted from natural causes, although there is great year-to-year variation. The most common categories of natural causes were congenital anomalies, Sudden Infant Death Syndrome (SIDS), and diseases of the nervous system (Table 10). As observed in the hospital data (Table 7), only about 2.1% of children in continuing care were admitted to hospital as a result of a congenital anomaly. This suggests that although a small percentage of children in care are admitted to hospital because of a congenital anomalies, the conditions are more serious and tend to be more life-threatening than for children who have never been in care. Children who died while in care died of natural causes at a rate more than four times higher than the rate for children in the general population.

**Table 10: Mortality due to natural causes, while in care, 1986–2005**

Cause of death (ICD)	Number of deaths while in care between 1986 and 2005		
	Actual deaths	“Expected”	Difference ratio
Congenital anomalies	52	9.7	5.4 *
Sudden Infant Death Syndrome	36	4.9	7.3 *
Diseases of the nervous system	25	2.2	11.2 *
Diseases of the respiratory system	10	1.6	6.4 *
Cancer	9	4.3	2.1
Perinatal conditions	9	12.9	0.7
Unknown causes ^	8	1.2	6.8 *
Infectious disease	7	1.0	7.0 *
Diseases of the circulatory system	5	1.6	3.1
Other natural causes	19	3.2	5.9*
<b>All natural causes</b>	<b>180</b>	<b>42.7</b>	<b>4.2 *</b>

^ Includes 6 deaths for which cause is pending investigation.

\* Statistically significant at the 95% confidence level.

The leading external causes of the deaths reported were suicide, motor vehicle accidents and accidental poisonings (Table 11). As noted in the previous section on themes arising across all the health services utilization data, the high rate of accidental poisonings among teenaged children in continuing care compared with those in the general population raises a question about whether the poisonings were indeed accidental or intentional. Children who died while in care died of external causes at a rate more than three times higher than the rate for children in the general population.

**Table 11: Mortality due to external causes, while in care, 1986–2005**

Cause of death (ICD)	Number of deaths while in care between 1986 and 2005		
	Actual deaths	“Expected”	Difference ratio
Suicide	27	5.2	5.2 *
Motor vehicle traffic accidents	24	12.5	1.9 *
Accidental poisoning	12	1.2	10.0 *
Homicide	10	2.2	4.6 *
Other transport accidents	10	3.8	2.7 *
Drowning	4	2.0	2.0
Fire/Burns	3	1.1	2.8
Falls	2	0.9	2.2
All other external causes	9	3.8	2.4 *
<b>All external causes</b>	<b>101</b>	<b>32.6</b>	<b>3.1 *</b>

\* Statistically significant at the 95% confidence level.

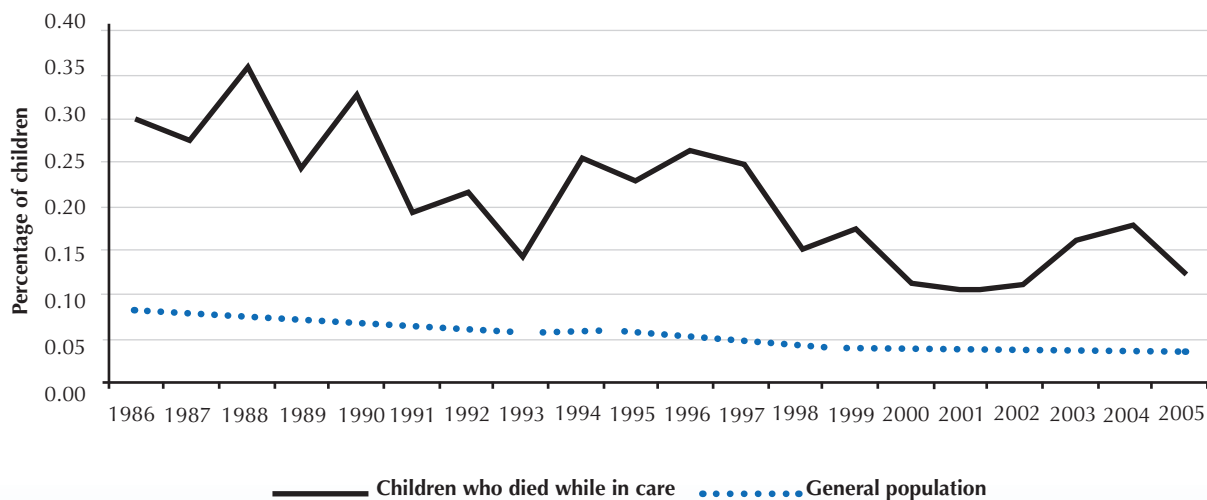
Table 12 shows that the mortality rate for all children has been declining significantly. As shown in Figure 40, the gap in mortality rates for children dying while in care and children in the general population has narrowed considerably over time for all causes; however, the mortality rate for children dying in care has remained substantially higher.

Table 12: Trends in mortality, for natural, external, and all causes, while in care, 1986–2005*			
Group	Cause of death	Trend	p Value
Children in Care (died while in care)	Natural causes	decreasing	0.001
	External causes		0.003
	All causes		<0.001
Provincial child population	Natural causes	decreasing	<0.001
	External causes		<0.001
	All causes		<0.001

\* Log Linear Regression Analysis.

Figure  
40

### Annual mortality rates, 1986–2005





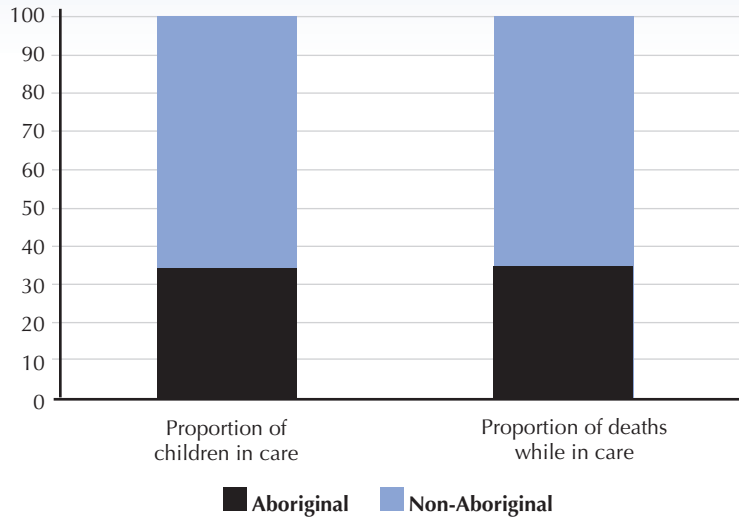
Aboriginal child deaths were proportional to the percentage of Aboriginal children in care between 1997 and 2005: Aboriginal children accounted for almost 34% of children in care between 1997 and 2005, and almost 36% of the reported deaths of children while in care (Figure 41).

In addition to analyzing the deaths of all children who died while in government care between 1986 and 2005, through our data linkages we were able to examine deaths of children who had been in government care but died after they left care, during the period 1997–2005. This included children who had been in either continuing care or temporary care at some point during this period.

As shown in Table 13, between 1997 and 2005 there were 266 recorded deaths of children who had been in temporary or continuing care. Of these, two thirds died after leaving care.

**Figure 41**

**Aboriginal children who died while in care, 1997–2005**



**Table 13: Children and youth who died while in care and after leaving care, 1997–2005**

Care Status	Died while in care	Died after leaving care	Total
<b>Temporary Care</b> n=24,802	53	124	177
<b>Continuing Care</b> n=12,221	40	49	89
<b>Total</b>	<b>93</b>	<b>173</b>	<b>266</b>

*Between 1997 and 2005, there were 266 recorded deaths of children who had been in temporary or continuing care. Of these, two thirds died after leaving care.*

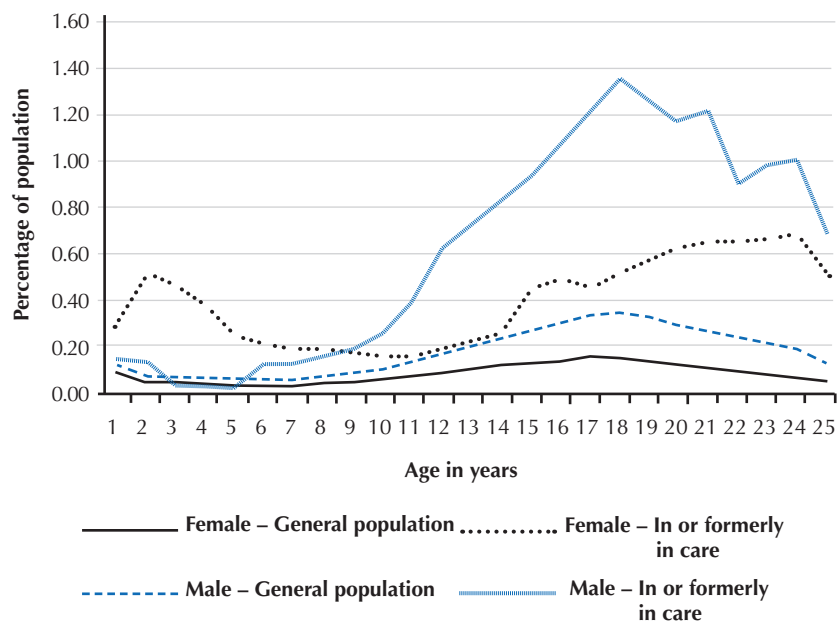
After age 10, males in or formerly in care died at about twice the rate of females in or formerly in care (Figure 42), and children in care died at a rate about 3.5 times higher than the rate for the general population.

After age 19, the death rate continued to decline for the general population as well as for males who had been in care. The rate gradually increased for females who had been in care, although it never reached the rate of males who had been in care.

Between the ages of 19 and 25, the gap between the mortality rates for young people who had been in care and those in the general population widens. Although the numbers are small, young people who had been in care died at a rate 6.5 times higher than the rate for the general population.

**Figure  
42**

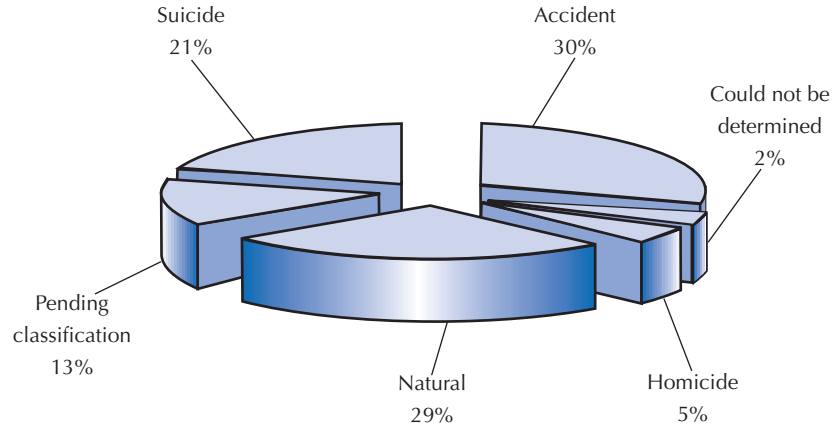
### Deceased children and youth by age at time of death by care status, 1997–2005



While two thirds of deaths of children in care were attributed to natural causes (Table 10), the picture is reversed for children who died after leaving care, with only 29% of deaths attributed to natural causes (Figure 43). More than half of the deaths of children previously in care were attributed to suicide and accidental death. While none of the deaths for children who died while in care between 1997 and 2005 were attributed to homicide, 5% of the deaths of children previously in care were attributed to homicide.

**Figure  
43**

**Causes of death of children who died after leaving care**



# 3.

## Reflections and Recommendations

This is the first time that we, the Child and Youth Officer and the Provincial Health Officer, have worked together on a joint report. As far as we know, it is also the first time that cross-government administrative data have been linked in this way and reported on publicly to provide a more extensive picture of children in care than the Ministry of Children and Family Development on its own can provide.

This first report is on health services utilization and mortality of children in care. As the cross-ministry data we look at expands to include data from the education, employment and income assistance, and criminal justice systems, the picture of children in care will become fuller.

The Medical Services Plan, PharmaNet, Vital Statistics and hospitalization data have limitations and need to be interpreted with caution. However, in combination they do provide useful information about how children in care compare with the general child population in British Columbia in relation to the utilization of a variety of health services, some health outcomes, and mortality. They also raise important questions that require further research.

We reflect below on highlights from the data that strike us as particularly important. We bring to our joint reflections separate perspectives – a focus on child welfare and a focus on public health. It falls within both our mandates to independently advise government about how to improve the health and well-being of all children in British Columbia, including children in care. We have therefore followed our reflections with recommendations to government about how it can fulfill its special responsibility as the guardian of children in care to improve their outcomes. These recommendations flow not just from the data in this report, but also from what we have come to know in our work as Child and Youth Officer and Provincial Health Officer.

### 3. Reflections and Recommendations

Although our mandates as Child and Youth Officer and Provincial Health Officer – and therefore our perspectives – differ somewhat, we hold common views about effective approaches to improving health and well-being outcomes for children and youth. As this is our first joint report, we believe that it is important to identify these common views. In the first section of this part of the report, we have summarized them and related them to improving outcomes for children in care.

In the second section, we set out our reflections on the data and our recommendations arising from it and from what we know from other sources.

In the final section, we report on what we have learned from our joint project about the importance and challenges of collecting cross-ministry data to better understand the state of health and well-being of children and youth in British Columbia. We also make recommendations about how to build on this first step that we have taken together.

# 3.1

## Our Common Views About Effective Approaches

### Prevention and health promotion

*We share the view that investment in health promotion and prevention of poor outcomes brings with it the greatest promise for improving health and well-being outcomes for all children, including children in care.*

Many children in care have health problems when they enter care. In many cases, these health problems are a contributing cause of the children coming into care; their parents (who themselves are often vulnerable) are unable to meet the challenges of parenting children with significant health problems. Depending on their severity, these health problems cause children in care to be more vulnerable and less able to deal with the challenges of life. They increase the risk of poor long-term outcomes, such as low educational attainment levels and inability to form healthy social relationships. Preventing these health problems in the first place could result in fewer children coming into care, and will reduce the risk of poor outcomes for those children who come into care for other reasons.

We know from the data that a child in care is more likely than the average child to have congenital anomalies and poor perinatal health. While not all congenital anomalies and poor health at birth can be prevented, scientific research is improving our understanding of their causes, and some preventive interventions are becoming available. For example, the incidence of spina bifida (one of the congenital anomalies reflected in the data as more prevalent among children in care) can be, and has been, reduced through folic acid supplementation before and during pregnancy.

Sudden Infant Death Syndrome (SIDS) provides another example of the effectiveness of prevention. The mortality data indicate that SIDS remains the second leading cause of mortality from natural causes for children in care, but the number of deaths caused by SIDS has declined over time. This trend reflects effective SIDS prevention programs, such as “back to sleep” and educational programs aimed at reducing smoking in the presence of infants.

Yet another example from the data of the potential of a preventive approach relates to the revelation that the most common reason for hospitalization of children is dental work. Access to preventive dental care would likely change that fact.

Fetal Alcohol Spectrum Disorder (FASD) provides an example – not from the data, but of relevance to children in care – of when prevention could have a significant impact. The databases we examined do not give information about the prevalence of FASD among children in care; however, we know from other sources that it is high. Alcohol consumption during pregnancy is probably the most common preventable cause of congenitally acquired mental and behavioural disabilities in children in British Columbia. The prevention of FASD could have a significant impact on outcomes for children in care, and again possibly reduce the numbers of children who have to be brought into care in the first place.

We welcome the provincial government's recent Act Now initiative aimed at increasing access to services for women at risk of using alcohol during pregnancy. We encourage the development of a provincial FASD prevention strategy, including community development, health promotion and targeted strategies to raise awareness of the disability and risks associated with alcohol and substance use during pregnancy.

## Early diagnosis and intervention

***We share the view that early diagnosis of disabilities and appropriate interventions can make a significant difference in improving outcomes for affected children and their families.***

Some congenital anomalies and effects of poor health at birth will stay with a child for a lifetime. However, if the disabilities caused by these congenital defects and poor early health conditions are identified early, strategies to increase a child's adaptive skills and to support families in managing the consequences of the disabilities can reduce the risks of poor outcomes for these vulnerable children.

Again using FASD as an example of relevance to the children in care population, children with FASD have a significantly greater likelihood of school failure, unemployment, and encounters with the justice system. If

FASD is left undiagnosed, the behavioural patterns of those affected are misunderstood and increase the likelihood of these poor outcomes. While the particular needs of children with FASD vary from child to child, it is known that generally they respond well to structure. Early diagnosis and education of significant adults in the lives of children with FASD will reduce the risks that these children face in childhood, adolescence and adulthood.

## Early childhood development

***We share the view that the most effective way to promote the health and well-being of children, especially vulnerable children (which children in care generally are), is through early childhood development strategies.***

Whenever public investment in strategies to improve outcomes for children and youth are being considered, the critical importance of the early years of life in the development of the child must be stressed. Although interventions later in life can be effective, it is in these early years that the foundation is established for competence and coping skills that will affect learning, behaviour and health throughout a child's life. In these early years, children thrive within families and communities that can meet their physical and developmental needs and provide security, nurturing, respect and love.

Four key areas for strengthening early childhood development were identified for action by governments and communities by the Canadian First Ministers in September 2000:

- the promotion of healthy pregnancy, birth and infancy
- improved parenting and family supports
- strengthened early childhood development, learning and care opportunities
- strengthened community supports.

We agree with these priorities. The Provincial Health Officer's 2002 annual report, *The Health and Well-being of People in British Columbia*, and the Child and Youth Officer's special report, *Healthy Early Childhood Development in British Columbia: From Words to Action*, make specific recommendations on how British Columbia can move forward in the area of early childhood development.



## Reinforcing inherent resiliency

***We share the view that the most effective strategies to improve outcomes for high-risk youth, both in and out of care, are those that enhance their resiliency and acknowledge and build on their strengths.***

Resilience research has focused on the reality that the majority of children and youth at high risk of poor outcomes develop to adulthood without those risks being realized. The research has identified certain factors (known as “protective factors”) that are associated with positive development despite high risk. These are:

- caring relationships with supportive caregivers and other adults
- high expectations, and
- opportunities for participation and contribution.

(For a more thorough discussion of this approach, see the Child and Youth Officer’s Issue Paper 4, *Towards a Strengths-Based Approach to Government Policy and Services for Children and Youth in British Columbia.*)

The data presented in this report showing that in general children in care use more health services is evidence both of poorer outcomes and of the fact that children in care are at higher risk than the general population. We also know from other research that children in care are over-represented in a variety of categories of children and youth at high risk of poor outcomes.

Being in care creates its own particular challenges for providing high-risk children with the caring relationships, high expectations, and opportunities for participation and contribution that they need to improve their chances of healthy development to adulthood. For example, having been removed from their families reduces opportunities to develop long-term relationships with caring adults. Being moved frequently from foster home to foster home (a reasonably common experience for children in care) exacerbates a lack of connection with significant adults in their lives, as does the fact that the ongoing guardianship responsibility of government and the involvement of foster parents officially ceases at age 19.

Once again children in care with FASD provide a good example. We know that the behaviours of these children often alienate them from their caregivers and other adults with whom they interact. Their behaviour creates low expectations, which in turn lowers their self-esteem, which is likely already

low because of their disabilities. They especially need adults to recognize their strengths and not be put off by their behaviour. Their behaviour and the low expectation that others have of them are obstacles to their being provided with opportunities to participate and to learn the value of contribution. These children need more, not fewer, opportunities to participate because it takes them longer to learn by experience. Also, they need to be encouraged to participate in order to experience success, develop competence, contribute, and feel good about themselves. Youth with FASD particularly need a network of adult support as they make the transition to adulthood and have to navigate adult systems that their disabilities make difficult to access. Youth with FASD who age out of government care at 19 are less likely to have that network of adult support.

We believe that if the outcomes for children and youth in care are to improve, the individual planning and management for these children and youth should be directed at enhancing their resiliency and identifying, acknowledging and building on their strengths.

## Special strategies for Aboriginal children

***We share the view that special strategies are required for Aboriginal children and youth in British Columbia, and that these strategies must be developed in partnership with Aboriginal communities.***

The Provincial Health Officer's 2001 annual report, *The Health and Well-being of Aboriginal People in British Columbia*, reveals unacceptable gaps in the health status of Aboriginal people in British Columbia, although it does provide evidence of steady improvement in many health indicators. These disparities in health status between Aboriginal people and the general population in British Columbia are paralleled in socio-economic status and are longstanding. They are the cumulative result of complex historical and contemporary factors that include historical loss of culture and political institutions, colonization, racism, and residential school experiences, which have had multigenerational impacts.

These same factors have led to a disproportionately high number of Aboriginal children and youth in care. The fact that currently almost half of children in care are Aboriginal suggests the need to develop, in conjunction

with Aboriginal communities, particular strategies for improving outcomes for them – strategies that take into account the complex historical and contemporary factors that got them there in the first place. We know that the Ministry of Children and Family Development is currently engaged in a joint effort with Aboriginal communities to do that, and we support that effort.

The *Child, Family and Community Service Act* has as one of its guiding principles that the cultural identity of Aboriginal children should be preserved. The Ministry of Children and Family Development has policies and programs designed to further that principle. At the same time, the disconnection of Aboriginal youth in care from their cultural and community roots is a continuing reality that increases the likelihood of their engaging in high-risk activities. Their over-representation in the criminal justice system attests to this. (See the Child and Youth Officer's Issue Paper 5, *Aboriginal Youth and the Youth Criminal Justice System*, for further discussion of this issue.)

Strategies for improving outcomes for Aboriginal children and youth in care should find ways of enhancing their sense of belonging by engaging the Aboriginal community in the development and implementation of these strategies, and by including a cultural component in responses to at-risk behaviours.

# 3.2

## Our Reflections on the Data

### General observations

We are pleased to note that the data analyzed in the report show that between 1997 and 2004, there is evidence of improvement in a number of health and well-being outcome measures for children in care. For example, mortality rates for children in care show a continuation of the downward trend noted in the Provincial Health Officer's 2001 report *Health Status of Children and Youth in Care in British Columbia: What do the Mortality Data Show?*. The teen pregnancy rate appears to be falling among children in care. Rates of respiratory conditions and injuries are falling more rapidly in the children in care population than in the general population.

Yet the data still show significantly higher rates of health problems and health services utilization for children in care than for children in the general population in most of these areas, as well as in others. While children in care usually experience the same health problems as do children in the general population, they clearly experience more health problems than other children do. This makes them more vulnerable.

Government (through the Director under the *Child, Family and Community Service Act*) is the guardian of these vulnerable children. It therefore has a special responsibility to take steps to prevent, and if prevention is not possible to manage, the health problems experienced by children in care. In its role as the maker and implementer of public policy, government is also well-placed to develop strategies to do that. These strategies should include proper assessment and individualized treatment plans, as well as ongoing training and support for both guardianship and protection line staff and caregivers in managing these conditions.

We note that, with some exceptions, the data suggests similar health outcomes for Aboriginal and non-Aboriginal children in care. In the general population, however, Aboriginal children have poorer health outcomes than non-Aboriginal children. This discrepancy may well have to do with the fact that the socio-economic backgrounds of children in care are similar regardless

of whether they are Aboriginal or non-Aboriginal; whereas in the general population, Aboriginal children on average live in poorer socio-economic circumstances than the average non-Aboriginal child.

Certain elements of the data, which we reflect on below, cause particular concern for children and youth in care, and raise issues for further study. These are:

- the higher prevalence of respiratory conditions
- the higher rates of death and intentional and unintentional injury and poisoning, caused by motor vehicle accidents, suicide and poisoning, especially among adolescents
- the higher prevalence of depression and anxiety
- the higher prevalence of hyperkinetic syndrome and the high use of cerebral stimulants to treat it
- the earlier and higher rates of pregnancy and use of contraception among females
- the poorer health indicators for youth between the ages of 19 and 25 who were previously in care.

## Respiratory conditions

While respiratory illness is the most common medical condition affecting all children in British Columbia, we note that children in care exhibit higher levels of service utilization and diagnoses for respiratory illnesses, and receive a higher level of antibiotic therapy, than do other children.

The data do not tell us *why* children in care experience more respiratory problems, but we may speculate that higher rates of pre-term births among children in care may be a contributing factor. Another factor, given that housing conditions in communities with lower socio-economic status, including reserves, are notoriously poor, may be the presence of environmental contaminants like moulds, fungi, dust and second-hand tobacco smoke, as well as overcrowding in substandard dwellings.

While children in care may have been exposed to these conditions before coming into care, and while there is clearly a social imperative to prevent these conditions by improving housing conditions on reserves and generally for those with lower socio-economic status, there is one environmental contaminant that can be banned from their immediate surroundings: reducing the amount of second-hand smoke to which children in care are exposed

will almost certainly reduce their level of respiratory problems. Because of its contractual relationship with foster parents, the Ministry of Children and Family Development is in a unique position to have an impact on the prevalence of respiratory problems among children in care, by making a smoke-free environment a requirement for foster homes.

## Intentional and unintentional injuries and poisonings

Intentional and unintentional injuries and poisonings are higher among youth in care. At the same time, it is important to note that while children in care have higher rates of hospitalization (and deaths) for these causes, in the past decade rates of injuries and deaths have been steadily declining. This indicates that we are on the right track.

The two most common non-natural causes of deaths of children in care between 1986 and 2005 were suicide and motor vehicle accidents. Among the most common reasons for hospitalization of children in continuing care in the adolescent years and early adulthood are assaults, poisonings, suicide-related issues and injuries resulting from motor vehicle accidents. Children in care also have a higher rate of hospitalization for injuries of undetermined cause – that is, whether they are accidental or intentionally self-inflicted, and in the case of adolescent and young adult females, for poisonings categorized as accidental. It is quite likely that some of these hospitalizations are connected to suicide attempts.

This data raises a concern about suicide among youth who are or have been in care. There is an Aboriginal aspect to the issue of suicide that we want to highlight. We know that the high risk of suicide is an issue for Aboriginal youth in general and for Aboriginal youth in care.

The research on Aboriginal youth suicide suggests that a sense of belonging is a crucial protective factor that reduces the risk of suicide. For Aboriginal children and youth, this means an understanding of themselves as Aboriginal. Connection to their culture and community is important in strengthening their sense of belonging. (For a further discussion of preventing Aboriginal youth suicide, see the Child and Youth Officer’s special report, *Sayt K’üüilm Goot – Of One Heart: Preventing Aboriginal Youth Suicide Through Youth and Community Engagement*.)

### Recommendation 1:

#### **For the Ministry of Children and Family Development**

Introduce a policy of no smoking inside foster homes.

### Recommendation 2:

#### **For the Ministry of Children and Family Development**

Engage in a renewed effort to connect Aboriginal children and youth in the continuing care of the government with their cultural and community roots to enhance their sense of belonging.

We know from other research that alcohol and other drugs are often contributing factors in assaults, accidental poisonings and motor vehicle accidents involving youth. Targeted programs aimed at promoting reduced and safer use of alcohol and drugs have proven effective. The data revealing higher-than-average injuries caused by assaults, accidental poisonings and motor vehicle accidents for youth who are or have been in care suggest the potential value of a targeted educational initiative among children and youth in care about the risks connected with alcohol and drugs.

## Depression and anxiety disorders

Sixty-five per cent of children and youth in care have been diagnosed at least once with a mental disorder, compared with 17% of the general population. Among the most common diagnoses, especially for females in the adolescent years, are depression and anxiety disorders. The prescribing of psychotherapeutic (e.g., anti-depressants and tranquilizers) and anxiolytic drugs (e.g., anti-anxiety medications) for adolescent females in care is similarly high.

This data, along with the injury data referred to above, suggest that anxiety and depression are among the mental health problems that children in care experience at significantly higher rates than do the general child population in British Columbia.

Having said that, we need to introduce a note of caution about inferences to be made from the data. The Ministry of Children and Family Development, in its research in this area, has estimated that about 13% of children and youth suffering from serious mental health problems receive treatment. This indicates that these conditions are under-treated in the general population. The high identification and pharmaceutical treatment of mental health conditions among children and youth in care could in part be a sign of better access to needed services. Unfortunately, no data are available to determine the frequency of use of counselling services by this same group. (Counselling services are generally considered an important part of treatment, often preferable to pharmaceutical interventions).

Nevertheless, it is fair to assume that rates of depression and anxiety disorders are high among children and youth in care. Children and youth with mental disorders of this type are in the high-risk category for poor outcomes such as poor school performance and dropping out of school.

### **Recommendation 3:**

#### **For the Ministry of Children and Family Development**

Promote education of youth in care about managing the risks of alcohol and drug use.

We know that factors in the child's environment affect the incidence and course of psychiatric and mental disorders. In particular, we know that stress is a factor leading to increased depression and anxiety disorders. Stress can be caused by the presence of risk factors like poverty, parental substance abuse, and domestic violence (including child abuse), which will have been experienced by many children and youth before they come into care. Children in care will also have experienced the stress of being removed from their families, and the multiple stresses of being in care, including the disruption of moving placements and schools, and the uncertain futures for many older youth as they face the post-majority years without adequate skills and support. All of these stressors combine to increase the risk that children in care will suffer from depression and anxiety.

In addition to its guardianship responsibilities, the Ministry of Children and Family Development has responsibility for child and youth mental health. Those with particular responsibility for child and youth mental health within the ministry have developed a Child and Youth Mental Health Plan. The first phase of that plan has involved a research-policy partnership with researchers formerly with the Mental Health Evaluation and Community Consultation Unit (Mheccu) at the University of British Columbia and now with the Centre for Applied Research in Mental Health and Addiction (CARMHA) at Simon Fraser University, and has brought together panels of experts to look at epidemiological and other research-based evidence to determine, among other things, best practices for the prevention, identification and treatment of prevalent child and youth mental health conditions like depression and anxiety.

This raises the question of whether the Ministry of Children and Family Development, in fulfilling its guardianship responsibilities, has been applying to the children and youth in its care what it has learned through its efforts in the child and youth mental health field. Does the ministry know which children and youth in care suffer from anxiety and depression and what treatment they are receiving? What efforts, if any, are being made to apply best practices for identification and treatment of anxiety and depression to the children and youth in the guardianship of the Director under the *Child, Family and Community Service Act*? Are there environmental conditions that the Ministry of Children and Family Development in its guardianship role could change to reduce risk and enhance protective factors?

#### **Recommendation 4:**

#### **For the Ministry of Children and Family Development**

Using the expertise connected with the Child and Youth Mental Health Plan, conduct a review of the current status of identification and treatment of children and youth in care with anxiety and depression disorders, and develop a strategy to implement identified best practices.



An example of an initiative connected to Phase 1 of the Child and Youth Mental Health Plan is the Ministry of Children and Family Development's funding and production, through Mheccu, of a series of documentary videos on mental health issues affecting children and youth, which have been aired on the Knowledge Network channel and are available online. The series includes *Beyond the Blues: Child and Youth Depression* and *Fighting Their Fears: Child and Youth Anxiety*, two excellent documentaries that provide youth and their parents with information about how to recognize early symptoms of depression and anxiety disorders, and effective strategies to combat the debilitating effects of these disorders. The information in the videos is presented by top clinicians in child and youth mental health in British Columbia, backed by the best research available. There are also knowledge tools that accompany the videos, including *Dealing with Depression: Antidepressant Skills for Teens*, a workbook that is featured in one of the videos as an effective aid for youth struggling with symptoms of a depressive disorder.

With the knowledge coming from their research partnership with Mheccu, the Ministry of Children and Family Development should be particularly well placed to apply the lessons learned to the children in its care. Foster parents and guardianship social workers, in particular, should be well versed in the lessons portrayed in the videos, so that they can support children and youth in care who suffer from these prevalent mental health disorders.

## Cerebral stimulants and hyperkinetic syndrome

Males in care are 10 times more likely than the general population of male children to be prescribed cerebral stimulants, such as Ritalin. Although females in care are less likely than males in care to be prescribed these stimulants, they are still 12 times more likely to be treated with them than are female children generally. The high use of cerebral stimulants for hyperkinetic conditions among children in care raises questions and concerns.

Cerebral stimulants are used to treat Attention Deficit Hyperactivity Disorder (ADHD) and other hyperkinetic syndromes. While research has shown these stimulants to reduce hyperactive, impulsive and inattentive behaviours, it has also raised questions about their use, including whether their use translates ultimately into a better prognosis with respect to outcomes, such as educational and occupational achievement. Questions have also been raised about the safety of stimulant use, particularly with pre-school children (Vitiello, 2001).

### Recommendation 5:

#### **For the Ministry of Children and Family Development**

Educate children and youth in care, foster parents and guardianship social workers about anxiety and depression, and the identification and management of them.

### Recommendation 6:

#### **For the Ministry of Children and Family Development**

Consult with the College of Physicians and Surgeons, and other appropriate professional organizations, about steps that could be taken to determine whether the prescribing practices of physicians treating children in care are appropriate.

It is perhaps predictable that children coming into care will exhibit behaviours that are difficult to manage. We need to understand better whether the pattern of high use of cerebral stimulants for children in care reflects effective diagnosis and treatment – or over-medicating of children in care. If over-medication is occurring, responsibility lies with the individual physicians who are doing the prescribing and with the medical community as a self-governing profession. As the guardian of children in care, government also has a responsibility to determine whether the high use of cerebral stimulants for the children in its care is in the children’s best interest. Behavioural disorders is one of the areas of focus in the first phase of the Child and Youth Mental Health Plan. The Ministry of Children and Family Development has access to expertise in this area that should assist in reviewing this question.

Government has access to data that could lead to helpful research on the subject of the long-term effectiveness and safety of cerebral stimulants. Academic researchers in British Columbia are well placed to undertake research to answer the question of what long-term impact this high rate of cerebral stimulant use has on children in government care. The Ministry of Children and Family Development has a responsibility and a potentially important leadership role to play in pursuing research in this area.

## Early and higher rates of pregnancy and use of contraception

We note that both pregnancies and contraception use occur earlier and at higher rates for females in care than for the general population. Females in continuing care became pregnant at a rate four times that of the general population and were prescribed contraceptives about 3.5 times as often between the ages of 12 and 19. This suggests an earlier onset of sexual activity among youth in care. Higher levels of early sexual activity and pregnancy are closely associated with other risk behaviours, such as drug and alcohol use, dropping out of school, and street involvement, which in turn bring with them an increased likelihood of exploitation, and sexually transmitted diseases.

Furthermore, compared with mothers in their twenties and thirties, teenaged mothers and their infants are likely to have poorer physical, emotional and social outcomes. The results of teenage girls having babies, whatever their motivation, leads to dropping out of school and the curtailment of opportunity for the young mother. It also has implications for parenting capacity.

### **Recommendation 7:**

#### **For the Ministry of Children and Family Development**

Take immediate steps to engage and collaborate with academics to conduct research into the issue of whether children in care are being appropriately medicated with cerebral stimulants.

The access to reproductive services for young women in care suggested by the data may be a good thing. What the data do not tell us is whether caregivers are prepared for the level of sexual behaviours in their charges indicated by the data. Nor does it tell us whether effective anticipatory counselling and guidance are provided for caregivers or the youth in their care.

Public health authorities and other community organizations, such as Options for Sexual Health (formerly Planned Parenthood BC), do important work in this area and sexually active youth in care should be afforded easy access. In addition, there is an existing network of Pregnancy Outreach Programs targeting high-risk pregnancies that reaches many young pregnant women. All pregnant females in care should be referred to these programs. (This would likely require an expansion of the programs.)

### The high level of post-majority health issues

The data indicates poorer health in the immediate post-majority years (19 to 25) for children in care than for the general population in that age group. Females experience continuing high rates of respiratory problems. Hospitalization for injuries remains high, particularly for suicide attempts, assaults, motor vehicle accidents and accidental poisonings. Accidental poisonings for females who have been in care peak at age 22. Mental health issues remain high for former youth in care to age 25, especially for females.

The transition from adolescence to adulthood is a critical developmental period. Difficulties in handling relationships and emotions and the many challenges of adulthood affect the prevalence of anxiety, depression, and acting-out behaviours.

Most supports for youth in continuing care end when they turn 19. The adult system does not provide the same level of support. Those services that are available in the adult system (e.g., mental health and addiction services) are not easily accessible to young people living in destabilized situations who do not have the skill or experience to deal with adult bureaucracies. These young people need supportive adults to help them navigate the system and to advocate for themselves. Young people who have been in care often do not have adults who will play this role for them once they reach 19 and the government's guardianship responsibility ends.

#### **Recommendation 8:**

##### **For the Ministry of Children and Family Development**

Address sexuality issues of children and youth in care proactively by working in conjunction with public health authorities and other resources to:

- make sex and parenting education and supports available both during and on leaving care, and
- provide foster parents with training on sex and parenting education and early pregnancy interventions.

#### **Recommendation 9:**

##### **For the provincial government**

Invest in and develop a cross-ministry plan for post-majority supports for youth leaving care who require adult services, with the Ministry of Children and Family Development taking the lead role.

# 3.3

## Learning From and Building on This Initiative

We have learned some lessons from this joint initiative about how cross-ministry administrative data can be used in the future to gain insights into the health and well-being of children in British Columbia, in particular children in the government's care.

We have learned that collecting cross-ministry data has its challenges and that the data itself has its limitations. We believe that some of these challenges and limitations can be overcome and we make some recommendations to achieve that end.

We have also learned that the service and outcome data currently available within government provides an important research tool to help understand the children in care population, to measure outcomes over time for children in care, and to raise questions and potentially evaluate public policy strategies to improve those outcomes.

### Challenges in collecting and analyzing data

The experience of collecting the data for this and other reports in this series has revealed challenges in the sharing of cross-ministry data for purposes outside the purposes of the ministry having control over the data.

We began this initiative in early 2005 and it took us more than a year to get the data we needed. While we have at times felt frustrated with the slowness of our progress in obtaining the data, we have been told by others, who have in various roles toiled to achieve the cross-ministry sharing of data for public policy research purposes, that we have experienced unique success.

The obstacles that we have experienced in accessing the data have on occasion only been overcome by a strong assertion of the statutory mandate of the Child and Youth Officer. Despite a very clear and general statement in the *Office for Children and Youth Act* of the Child and Youth Officer's entitlement to information necessary for the carrying out of her duties and

responsibilities, this entitlement was from time to time questioned – although in every instance it was ultimately acknowledged.

We were asking for data that identified individuals and included personal information, and the resistance to providing the information was most often framed as concern for the protection of individual privacy and the perceived limitations imposed by the *Freedom of Information and Privacy Act* (FOIPPA). (In fact, the *Office for Children and Youth Act* expressly provides for entitlement to the data despite any other enactment, including FOIPPA.) Recognizing the personal aspects of the data, we took steps to set up protocols to maintain confidentiality. We were happy to work with the public body from which we were seeking the data to ensure continued confidentiality. However, the reluctance in some quarters to share the data did not always end there, suggesting that legitimate privacy concerns, and confusion over the role of FOIPPA, were not the only cause of the reluctance. In our view, our experience (and that of others who have tried to advance cross-ministry sharing of information) may be evidence of the existence of a culture, perhaps inherent in government or any large bureaucracy, of a strong sense of “ownership,” to the exclusion of perceived outsiders, of the data they have collected and housed.

While we see major public policy benefits to the cross-ministry sharing of data quite separate from its use by officers such as the Provincial Health Officer, the Child and Youth Officer and the future Representative for Children and Youth, we believe that these officers have an important role to play in collecting, analyzing and commenting on linked administrative data if it is to be used to independently monitor government-funded services for children and youth. If this role is to be effective, the entitlement of the Representative for Children and Youth to this data must be clear.

In his report, *BC Children and Youth Review: An Independent Review of BC's Child Protection System* (April 7, 2006), the Honourable Ted Hughes recommended that the *Representative for Children and Youth Act* clearly provide for the creation, use and disclosure of linked data sets for purposes specified in the act. We have some concern that that act in its current form may be more restrictive than the *Office for Children and Youth Act* in that regard. It contains a provision for information-sharing agreements between the Representative and public bodies that may be taken to imply that the Representative's entitlement to the information is conditional upon reaching

agreement with the public body. By doing this it potentially sets up a negotiating dynamic that could be used to delay the efficient transfer of data in the future.

We are not suggesting that this was the intention of the drafters of the act, but it may be an unforeseen consequence. Fortunately, this is a consequence that can be remedied, as we understand that the Ministry of Attorney General is conducting a consultation process and will be proposing amendments to the act for consideration by the Legislature.

## Measuring outcomes and a report card for children in care

The data set out in the second part of this report provides a baseline from which to begin tracking health services utilization and outcome measures in order to determine whether the health and well-being of children in care is improving over time. As additional measures become available, they can be added to further enrich our understanding.

Meanwhile, more consideration should be given to which measures are most useful as indicators of health and well-being outcomes. Work has already been done on a provincial and national level to identify health and well-being indicators for children in care. It makes sense to build on, although not be slowed down by, this work. Also, further research could usefully be done to better understand the causes of some of the patterns observed in the data that has been collected. This would clarify what measures would be most helpful in understanding how well children in care are doing in British Columbia.

In considering the best outcome measures, it may become apparent that the currently accessible administrative data has gaps. In that case, consideration should be given to how those gaps could be filled in a manageable and reliable way.

While there is preliminary work to be done, we believe that a report card could and should be developed, using the measures identified as most helpful, and the current administrative data, possibly supplemented by other data that could be collected and accessed reasonably easily.

We also believe that the Provincial Health Officer and the new Representative for Children and Youth should have a role in this reporting process.

### **Recommendation 10:**

#### **For the Ministry of Attorney General**

Propose amendments to the *Representative for Children and Youth Act* that make clear the Representative's immediate entitlement to cross-ministry data required for the purposes of the act.

Because of an inevitably limited research capacity in these two offices, the responsibility for the actual collection and linking of the data on an ongoing basis may rest better with the relevant ministries, or with BC Stats. (See Ian McKinnon’s paper, “BC’s Children in Care: Improving data and outcomes reporting,” prepared for the *BC Children and Youth Review*, for an overview of British Columbia’s data capacity.)

On the other hand, involving officers not responsible for the provision of direct services for children, youth and families, but with mandates to further the interests of children and youth, would increase the credibility of the reporting. It would ensure that concern about possible negative reflection on a given ministry arising from the data would not get in the way of providing the public with a full and accurate picture of the state of health and well-being of children in care in British Columbia.

## Using data for evaluating government policies and programs

It has been the policy of government in recent years to encourage the use of outcome measurements to evaluate the effectiveness of its strategies. Developing meaningful outcome measures is often a challenge, in part because of the lack of relevant and accessible data. The data collected in this initiative and analyzed for this report and the other reports in this series could provide a base for outcome measures to evaluate the effectiveness of programs and policies undertaken by the Ministry of Children and Family Development on behalf of children in care.

## Digging more deeply into causes

This report and the others planned for the series are intended to describe service utilization and outcomes for children in care. The data does not identify the causes of the patterns observed. Making causal connections between the provision of services and outcomes requires more complex research than was undertaken in this initiative. British Columbia is fortunate to have considerable research expertise in academic and research units that have the capacity to do such research.

For example, the research done for this report (and those planned) does not tell us what the impact of being in care has on the children. To explore this issue, the Child and Youth Officer for British Columbia is partnering

### **Recommendation 11:**

#### **For the new Representative for Children and Youth**

In collaboration with the Provincial Health Officer, develop a regular report card on identified and generally accepted indicators of the health and well-being of children in care, using the data in this report (and in the others planned for this series) as a baseline.

### **Recommendation 12:**

#### **For the Ministry of Children and Family Development and the provincial government**

Consider using outcome measures from the data generated by this initiative as a baseline against which to evaluate programs and policies designed by the ministry to better the health and well-being of children in care.

in a project with the Human Early Learning Partnership at the University of British Columbia, which has the expertise to dig more deeply into the data to consider this question of impact. The study will compare the outcomes for a sub-set of children in care with a similar group of children who did not come into care.

We believe that this kind of initiative should become the norm for government. Knowing more about the impact of being in care may throw light on the ongoing debate about the significance, in terms of the long-term interests of children, of the fluctuation in the numbers of children in care over time. Also, a better understanding of the causes of poorer outcomes for children in care, including the impact of being in care, will be useful in the development of strategies to improve outcomes.

### **Recommendation 13:**

#### **For the Ministry of Children and Family Development and the provincial government**

Engage in collaborative research with research communities outside of government to dig more deeply into the causes of poorer outcomes for children in care and to study the impact, if any, of being in care on specific outcomes for children in care.





# Glossary

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**Aboriginal:** This report uses the same definition of Aboriginal as the Ministry of Children and Family Development uses in its data, in which people who self-identify as Aboriginal are considered Aboriginal.

**continuing care:** The government is the sole guardian of a child with all the rights, duties and responsibilities of a parent and has the right to consent to the adoption of the child. (The Public Guardian and Trustee becomes the guardian of the child's estate.) Continuing care usually doesn't end until the child turns 19 or is adopted.

**general population:** Used in this report to describe the population of children and youth who have never been in care.

**International Classification of Disease Revision 9 (ICD9):** An international system of disease classification used by both the Medical Services Plan and hospitals.

**perinatal:** The period during gestation and the first week after birth.

**temporary care:** The government has custody of the child on a time-limited basis and unless limited by the court carries out the responsibilities of a guardian except the right to consent to an adoption.



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# Appendix A: Data Definitions

## Matching Process for the Health Care Utilization Child in Care Data Set

The data set was constructed through identifying all children who were in care for all or a part of the time period April 1, 1997 to November 1, 2005 and who had a valid personal health number. The Ministry of Children and Family Development provided records for 40,303 children over this time period; 37,023 or 92% of these children had valid personal health numbers which we linked with health care records. Of the 37,023, children in continuing care accounted for 12,221 and children in temporary care accounted for the remaining 24,802. During this same time period there were 1,629,059 children in the general population with valid personal health numbers.

	Continuing Care			General Population
	Aboriginal	Non Aboriginal	Total	
Females	2,446	3,507	5,953	790,971
Males	2,578	3,690	6,268	838,088
Total	5,024	7,197	12,221	1,629,059

Children who were in care between 1997 and 2005 were born in 1978 and later. Some of those children would have turned 19 in 1997 which allowed us to follow their health care utilization until they turned 27. Analysis of health care records was limited to age 25 in this report because of small cell sizes at ages 26 and 27 for children who had been in continuing care.

## Data Sets

The data sets used in this report included children in care records from the Ministry of Children and Family Development; Ministry of Health: Client Registry, Medical Services Plan, PharmaNet, Discharge Abstract Database (Hospital records), and Vital Statistics.

Mortality data were accessed through Vital Statistics for all children who died while in care between 1986 and 2005 and through the Ministry of Health Client Registry and Vital Statistics for children who died both in care and after leaving care between 1997 and 2005.

## Age Adjusting\*

Age adjusting was conducted using the direct method.

## Significance Testing

Significance testing for Tables 1-9 was conducted using a 2 tailed t-test at the 95% confidence level.

\*Age adjusted variances were calculated for statistical testing using the methodology developed by Kim, HJ, Fay, MP, Fever, EJ, Midthune, DN (2000). Permutation test for joinpoint regression with applications to cancer rates. *Statistics in Medicine*, 19: p.335-351 (correction; 2001; 20:655)

## How to Reach Us



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