

A Report On the Health of British Columbians

Provincial Health Officer's Annual Report

1997

**Feature Report:
The Health and Well-being
of British Columbia's Children**

1998

Ministry of Health and Ministry Responsible for Seniors
Victoria, British Columbia

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Ministry of Health and
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Victoria, British Columbia

May 8, 1998

The Honourable Penny Priddy
Minister of Health and
Minister Responsible for Seniors
Parliament Buildings
Victoria, British Columbia
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Madam:

I have the honour of submitting the Provincial
Health Officer's Annual Report for 1997.

John S. Millar, M.D.
Provincial Health Officer

Highlights

This year's annual report focuses on the health and development of British Columbia's children, from birth through the elementary school years.

There are two reasons for this year's particular focus. The first is immediate – to draw attention to the health of children in British Columbia, so that this information can be used to improve services to children.

The second reason is more long-term. It is crucial to understand the importance of early childhood experiences on one's health throughout life. It is now well-established that childhood marks a period of extreme sensitivity to environmental conditions. To the degree that we are able, as a society, to provide stimulating and supportive environments for our children, we will improve overall levels of health in

British Columbia and reduce inequalities in health. Launching lives well is a vital health promotion strategy.

This report identifies 122 specific actions that can be taken to improve the health of British Columbia's children. These recommended actions are intended to stimulate discussion and action by the many individuals and groups who influence the health of children, at provincial, regional, and community levels. Coordinated efforts on the recommended actions will contribute to various goals and commitments to children's health, including the *Convention on the Rights of the Child* and the recently-announced health goals for British Columbia.

Health status of British Columbia's children

Children's health, like the health of adults, involves physical, mental, emotional, and social well-being.

Overall, the children of British Columbia are among the healthiest in the world. Infant and child deaths rates have shown a continuous decline and are now very low. Most school-aged children say they are healthy and feel physically good.

Aboriginal children, children in low-income families, and children living in the north and in parts of Vancouver experience high death rates, compared to their counterparts in the total child population.

While childhood deaths are becoming rare, illnesses and health problems remain common.

Recommended Action:

- Improve provincial information about the common non-life-threatening health problems that children experience and about the groups of children who are disadvantaged in their overall level of health, as a basis for targeted prevention programs.

Growing up in British Columbia

The family environment is the most important single influence on a child's health and well-being – an influence that lasts a lifetime. Healthy neighbourhoods and communities and quality child care are also important in providing nurturing and stimulating environments.

Most children live in supportive families. However, some families show signs of distress, as measured by rates of parental depression, tension in the home, and child abuse.

One child in five lives in a low-income family, and the trend is not improving. Not all children living in poverty end up having problems, but a stable and adequate family income provides greater opportunities for children to achieve health. Reducing child poverty and providing stimulating and supportive child care are the most important actions we can take to improve the well-being of children.

Recommended Actions:

- Reduce the number of children living in poverty and reduce the depth and duration of poverty.
- Adopt the principle, modelled on the principles of medicare, that all children should have access to high quality child care without financial barriers.
- Support community-level initiatives that build "social capital" (participation in the activities of community life).

Child growth and development

Healthy growth and development means good physical health, good social skills, an ability to learn, problem-solving and coping skills, self-esteem, and hope for the future.

Children progress through various stages of growth and development. The time from before birth through age 5 is a critical window of opportunity for helping children receive a good start in life. The school-age years are also important for building and enhancement of skills. However, it takes more effort to overcome developmental problems than to prevent them by investing during the earlier "foundation" years.

Physical environment

Most British Columbia children are growing up healthy and well-adjusted. Low birthweight babies, inequalities in school readiness, rates of smoking and physical inactivity, and the frequency of mental and emotional problems among children are concerning. These issues need to be tackled in a coordinated way, if more children are to achieve their full potential for healthy and productive lives.

Recommended Actions:

- Implement comprehensive programs to encourage non-smoking, healthy eating, and regular physical activity, starting at a young age.
- Implement programs to help pregnant women, children, and families at high risk of health problems.

Children's health can be affected by their physical environments – the surroundings in which they live, breathe, eat, attend school, and play.

From the perspective of children's health, second-hand smoke, small airborne particles called PM₁₀, and allergens such as house dust mites, pet dander, and moulds are important air contaminants. Physical injuries are another serious threat that children face. Intestinal diseases, which can be spread through contaminated hands or toys, food, or water, are very common among children. In the past, lead was a major environmental hazard, but the risk has been dramatically reduced.

It is not possible to predict or eliminate all environmental health risks. In developing environmental policies and standards, trade-offs have to be made. For example, a reduction in greenhouse gases or PM₁₀ emissions may well require restrictions on industry that lead to job and income loss, and making all schools earthquake-proof could consume the entire education budget. To the extent possible, it is important to identify these trade-offs, so that parents and others can make informed decisions about protecting children – and future generations of children – from environmental threats.

Recommended Actions:

- Encourage scientific research and public discussion about risks in the physical environment and the options for managing them.
- Take into account children's characteristics and behaviour when developing policies and standards about air, food, water, land, and other aspects of the physical environment.

Health services for children

Families and other caregivers are the front-line providers of children's health services. Beginning with pregnancy and birth, children have contact with the publicly-funded health services system, which includes well-baby care, treatment of common childhood illnesses, and specialized services for specific health problems.

Every year, most children receive care from family doctors, two of every ten see a specialist, and about four in every one hundred children are admitted to hospital. Common conditions for which children seek medical care are respiratory infections, ear infections, emotional and behavioural problems, asthma, vision impairment, skin diseases, and dental problems.

At present, we have limited information about which children receive what health service for what purpose, whether those services are leading to improved health, and whether children have health needs that are not being met. Levels of antibiotic use and regional variations in Ritalin prescribing, myringotomy, and tonsillectomy suggest that some children may be receiving unnecessary services.

Recommended Actions:

- Continue to provide immunization, screening, and other population programs designed to maintain children's health.
- Educate parents and other caregivers about appropriate treatment of common childhood diseases such as upper respiratory infections and ear infections.
- Increase the proportion of health resources allocated to evaluation and quality improvement.

Aboriginal children

On most measures of health, Aboriginal children do not fare as well as others. Sudden Infant Death Syndrome (SIDS), injuries, dental disease, and exposure to second-hand smoke are examples of health problems that are more frequent among Aboriginal children than among the total child population.

While this lower level of health remains unacceptable, Aboriginal children have made significant health gains in recent years, and many Aboriginal communities have begun to make improvements in the conditions that affect their health.

Recommended Actions:

- Support efforts by Aboriginal people to achieve self-governance.
- Support programs and services that focus on the development of self-esteem, coping skills, and healthy behaviours.

Disease and injury prevention

We have the knowledge to prevent – or reduce the impact of – many of the diseases and conditions that burden the health of British Columbia's children.

Some babies are born with problems caused by their mother's use of alcohol or other drugs during pregnancy. As a society, we need to tackle the issue of preventing substance abuse.

Increasing women's consumption of folic acid – around the time conception – would be a major step towards prevention of neural tube and other birth defects.

For asthma and other respiratory diseases, eliminating exposure to tobacco smoke and other air contaminants is perhaps the most important preventive activity.

Up to 90% of childhood injuries can be prevented, through collaborative efforts to make homes, schools, parks, and streets safer.

Although British Columbia has been highly successful in protecting children from vaccine-preventable disease, there are areas of the province where immunization levels are a cause for concern.

Prenatal testing and drug therapy are helping to reduce the number of children born with HIV, but further improvements are possible.

Continued improvements in dental health will require reaching high-risk groups, particularly Aboriginal and immigrant children, as well as efforts to prevent nursing bottle tooth decay and early childhood tooth decay.

For conditions such as allergies, cancer, or other chronic diseases, prevention is not always possible. Efforts should be focused on education and management of disease, to reduce the severity and impact of illness.

Recommended Actions:

- Encourage community-wide solutions to substance abuse, violence, injuries, and other preventable health problems.
- Develop a coordinated childhood asthma management plan to help standardize care around the province.
- Set goals to increase the proportion of children who are brought up in non-smoking homes.
- Implement a province-wide registry for tracking immunizations and communicable diseases.

Meeting our commitments to children

The importance of child health and well-being has been recognized in leadership initiatives nationally and provincially. *Health Goals for British Columbia, Measuring Our Success*, and the *Convention on the Rights of the Child*, three documents that have been drawn upon in preparing this report, contain a number of specific goals and commitments with regard to children's health.

We have made progress in many areas of child health. However, there is still some distance to go, if we are to meet our commitments to ensuring that all young children receive the best possible start in life.

Investing in child health

Providing the means whereby all children can enjoy good health is a wise investment – from an economic standpoint, as well as from the perspective of improving population health.

Children who arrive at school "ready to learn" are more able to take full advantage of educational opportunities, thus monies devoted to the education system are more productively spent. Children who are given a healthy start are more likely to be employed and to have higher earnings, factors that contribute to their personal health. The work force becomes more productive and competitive, making the economy stronger and more sustainable. Optimal physical growth and development reduces the occurrence of disease and other health and social problems, thereby avoiding expensive treatments and services.

With our present information systems, it is not possible to determine how much money is spent specifically on children and what the outcomes relative to these expenditures may be. Nonetheless, in making allocations between and within various government enterprises, it is possible to give increased emphasis to programs and projects that maintain and improve healthy child development. The corporate sector and non-government organizations can contribute, by adopting and advocating for policies and programs that are child-friendly.

Making children healthier requires a planned approach, along with political commitment and adequate funding for needed policies, services, and other actions.

Recommended Actions:

- Develop a provincial children's agenda to provide a comprehensive approach to child health and development.
- Integrate specific questions on child health into impact assessments and other policy and planning decisions.

For a complete list of recommended actions, see pages 177-183.

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This report focuses on the health of British Columbia's children from birth through the elementary school years. Building on the work of academics, interest groups, and governments, this report describes the health status of children, the factors that influence their health, and what can be done to improve the health of all children.

The Provincial Health Officer is required by the *Health Act* to report independently to British Columbians on their health status, on health issues, and on the need for legislation, policies, and programs that will improve the health of the population.

The Provincial Health Officer is required to produce an annual report through the minister to the legislature and the people. In addition, reports may be issued from time to time in the manner thought to be most appropriate.

In previous annual reports, the critical importance of early childhood development to health status throughout the rest of the life cycle has been recognized. This special report, therefore, focuses particularly on the health and development of children in British Columbia.

This report describes existing inequities in the health status of children, what is known about the most important influences on child health, and, in light of this knowledge, what can be done to improve the health of all children in British Columbia.

This report focuses on children from early childhood (conception to age 5) through the elementary school years (ages 6 to 12). Because most routinely-produced health statistics are based on 5-year age groupings, many of the data presented are by 5-year age groups, for birth through age 14.

The health of adolescents, Aboriginal health, cancer, and the health care system are some of the topics under consideration for future reports.

Audience For This Report

The group that has the most influence on children's health and well-being is, of course, the family.

There are several other groups of people who make decisions that affect the health of children. Many of the major decisions about policies, programs, and legislation are made by our political representatives at the national, provincial, regional, and municipal levels, and by those dedicated to governing our universities, school system, and regional health and social services.

The responsibility for the health of children does not lie with families or the government alone. Actions can be taken in the private sector, both in maintaining a sustainable economy and in specific family-friendly and healthy workplace policies. There are many non-government organizations that have a primary interest in the health of children and families, and many more that have the potential to influence child health.

It has been said that it takes a village to raise a child, reflecting the extreme importance of local neighbourhoods and communities to family and child health. This includes volunteer organizations, clubs, churches, and other community groups.

Fundamental to enabling all these groups to improve the health and development of children is knowledge – knowledge about the important factors influencing the health of children. This report is dedicated to all groups concerned with child health and development, in the hope that through a more informed public and more knowledgeable decision-makers, coordinated action will be taken to improve the health and development of British Columbia's children.

Formal Commitments to Child Health

Recently, the importance of child health and well-being has been recognized in leadership initiatives nationally and provincially.

In 1991, Canada ratified the *Convention on the Rights of the Child*. By signing this global charter, Canada has stated its intention to protect children from all forms of violence and abuse, to diminish infant and child mortality, and to ensure that every child has an adequate standard of living. In 1989, the federal government announced its intention to eradicate child poverty, and in 1997, undertook some practical means to achieve this, by redesigning the system of child tax benefits.

Canada, along with other nations that have signed the *Convention*, is required to make periodic reports to the United Nations regarding progress on children's rights. Canada's next report, covering the period 1994-1998, is due to be made in January 1999.

Because it is an international treaty, only United Nations member-states can formally sign and ratify the *Convention*. However, the British Columbia government has indicated its support for the *Convention*.

In British Columbia, the Ministry for Children and Families was created in 1996. In 1997, the Ministry published *Measuring Our Success*, which sets out goals, indicators, and benchmarks for child and family well-being (Appendix D).

In March 1998, the Minister of Health released the *Health Goals for British Columbia* (Appendix E). These goals, approved by Cabinet, include a number of objectives that specifically address child and family health issues, as well as many that address the broader socio-economic, environmental, and health care issues that are important to child health.

The *Convention on the Rights of the Child*, *Measuring Our Success*, and *Health Goals for British Columbia* have all been drawn upon in the preparation of this report. In part, this report provides an update on progress towards the goals and commitments to child health and well-being as set out in these three documents.

Other Initiatives

In addition to the above documents, this report builds on the work of many others, including academics, interest groups, and governments. Some of the important initiatives and groups involved in child health are:

- *National Longitudinal Survey of Children and Youth*. This major survey will track a representative sample of Canadian children from birth through to adulthood. Such long-term research provides a unique opportunity to study children's physical and social development and to learn more about the conditions that produce healthy children.

The survey was developed by Statistics Canada and Human Resources Development Canada. The first cycle, which took place in 1994, collected information about children age 0 to 11.

- *The Progress of Canada's Children.* This series of reports, which began in 1996, shows how well Canadian children and youth are faring on a broad range of health and social measures. The series, prepared by the Canadian Council on Social Development, identifies areas where children are doing well and others where improvements are needed.
- *Canadian Institute of Child Health.* This Institute has produced reports that provide a comprehensive picture of the health of Canada's children (Canadian Institute of Child Health, 1994). Its publications have raised awareness of the importance of child health among the general public, governments at all levels, and those who provide health and social services to children.
- *Canadian Institute of Advanced Research.* Through its network of experts, the Institute's Population Health Program has undertaken research to improve our understanding of health, the factors that influence health, and ways to improve the health of individuals and the population. The Institute has helped to identify the powerful links between early childhood experiences and health and well-being throughout life.
- *Turning Points.* This report outlines a mission and eight national goals for healthy child and youth development (Health Canada, 1995). The goals were developed through a cross-Canada consultation process.
- *Federal/Provincial/Territorial Advisory Committee on Population Health (ACPH).* This committee provides advice on national and inter-provincial strategies to improve the health status of Canadians. Its initiatives and publications, such as *Strategies for Population Health: Investing in the Health of Canadians*, have recognized the importance of healthy child development as a key determinant of population health (Advisory Committee on Population Health, 1994). A recent publication, *Building a National Strategy for Healthy Child Development*, outlines policy actions that will provide children with conditions they need to develop into healthy and productive adults (Advisory Committee on Population Health, 1998).
- *National Children's Agenda.* This initiative involves developing a framework for improving the health and well-being of Canada's children and youth. As announced in the September 1997 Speech from the Throne, some priority initiatives under this Agenda include the national child benefit system, learning readiness indicators, expanding Head Start programs to on-reserve First Nations children, and establishing centres of excellence for children's well-being. Federal, provincial, and territorial governments are working to more fully develop the Children's Agenda.
- *First Call.* First Call, a coalition of provincial organizations and community groups, works on systemic issues that impact the health and well-being of children and youth in British Columbia. Currently, First Call facilitates BC Campaign 2000 on child poverty and is working with numerous organizations on a *Spotlight on Children and Youth Campaign*. In 1998, First Call published a review of the research in child wellness and its implications for promoting child health and well-being (Hay & Wachtel, 1998).

Report Content

The health of children is intricately related to the health and functioning of their parents, families, and the physical and social environment in which they live. Important factors that influence health of families and children are living and working conditions, individual capacities, skills, and choices, the physical environment, and health and social services. The chapters in this report have been arranged to reflect these major influences on child health.

Chapter 2 provides an overview of the health status of British Columbia's children.

Chapter 3 describes the social and economic environments in which children and families live - perhaps the most important influences on child health.

Chapter 4 describes children's growth and development - physical, mental, emotional, social, and behavioural.

Chapter 5 is about the physical environment. This includes specific issues that affect child health in the short term, as well as the long-term issue of sustainability, which will affect children in the future.

Chapter 6 describes child health services in British Columbia today, and how those services contribute to child health.

Chapter 7 focuses on the health of Aboriginal children, a group that has traditionally experienced a much lower health status than the general population.

Chapter 8 outlines some of the specific diseases that threaten child health today, as well as strategies to prevent them.

Chapter 9 summarizes the information presented in this report as it relates to the United Nations *Convention on the Rights of the Child*.

Chapter 10 explains why investing in child health and development is worthwhile and identifies some of the sectors that have a role to play in making the needed investments.

Chapter 11 lists all of the actions recommended in Chapters 2 through 9 of the report.

Acknowledgements, references, health region data, and an index of topics are provided in the Appendix.

We welcome your comments, questions, and suggestions on this and future reports. A feedback form is provided at the back of this report.

Health Status of British Columbia's Children

2

Overall, the children of British Columbia are among the healthiest in the world. However, not all children share equally in this good health. Although preventable deaths and health problems occur in all groups, infants in the first year of life, boys, Aboriginal children, and children in low-income families are the most vulnerable.

The health of children, like the health of adults, has many aspects. Children have the right to survive, grow, and develop. Children need food, shelter, and safety. They also need love and a sense of belonging, within their family, school, and community.

Children need opportunities to learn, to improve their skills, and to participate in society. Thus, child health involves physical, mental, emotional, and social well-being, and these can be measured in various ways.

Generally, the terms *health* and *well-being* have come to be used interchangeably with *quality of life*. Yet, most of the measures we have available do not measure health in this positive sense.

Many of the indicators that are in present use are drawn from data that have been collected for administrative and bureaucratic purposes. Many have the advantage of having been collected in a similar way over long periods of time and in many jurisdictions, allowing comparisons over both time and place. They often have the disadvantage of being focused primarily on death and disease.

As our understanding of health grows, no doubt there will be interest in collecting data to measure health in the broader sense.

In the meantime, some reassurance can be taken from the observation that where we have had the opportunity to collect and analyze health or quality of life data, they appear to vary in much the same way as do death and disease data. So, although many of our current indicators may be less than perfect as measures of health, they do provide an adequate information base from which to draw conclusions and to suggest recommendations for improving child health.

Age Groups

The information in this report was compiled from various sources. The term children can refer to different age groups, depending on the source of the data.

For many of the statistics presented in this report, children refers to those under age fifteen (the "0 to 14" age group). Infants are children in the first year of life, from birth to 364 days of age (the "under one" age group).

For statistics about children-in-care, children are persons under nineteen years of age.

Traditional Measures of Health

Most traditional measures of health are based on data about births and deaths. Based on these measures, the major threats to child health are birth defects, low birthweight and other problems occurring shortly after birth, and injuries. Every year, most children receive care at least once from a family doctor, 2 of every 10 see a specialist, and about 4 in every 100 children are admitted to hospital. Based on hospital records and physician billing information, the major diseases and conditions affecting children are respiratory infections, ear infections, emotional and behavioural problems, asthma, vision impairment, skin diseases, and dental problems.

Deaths

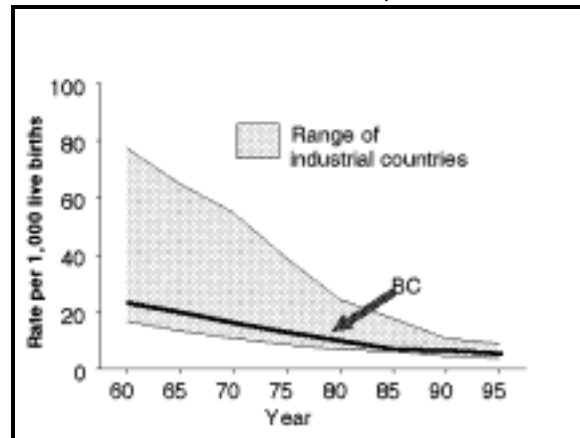
The infant mortality rate is a long established measure, not only of child health but also of the social well-being of a society.

In British Columbia, the infant mortality rate has shown continuous improvement in this century and is now at a very low rate. Of every 1,000 babies born in 1996, 5 died in the first year of life, compared to 23 per 1,000 thirty years ago. Reductions have been made in deaths occurring in the first week of life (the "early neonatal" period), as well as throughout infancy (Table 1). The perinatal mortality rate has also declined. This measure combines stillbirths with early neonatal deaths and provides a widely-accepted indication of the effectiveness of prenatal and maternity care.

Infant mortality rates have been declining in other countries as well, and rates are now converging in the range of four to eight deaths per 1,000 (Figure 1) (UNICEF, 1998; Wengman, 1996). These declines have been achieved as a result of improvements in living and working conditions, control of infectious diseases, and advancements in the care of mothers and babies.

As the infant mortality rate becomes small, the rate fluctuates due to the small number of deaths. Completeness and consistency in reporting become very important when making

Figure 1 Infant Mortality Rates, Industrial Countries and B.C., 1960-1995



Among industrialized countries, Finland, Sweden, and Japan have the lowest infant mortality rate (4 per 1,000 live births), and Greece the highest (9 per 1,000). Source: OECD Health-Data, 1996 (industrial countries). B.C. Vital Statistics Agency, Vital Statistics Annual Report 1996 (B.C. data).

comparisons between jurisdictions and over time. As an example, in 1993 Canada's infant mortality rate increased slightly, raising concerns about potential environmental or other influences. After further study, it appeared that the increase was due in part to random fluctuation (Joseph & Kramer, 1997) and/or to increased registration of babies weighing less than 500 grams as live births (Joseph & Kramer, 1996).

Table 1 Progress in Infant Mortality, B.C., 1966 and 1996

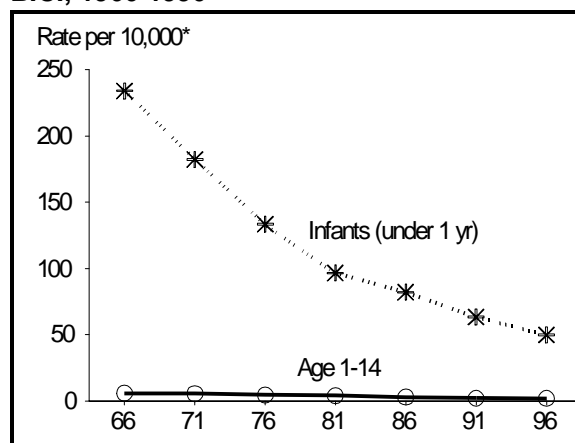
Indicator	Age at death	Number of deaths		Rate per 1,000*		Percent change
		1966	1996	1966	1996	
Infant mortality rate						
Early neonatal	0-6 days	435	132	13.4	2.9	-79%
Neonatal	0-27 days	494	160	15.2	3.5	-77%
Post-neonatal	28-364 days	263	68	8.1	1.5	-82%
Total**	0-364 days	761	228	23.4	5.0	-79%
Stillbirth rate	20 weeks gestation to birth	409	291	12.4	6.3	-49%
Perinatal mortality rate	Stillbirths plus early neonatal	844	423	25.6	9.2	-64%

* Infant mortality rates are per 1,000 live births. Stillbirth and perinatal mortality rates are per 1,000 total births (live births plus stillbirths). ** Total deaths in 1966 (761) includes 4 infant deaths with age at death not stated. Source: B.C. Vital Statistics Agency. Vital Statistics Annual Reports.

Death rates for preschool and school-age children have also been declining. Children between the ages of 1 and 14 have very low death rates compared to infants (Figure 2).

Since 1996, the Children's Commission has been charged with reviewing all child deaths in British Columbia. The Commission makes recommendations for improving services, protecting children, and preventing further deaths. The Commission will also be issuing regular reports on trends and patterns in child deaths (Children's Commission, 1997).

Figure 2 Death Rates, Children Age 0 to 14, B.C., 1966-1996



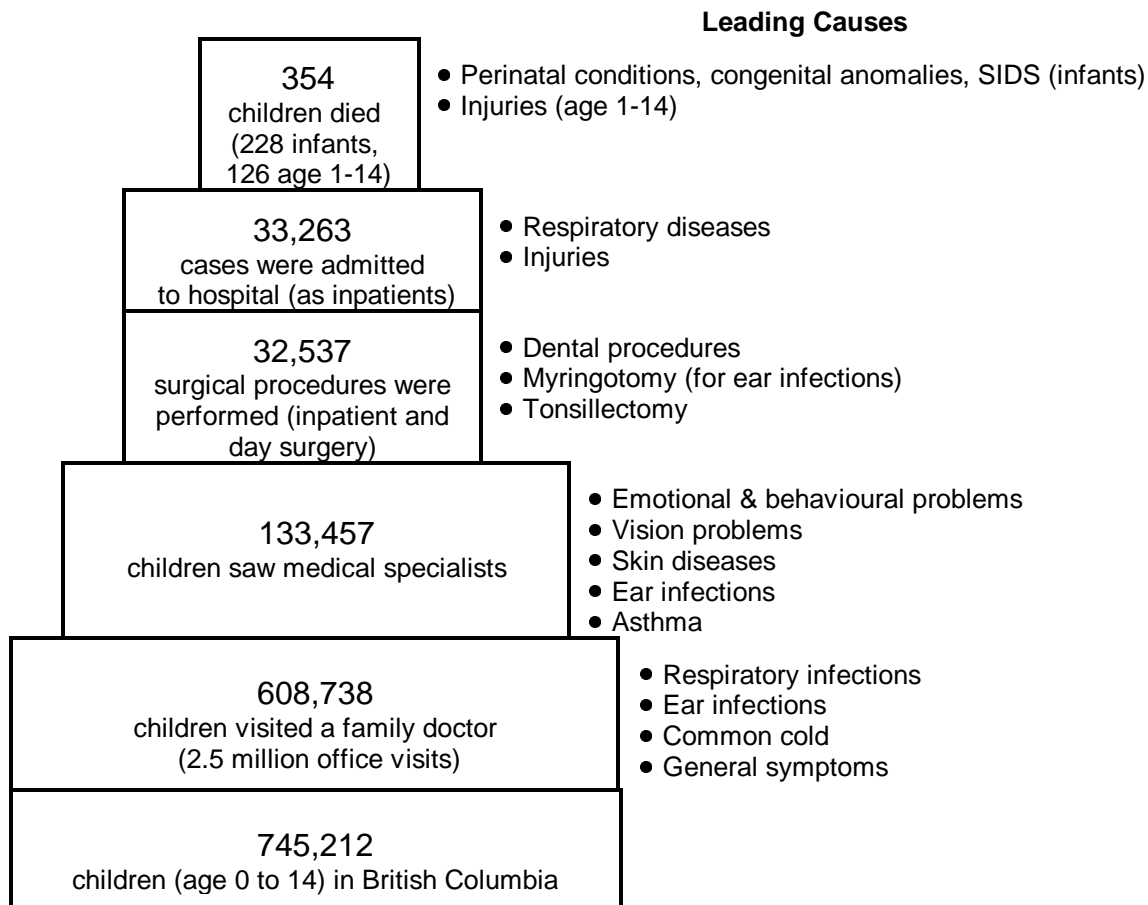
* For infants under age 1, the rate is per 10,000 live births. For ages 1-14, the rate is per 10,000 population in this age group. Source: B.C. Vital Statistics Agency. Vital Statistics Annual Reports.

Diseases and Health Conditions

Death rates are basic and important indicators, but they measure only the most severe (fatal) outcome. Every year, most children visit their family doctor at least once, one in every five sees a specialist, and about one in twenty-five is admitted to hospital. Databases that describe these contacts with the health system provide additional information about the illnesses, injuries, and health problems that children experience.

Table 2 provides some statistics on health-related events and types of diseases and conditions for which children receive medical care. Many of these major health problems are discussed in more detail in other sections of this report.

Table 2 Health-Related Events, Children Age 0 to 14, B.C., 1996



Sources: B.C. Vital Statistics Agency (births and deaths, 1996). Information and Analysis Branch (hospitalizations and surgical procedures, fiscal year 1996/97). Medical Services Plan and Clinical Support Unit, Community Health (specialist exams and physician office visits, 1996).

Low Birthweight

The low birthweight rate is a long established indicator of child health. Low birthweight (less than 2,500 grams) can result in mental and physical disabilities and, in extreme cases, death. Low birthweight is also a predictor of health in later life. Some recent studies suggest that low birthweight increases the risk of heart disease, diabetes, and other chronic conditions in life (UNICEF, 1998).

About two-thirds of low birthweight babies are premature or "pre-term" (babies born too early, before the 37th week of pregnancy) (Figure 3). Many factors contribute to low birthweight and pre-term births. Some of the known causes are smoking by the mother during pregnancy, lack of nourishment in the mother's womb, pregnancy-induced hypertension, and multiple births.

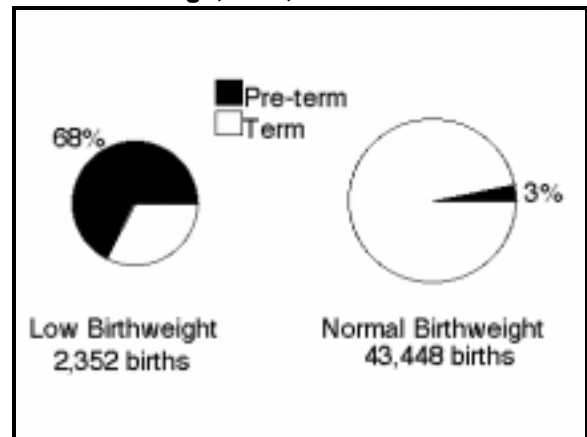
About 5% of babies are low birthweight, and about 6% are pre-term. From the 1960s to 1980, the low birthweight rate declined fairly steadily, but there has been little change since the early 1980s (Figure 4). This lack of reduction may be due, in part, to the fact that more very low birthweight babies are being counted.

The causes and prevention of low birthweight and pre-term birth in particular require further study. However, improvements on both these measures are possible, by supporting women at risk of poor pregnancy outcomes (see Birthweight, pages 45-46 and Prenatal Outreach, pages 88-89).

Recommended Actions:

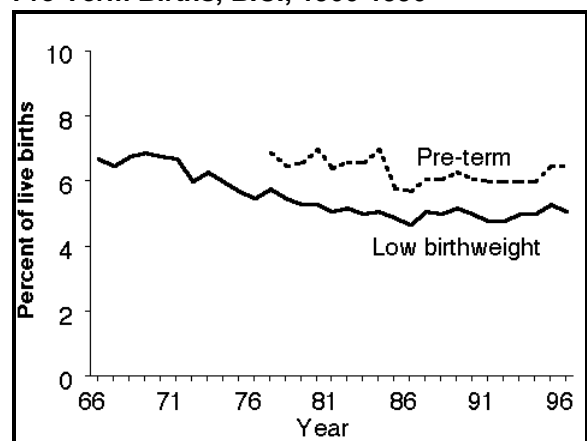
- **Encourage research into the causes and prevention of pre-term and low birthweight births.**
- **Improve the collection and analysis of provincial information about the non-life-threatening illnesses and health problems that children experience.**

Figure 3 Births by Birthweight and Gestational Age, B.C., 1996



Low birthweight: birthweight less than 2,500 grams. Pre-term ("premature"): gestational age less than 37 weeks. Source: B.C. Vital Statistics Agency. Vital Statistics Annual Report 1996.

Figure 4 Low Birthweight and Pre-Term Births, B.C., 1966-1996



Low birthweight: birthweight less than 2,500 grams. Pre-term (premature): gestational age less than 37 weeks. Source: B.C. Vital Statistics Agency. Unpublished tables.

Disabilities

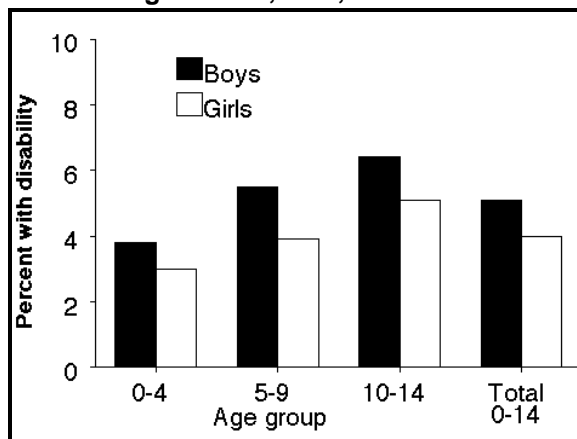
Disabilities can impact the lives of children and their families in many ways. Disabilities can contribute to general health problems and can impact a child's ability to learn, as well as their ability to participate in social and recreational activities.

According to the Health and Activity Limitation Survey, an estimated 26,800 children, 5% of British Columbia children (age 0 to 14), have at least one disability - either a general limitation, a chronic (long-term) health problem, or a condition that requires the use of a specified technical aid. Learning disabilities, intellectual disabilities, and heart conditions are the most common chronic problems (B.C. Ministry of Advanced Education, 1992; Statistics Canada, 1990).

The rate of disability increases with age and is higher among boys than among girls (Figure 5), particularly for behavioural and emotional conditions.

School attendance is one measure of the extent to which children are able to participate in daily activities. Most (94%) school-age children with a disability attend school or are being tutored, with two-thirds attending regular school classes. However, children with a disability are more likely to start school later and to need extra time to achieve their level of education (B.C. Ministry of Advanced Education, 1992; Statistics Canada, 1990).

**Figure 5 Disability Rates,
Children Age 0 to 14, B.C., 1986**



Source: Health and Activity Limitation Survey. In Statistics Canada. (1990). Highlights: Disabled persons in Canada. Cat. No. 82-602.

Measures of Positive Health

Most babies are born healthy, according to their parents, and most school-aged children say they are healthy and feel physically good. Self-rated health, along with new measures of mental, social, and emotional health, are beginning to provide a yardstick for measuring the health of British Columbia's children.

Indicators of positive health attempt to measure well-being – the extent to which children have good physical health and are achieving their highest potential. Although we rely on traditional illness indicators that measure death and disease, more positive measures of health are beginning to become available. Surveys, such as the National Longitudinal Survey of Children and Youth and the B.C. Adolescent Health Survey, are helping to create a more comprehensive picture of children's health.

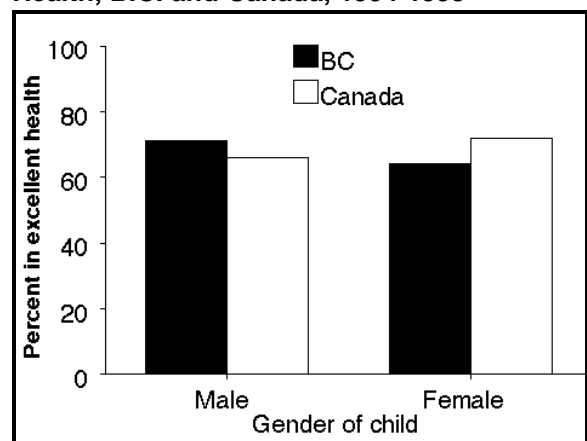
People's perceptions of their own health provide one overall measure of well-being. In fact, a person's self-rated health is often quite similar to results obtained through objective measures.

According to their mothers, most babies are born healthy – two-thirds of newborns have "excellent" health at birth (Figure 6). Fewer than 5% of mothers indicate that the health of their babies is "fair" or "poor".

Most school-aged children say they are healthy and feel physically good:

- In an international survey, 47% of Canadian boys and 41% of Canadian girls (age 11) described themselves as very healthy (King, Wold, Tudor-Smith, and Harel, 1996).
- In the National Population Health Survey, 62% of British Columbians age 12 to 14 said they were in excellent or very good health (Statistics Canada, 1995).

Figure 6 Percent of Newborns in Excellent Health, B.C. and Canada, 1994-1995



Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using Statistics Canada National Longitudinal Survey of Children and Youth microdata, 1994-95.

- In British Columbia's Adolescent Health Survey, most students (86%) rated their health as excellent or good (The McCreary Centre Society, 1993).

Other aspects of positive health include optimal physical growth, the ability to learn valuable skills and to apply them, good coping skills, including handling stress, control over life choices, a sense of psychological well-being, and good self-esteem. Information on these topics is presented in the chapter on child growth and development (pages 43-64).

Inequities in Child Health

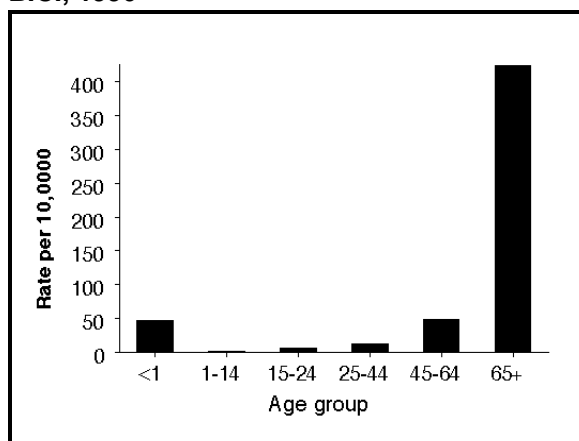
On most measures of child health, there are well-known and persistent inequalities. Girls have lower rates of death and disease, while boys are more likely to say that they feel healthy and physically good. Children living in areas with the highest levels of income, education, and employment are more likely to survive and less likely to experience serious illnesses.

Overall, the children of British Columbia are among the healthiest in the world. However, not all children in the province share equally in this good health. There are major differences in the level of health, by age, sex, region, and socio-economic status.

Age Differences

Children are most vulnerable to illness or death in the first year of life; infants account for two-thirds of childhood deaths (age 0 to 14). After age one, the risk of dying declines and does not reach this rate again until middle age (Figure 7). Infants are also more likely to require hospital or other medical care than are preschool or school-age children.

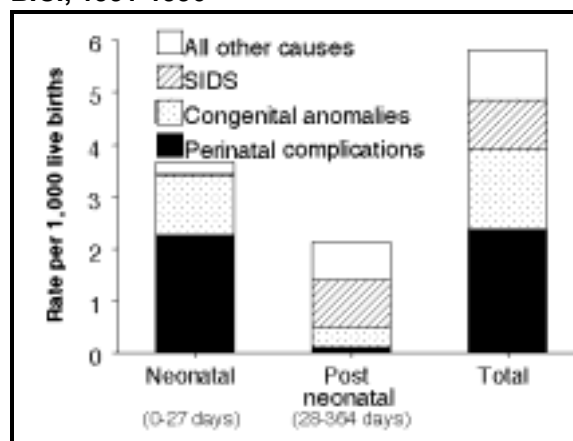
Figure 7 Death Rates by Age Group, B.C., 1996



Source: B.C. Vital Statistics Agency. Vital Statistics Annual Report 1996.

Within the first year of life, there are differences in the risk and causes of death. During the first week of life (the early neonatal period), most deaths are due to perinatal complications, a category that includes prematurity, low birthweight, and respiratory distress. About one-third of neonatal deaths (deaths within the first month of life) are due to congenital anomalies. As one moves further from the time of birth, external influences become more important. Between the ages of one month and one year (the postneonatal period), Sudden Infant Death Syndrome (SIDS) is the leading cause of death (Figure 8).

Figure 8 Selected Causes of Infant Deaths, B.C., 1991-1996

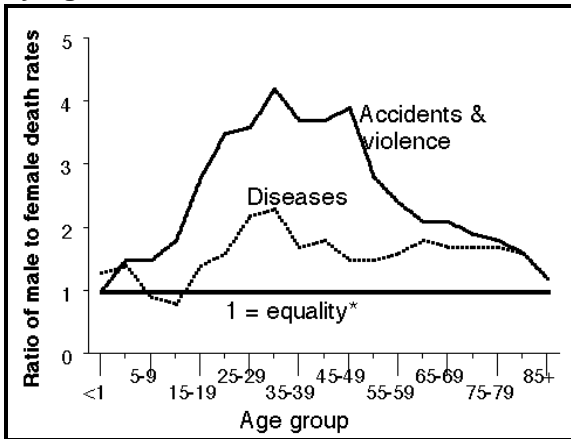


Note: SIDS may be under-counted as some deaths still under investigation when these data were prepared may later be coded as SIDS. Source: B.C. Vital Statistics Agency. Unpublished tables, December 1997.

Gender Differences

At all ages, males are more likely to die than females. This gender difference begins in infancy, and the male-female gap in death rates increases throughout childhood. Males have a higher death rates for most causes of death, although the gap is much greater for accidents and violence (Figure 9).

Figure 9 Gender Gap in Death Rates by Age, B.C., 1991-1995



* If the ratio is equal to one, males and females have the same death rate. When the ratio is greater than one, males die at a higher rate than females. Source: B.C. Vital Statistics Agency. Unpublished tables.

Although boys die at a higher rate and at earlier ages, girls have lower self-rated health. 43% of grade seven boys say their health is excellent, compared to 31% of girls (Figure 10).

Regional Differences

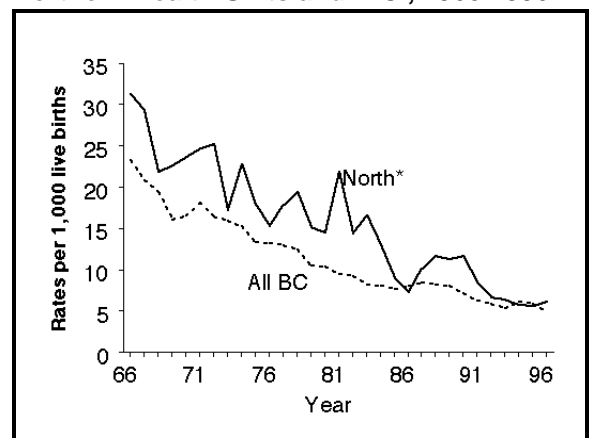
Traditionally, northern and rural areas of the province have had a lower level of health than southern, metropolitan areas. For some health indicators, such as infant mortality, the north-south gap has been narrowing in recent years (Figure 11).

Figure 10 Self-Rated Health, Grade 7 Students, B.C., 1992



Source: B.C. Adolescent Health Survey 1992. McCreary Centre Society.

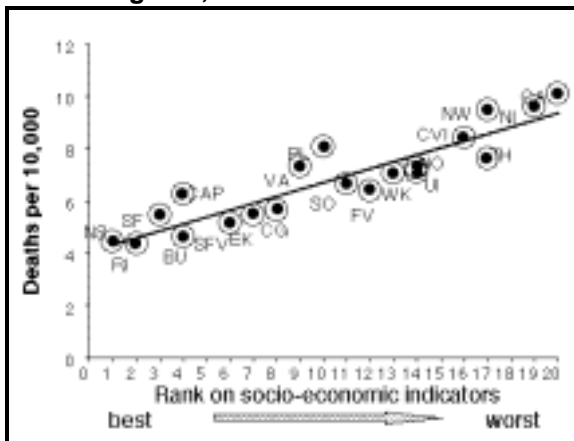
Figure 11 Infant Mortality Rate, Northern Health Units and B.C., 1966-1996



* "North" includes Cariboo, Skeena, Peace River, and Northern Interior health units. Source: B.C. Vital Statistics Agency. Unpublished tables, July 1996 and Vital Statistics Annual Reports.

Regional differences persist. Children age 0 to 18 living in northern areas of the province are twice as likely to die as those living in North Shore, Richmond, and Burnaby. These regional inequities are not explained to any significant degree by access to health care services. Rather, the variation is related to differences in social and economic conditions. Regions with the highest levels of income, education, and employment have the lowest death rates. In general, the better the ranking on these social and economic indicators, the lower the child death rate (Figure 12).

Figure 12 Overall Rank* on Three Socio-economic Indicators and Child Mortality Rate (Age 0 to 18), Health Regions, B.C.



* Overall rank on an index composed of three social and economic indicators: percent of population on income assistance (June 1997), percent of population aged 25-34 with less than high school graduation (1991), and unemployment rates (1991). See Appendix pages F-4 and F-5 for additional information. Sources: Social and economic indicators acquired from BC STATS, Ministry of Finance and Corporate Relations. Age standardized mortality rates, all causes of death (1987-1995) from B.C. Vital Statistics Agency. Unpublished tables, May 1997.

Regional Data

For regional data presented throughout this report, "region" refers to the region of residence. A child whose home residence is in the Fraser Valley, for example, will be counted under Fraser Valley, although health events (birth, hospitalization, doctors' visits, etc.) may take place elsewhere.

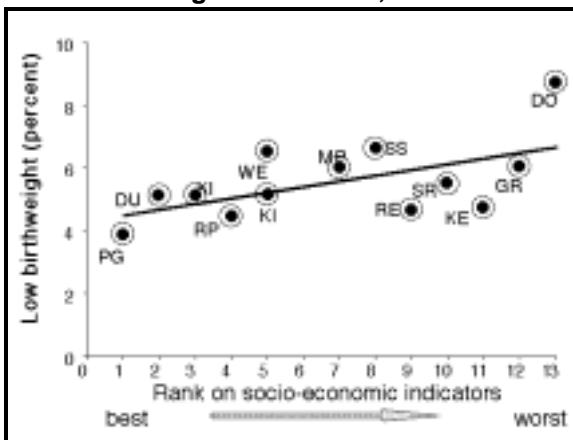
Regional data are provided in tabular format in Appendix F. Appendix G lists the names, locations, and abbreviations of the regions used in this report.

Please note that births and deaths occurring out-of-province (e.g., a B.C. resident giving birth or dying in Alberta) are not routinely recorded in B.C. databases. Data for East Kootenay and Peace Liard in particular require cautious interpretation; out-of-province events may increase rates in these regions by as much as 25% (Foster & McKee, 1994).

Many of the health indicators presented in this report are based on regularly-collected data using 20 geographic regions. These regional units will mask sub-regional differences, such as differences within Vancouver.

One study found that, consistent with the regional pattern, those Vancouver areas with the greatest proportion of people at the top of the social and economic hierarchy have the lowest death rates, for infant deaths and for all ages (Division of Vital Statistics, October 1995). Because low birthweight is caused by many factors, geographic patterns are more difficult to interpret than for other health indicators. However, the most affluent Vancouver neighbourhood (Point Grey) had the lowest low birthweight rate, while the most disadvantaged (Downtown) had the highest (Figure 13).

Figure 13 Overall Rank^{*} on Three Socio-economic Indicators (1991) and Low Birthweight Rate (1990-1992), Vancouver Neighbourhoods^{}, B.C.**



^{*} Overall rank on an index composed of three social and economic indicators: average income, percent of population with less than grade nine education, and unemployment rates. ^{**} The 13 neighbourhoods are KI Killarney, SU Sunset, DU Dunbar, PG Point Grey, RP Riley Park, KE Kensington, RE Renfrew, MP Mount Pleasant, KI Kitsilano, SU Sunrise, GR Grandview, DO Downtown, WE West End. Source: *Mortality and health status in Vancouver: An analysis by neighbourhood areas. Division of Vital Statistics Feature Report, October 1995. Prepared by K.F. Burr, G.A. Costanzo, M.V. Hayes, Y.C. MacNab, & B. McKee.*

Children-in-Care

One particularly vulnerable group is "children-in-care" – children who are in the custody, care, or guardianship of child welfare authorities. These children are receiving protection or special care for a variety of reasons. Many children who come into care are economically disadvantaged, of Aboriginal heritage, are medically fragile or severely disabled, or have been damaged psychologically or emotionally – factors that put them at increased risk of dying at a young age.

Concerns about deaths of children-in-care have prompted an overhaul of British Columbia's child welfare services. Information about the health status of children-in-care could assist in monitoring the impact of these changes.

Over the past 12 years, a total of 176 children-in-care died – an average of 15 deaths each year. At this time, provincial information systems do not produce health statistics about children-in-care that are comparable to those available for the total child population. Thus, we are not able to describe or compare the mortality experience and other health outcomes for children-in-care.

Children-in-Care

If a family is unable to care for a child, child welfare authorities may temporarily or permanently assume responsibility for the child. Children who require this custody, care, or guardianship come into the care of the Ministry for Children and Families and are referred to as "children-in-care".

Children come into care for a variety of reasons. Protection may be required due to abuse or neglect, parents may be absent or unable to care for their child, or the child may require medical or other special care of some type.

Additional information about children-in-care may be found in the sections on British Columbia's children (pages 23-24) and Aboriginal Children (pages 111-112).

Across Canada, the number of children-in-care who die is not known precisely, because data on this topic are not consistently tracked. An Ontario task force recently reviewed deaths of children who were receiving child welfare services (Ontario Association of Children's Aid Societies, 1997). As databases on children-in-care are developed and improved, we may be able to learn more about the health status of this group of children.

Recommended Actions:

- *Develop strategies to address the factors underlying the inequities in children's health status: inequalities in income, social status, housing, and other aspects of daily life.*
- *In addition, address the special needs of at-risk groups, in particular, Aboriginal children, children in low-income families, and children-in-care.*
- *Continue to improve provincial information about Aboriginal children, children-in-care, and other vulnerable groups of children. Data definitions and categories should be compatible with other systems designed to track health and disease in the total child population.*
- *The Ministry for Children and Families should develop data and information systems to track health outcomes, including hospitalizations and deaths, for all children who are or have been in-care.*

Is There Potential for Improvement?

The level of children's health can be improved overall, and inequities can be reduced. Population groups, regions, and countries that have achieved the best results on child health measures can be studied to identify areas for policy and action.

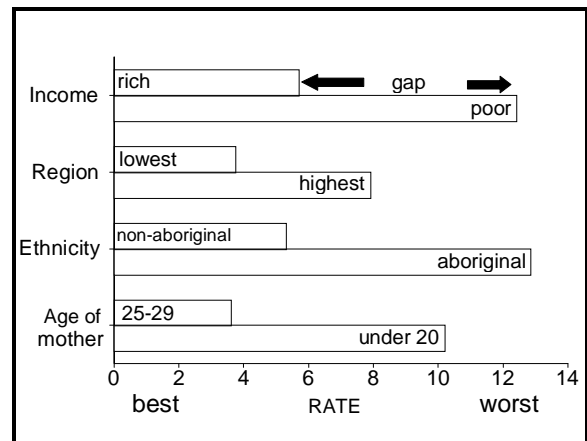
On many measures of child health, there is considerable potential for improvement. One way to identify areas for improvement is to look at what has already been achieved by the healthiest communities, population groups, or countries, and by using these as a gold standard or benchmark towards which to aim.

For the various health indicators presented throughout this report, gold standards or "best" rates are identified, where possible. *Measuring Our Success*, recently produced by the Ministry for Children and Families, provides a comprehensive list of child health outcomes, baseline data for British Columbia, and benchmarks that can be used as a reference point for measuring provincial performance (B.C. Ministry for Children and Families, 1997; see also Appendix D of this report).

Inequities in health status are not inevitable. To make continued improvements in child health, gaps between population groups must be identified and minimized.

For example, Figure 14 shows equity gaps in infant mortality rates within the province of British Columbia. Infants born in wealthy neighbourhoods, in the southern areas of the province, to non-Aboriginal families, or to mothers in their late twenties, are much less likely to die in infancy.

Figure 14 Inequities in Infant Mortality Rates (infant deaths per 1,000 live births), British Columbia



Note: Data are for different time periods. Thus, there are different averages for the total population. Data are for the following years: age of mother, 1996; aboriginal (Status Indian) and non-aboriginal (population excluding Status Indian) population, 1991-1996; health regions within British Columbia, 1992-1996; income, 1986 (the most recent year for which data are available). Sources: Income data are from Thomson, M.E. (1990, August). Association between mortality and poverty, BC Medical Journal, 32(8), 337-338; data are for the highest ("richest") and lowest ("poorest") neighbourhoods, Vancouver and Victoria Census Areas, 1986. All other data from B.C. Vital Statistics Agency, B.C. Ministry of Health.

Our goal should be to ensure that all groups of children are able to enjoy the best possible health status. There are other jurisdictions – Sweden is one example (see page 29) – where inequities in children's health status have been reduced. To progress towards this goal requires an understanding of the reasons these inequities exist.

The major factors that underlie these inequities and that should be the focus for policy and action include an adequate, equitable income for all families, healthy living and working conditions, quality care in early childhood, opportunities and supports for parents and their children. These factors are discussed in the following chapter - Growing Up in British Columbia.

Growing Up in British Columbia

3

Nurturing and stimulating environments – in the home, neighbourhood, and community – create opportunities for children to grow and develop in healthy ways. To help children achieve their full potential, it is particularly important that children and families have an adequate standard of living and that all children have access to quality care.

Growing up from birth to adulthood is a continuous process. As children progress through the ages and stages of development, they need caring and stimulating environments.

According to the B.C. Royal Commission on Health Care and Costs (1991), all children need:

- A secure attachment to their parents.
- Continuity in relationships with major caregivers.
- Early mental stimulation.
- Sufficient, appropriate, and consistent structure in their families.
- Freedom from rejection, violence, abuse, maltreatment, and exploitation.
- A sense of cultural values.

This chapter looks at the children of British Columbia – the home, neighbourhood, and community environments in which they are growing up – and whether children are being given environments that will help them to grow and develop in healthy ways.

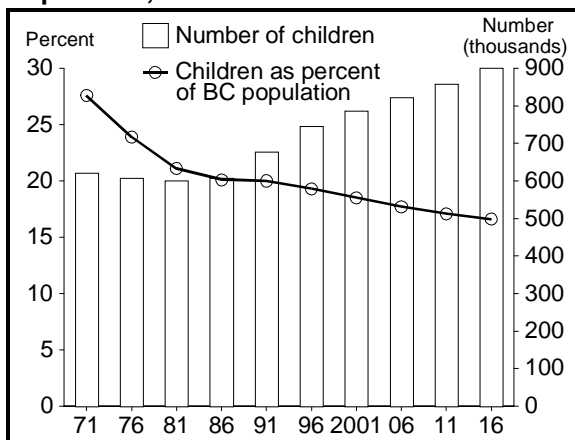
British Columbia's Children

Children age 0 to 14 make up about one-fifth of British Columbia's population. While most children live at home in two-parent families, 17% of children live with one parent, most often their mother. About 1% of children are under the care of child welfare authorities. Changes in population structure, settlement patterns, and labour force participation affect how family members relate to each other and their needs for supports such as parenting education and child care.

Children in British Columbia

An estimated 755,342 children age 0 to 14 live in British Columbia in 1997. These children make up just under one-fifth (19%) of British Columbia's population. As in most industrialized areas of the world, the age distribution of British Columbia is changing. The average age is becoming older. While the number of children has been growing, children have been declining as a percentage of the provincial population, and this trend is expected to continue into the next century (Figure 15).

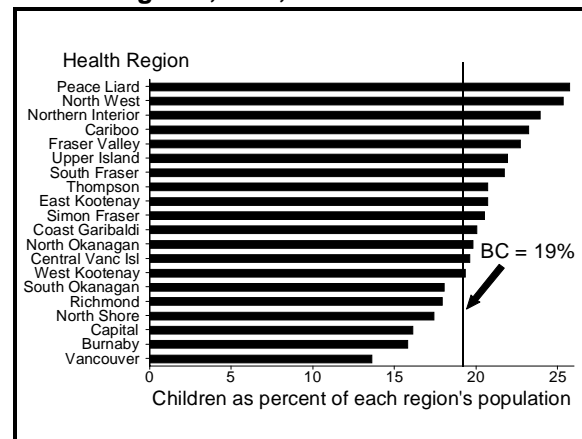
Figure 15 Children Age 0 to 14 as a Percentage of British Columbia's Population, 1971-2016



Source: Population estimates (July 1997) and P.E.O.P.L.E. Projection 22, BC STATS, B.C. Ministry of Finance and Corporate Relations.

More than half (53%) of British Columbia's children live in the Fraser Valley or the Lower Mainland health regions (Table 3). As a percentage of their region's population, children comprise a larger share in the northern areas of the province, where about one-quarter of the population is under age 15 (Figure 16).

Figure 16 Children Age 0 to 14 as a Percentage of each Region's Population, Health Regions, B.C., 1997



Source: BC STATS, Ministry of Finance and Corporate Relations, March 1998. Compiled by Information and Analysis Branch, B.C. Ministry of Health.

The 1996 Census shows that British Columbia's population is becoming more urbanized, with 82% of people living in urban areas, compared to 80% in 1991.

Our population is also becoming more diverse. About 7% (50,975) of children under 15 are immigrants, while of the total population (all ages), one-quarter are immigrants (people who were mostly foreign-born and granted landed immigrant status by Canadian immigration authorities). More than 70% of British Columbia's immigrants live in the Vancouver census metropolitan area, where immigrants make up more than one-third of the population.

These changes in population structure, settlement patterns, and cultural composition illustrate the dynamic nature of social life. They also pose real challenges for healthy public policy, particularly as it relates to children. Some of these changes, and the challenges they present, are identified in this chapter.

1996 Census

In 1997, the first results from the 1996 Census were released by Statistics Canada. These first releases contain population and dwelling counts by municipality and regional district.

Information on other characteristics of the British Columbia population such as age, ethnicity, education, and income will be released over the next two years. Data aggregated by health regions will also be prepared during this time period.

Census information is available from BC STATS, B.C. Ministry of Finance and Corporate Relations. Visit their internet website <http://www.bcstats.gov.bc.ca> or call (250) 387-0359.

Table 3 Children Age 0 to 14, Health Regions, B.C., 1997

Region	Number of children	Percent of B.C. total
NORTH		
Cariboo	17,313	2.3%
North West	22,984	3.1%
Peace Liard	16,775	2.2%
Northern Interior	31,138	4.1%
Subtotal	88,210	11.7%
THOMPSON/OKANAGAN/KOOTENAY		
East Kootenay	16,476	2.2%
West Kootenay	15,747	2.1%
North Okanagan	22,877	3.0%
South Okanagan	40,406	5.4%
Thompson	27,367	3.6%
Subtotal	122,873	16.4%
ISLAND/COAST		
Coast Garibaldi	15,082	2.0%
Central Vanc Island	46,615	6.2%
Upper Island	26,287	3.5%
Capital	53,533	7.1%
Subtotal	141,517	18.8%
FRASER VALLEY		
Fraser Valley	53,122	7.1%
South Fraser Valley	119,505	15.9%
Simon Fraser	62,935	8.4%
Subtotal	235,562	31.4%
LOWER MAINLAND		
Vancouver	74,730	9.9%
Burnaby	29,687	4.0%
North Shore	30,697	4.1%
Richmond	28,066	3.7%
Subtotal	163,180	21.7%
BRITISH COLUMBIA		
Total	751,342	100.0%

Source: BC STATS, Ministry of Finance and Corporate Relations, March 1998. Compiled by Information and Analysis Branch, B.C. Ministry of Health. Note: Region percentages may not add to subtotals due to rounding.

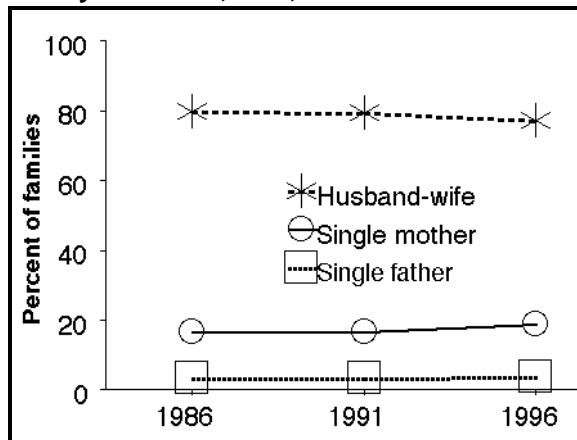
Family Patterns

Most children live at home, and 81% of children age 0 to 14 live in two-parent families (BC STATS, December 1997). However, family patterns are changing.

- There are more types of families and relationships. More families are headed by common-law couples, and about 9% of two-parent families are step-families or "blended" families, in which at least one of the children in the household is from a previous relationship of one of the parents (BC Council for the Family, 1997).
- Single-parent families have increased as a proportion of all families with children at home, from 20% in 1986 to 23% in 1996 (Figure 17). In 1996, one child in six (17% of children age 0 to 14) lived in a single-parent family. Most (83%) single-parent families with children at home are headed by women.

On average, single-parent families are smaller than two-parent families. Single-parent families have an average of 1.6 children at home, compared to 1.9 children in two-parent families (Figure 18).

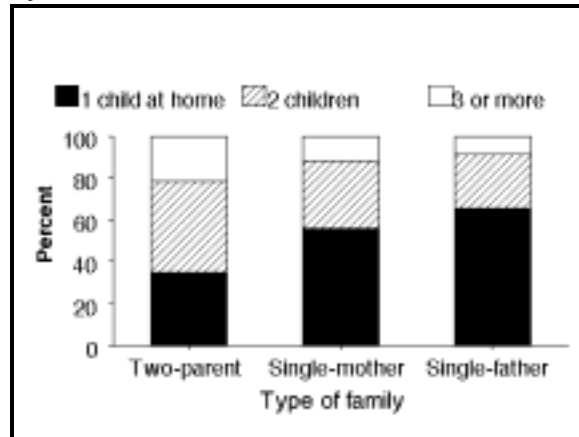
Figure 17 Families with Children at Home by Family Structure, B.C., 1986-1996



Source: Focus on BC Families: Children Living at Home. 1996 Census Fast Facts. BC STATS, Ministry of Finance and Corporate Relations.

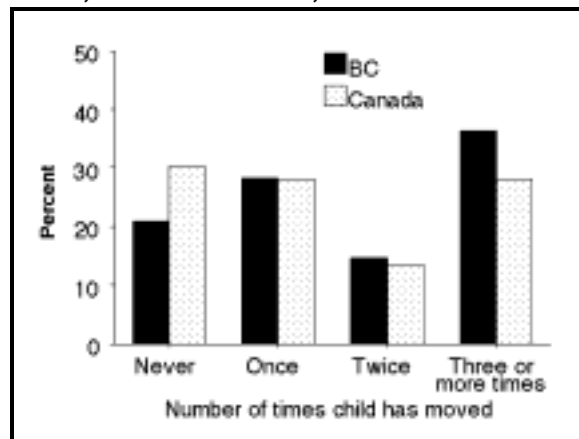
- Families are mobile. More than one-third of British Columbia children (36%) have moved three or more times in their lives (Figure 19).

Figure 18 Families with Children at Home, by Number of Children, B.C., 1996



Source: Focus on BC Families: Children Living at Home. 1996 Census Fast Facts. BC STATS, Ministry of Finance and Corporate Relations.

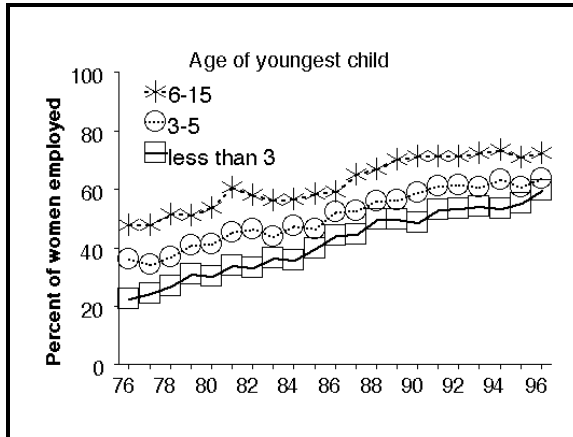
Figure 19 Number of Times Children Have Moved in their Lives, Children Age 6 to 11 Years, B.C. and Canada, 1994-95



Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

- More women with young children are working outside the home. In two-spouse families, 60% of women whose youngest child was less than three were employed, up from 23% in 1976 (Figure 20).

Figure 20 Employment of Women in Two-Parent Families with Children, by Age of Youngest Children, B.C., 1976-1996



Source: Statistics Canada. Catalogues 71-529 and 71-220 Labour Force Survey. In BC Council for the Family, *Diversity and Change: A Profile of British Columbia Families*, 1997. Table 2.3.

Impact on Children

The mobility of today's society may pose difficulties for some children in making new friends and in settling into a new environment. Of course, these changes can also afford children great opportunities to meet new friends. Much of how children experience these changes depends on their parents' perception of the move, and whether moves were voluntary or desired (as opposed to forced), and the willingness of people in new communities to welcome and accept newcomers.

Increasing activity in the labour force (outside the home) increases pressure for access to supportive, high quality child care (see pages 33-38).

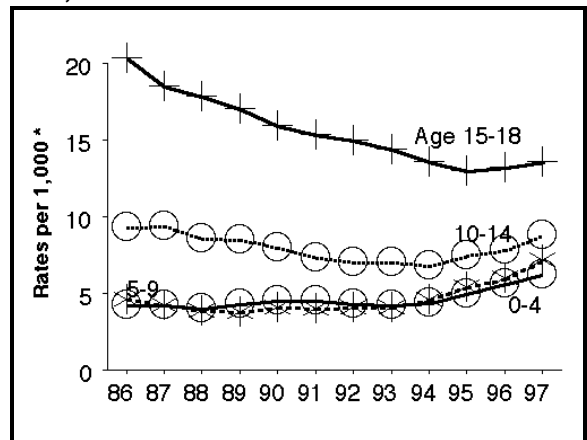
Children-in-Care

Most children live in families with one or both of their biological or adoptive parents. In cases where children are unable to live with their families, the Ministry for Children and Families provides substitute parenting. Children come into the Ministry's care for several reasons. Protection may be required due to abuse or neglect, parents may be absent or unable to care for their child, or the child may require special care of some type.

In 1996/97, there were about 8,200 children-in-care at any point in time – slightly less than 1% of the population under age 19. Who are these children-in-care?

- **Age.** Roughly one-third of children-in-care are youth age 15 to 18, and about two-thirds (5,531) are children age 0 to 14. Over the past decade, the age mix of children-in-care has been shifting towards the younger age groups (Figure 21), with the total number in care increasing steadily over the past four years.

Figure 21 Children-In-Care by Age Group, B.C., 1986-1997



* Children who are in the care of child welfare authorities, per 1,000 B.C. children in each age group. Figures are as of March 31 each year. Source: B.C. Ministry for Children and Families.

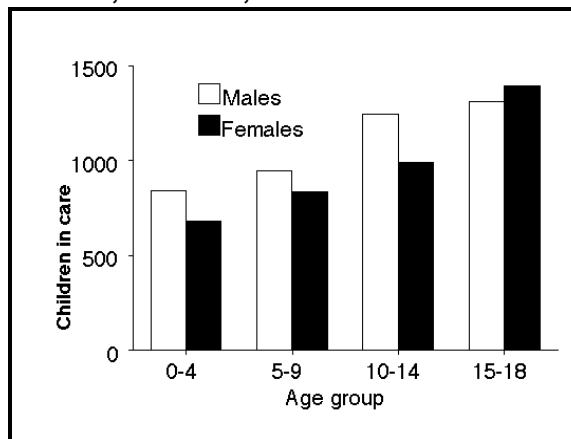
- *Gender.* More boys than girls are in the Ministry's care, except among 15 to 18 year olds, where girls outnumber boys (Figure 22).
- *Social and economic characteristics.* About one-third of all children-in-care are of Aboriginal descent (see pages 111-112). Approximately 60% are from Income Assistance families, and 60% are from lone-parent families.
- *Geographic area.* The northern areas of the province and Vancouver have the highest rates of children-in-care (Figure 23). In general, the regions with the highest proportions of children-in-care are the regions with the lowest socio-economic status, as measured by rates of poverty, unemployment, and educational attainment (see page 14).
- *Disability status.* About one in every five children-in-care is considered to have a severe disability of some type, either physical, intellectual, or behavioural.

Approximately half of those coming into care are admitted through voluntary parenting agreements, while half are admitted through court orders (at a given point in time, however, about 27% of children-in-care are through voluntary and special needs agreements; children admitted through court orders tend to remain in care for longer periods of time, and thus account for a higher percentage of the caseload). When children come into care, they are placed in a living arrangement deemed appropriate for their level of care. The majority of children-in-care live in foster homes. Those with severe physical, emotional, or behavioural problems may be placed in group homes or residential facilities equipped to meet their special needs.

Changes in the number of children-in-care reflect, in part, increases in the child population and changes in child welfare policies and the types of care provided.

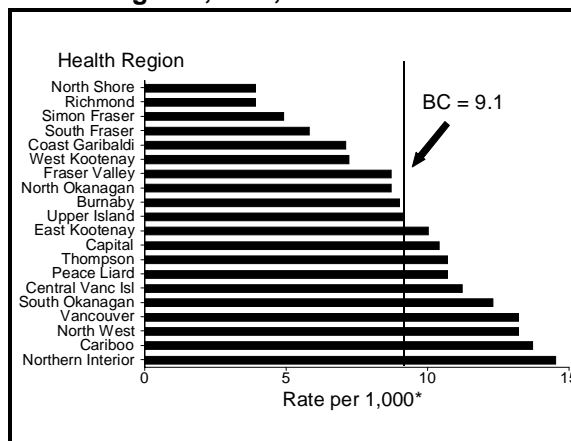
However, the growing number of children-in-care may also indicate that more families are having difficulties in caring for their children. Long-term solutions will require addressing the health and social problems that families are experiencing in caring for their children.

Figure 22 Children-in-Care by Age Group and Sex, March 31, 1997



Source: B.C. Ministry for Children and Families.

Figure 23 Children-in-Care, Health Regions, B.C., 1997



* Children who are in the care of child welfare authorities, as a rate per 1,000 population age 0 to 18 in each region. Figures are based on average month-end counts for the period February 1997 to February 1998. Source: B.C. Ministry for Children and Families.

Healthy Home Environment

Most children live in supportive families. However, some families show signs of distress, as measured by rates of parental depression, tension in the home, and child abuse and neglect. Research shows that children in high-risk situations can be helped to achieve their full potential, by supporting people in their efforts to be effective parents and caregivers.

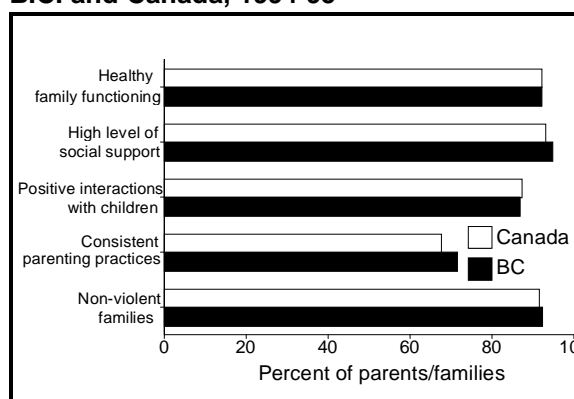
Family Health and Well-Being

As people know from their own experiences, and as research clearly shows, the family environment is the most important single influence on a child's health and well-being – an influence that lasts a lifetime.

Available indicators suggest that most children live in positive, supportive families. Results from the National Longitudinal Survey of Children and Youth show that more than 90% of families, both provincially and nationally, enjoy healthy family functioning, as measured by a series of questions about how well the family works together in problem solving, communication, roles, emotional responsiveness, emotional involvement, and behaviour control. Similar percentages report having a high level of support from their families and friends, positive interactions with their children, and non-violent families (Figure 24).

Positive interactions between parents and children, stability and consistency in the home, and other aspects of quality parenting help children develop a sense of identity and problem-solving skills. Children who do not receive these protective factors often have more difficulty coping with life's challenges.

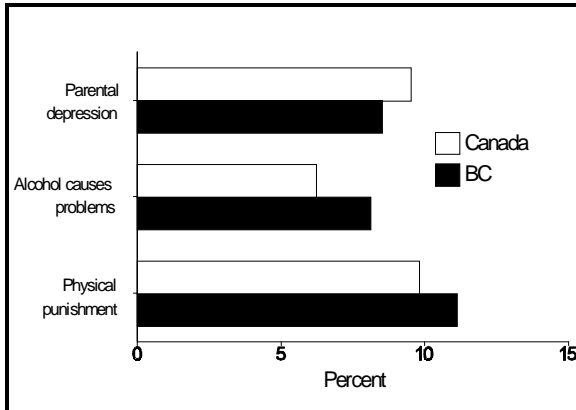
Figure 24 Family Health and Well-being, B.C. and Canada, 1994-95



[1] Percent of children living in "healthy functioning" families, as determined by a series of questions about how well the family works together. [2] Percent of children age 0 to 11 whose parents have friends or family who help them feel safe, secure, and happy. [3] Percent of children age 2 to 11 whose parents indicate they have positive interactions with their children. [4] Percent of children age 2 to 11 whose parents indicate they have consistent parenting practices. [5] Percent of children whose parents say their children never see adults or teens in the house physically fighting, hitting, or otherwise trying to hurt others. Source: Prepared for Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Indicators of family distress include those in which parents experience depression (about 8% of British Columbia families), problems with alcohol (about 8%), and families that use physical punishment as a means of discipline (about 11%) (Figure 25).

Figure 25 Families and Children At-Risk, B.C. and Canada, 1994-95



[1] Percent of parents of children age 0 to 11 experiencing moderate to severe depression (a score of 13 or higher on a depression scale ranging from 0 to 35) [2] Percent of children age 0 to 11 whose parents say drinking is a source of tension or disagreement in the home. [3] Percent of children age 2 to 11 whose parents say they use physical punishment "always/often" or "sometimes" as a method of parental discipline. Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Prevention

Parental depression, poor parenting practices, family violence, child abuse and neglect (pages 142-143) and other symptoms of family distress can be prevented or minimized. There is a wealth of research to show that programs to support high-risk families are effective in improving the health outcomes of children. Some of the leading examples are:

- *Hawaii Healthy Start program.* By identifying high-risk families in Hawaii and offering an appropriate array of supportive services, this program has demonstrated that it is possible to substantially reduce the incidence of child abuse in a cost-effective manner (Fuddy, 1992).
- *Perry Preschool Program.* This U.S. program showed an early childhood education program to be strongly associated with positive outcomes in later childhood and adulthood. The children receiving the early education program were less likely to become involved in criminal activity, less likely to become pregnant during their teen years, and less likely to be in need of social assistance. These children were also much more likely to be literate, finish high school, be employed or attending college, and to have higher earnings (Schweinhart, Barnes, & Weikart, 1993). These same factors are strongly associated with better health status over the life course.
- *Head Start Program.* This program, which provided a "head start" to children from poor families in the United States, was found to have a positive effect on children's intelligence scores and to result in increased school readiness and improved school achievement (Zigler & Muenchow, 1992).

The knowledge from these studies is being applied by the Ministry for Children and Families in its *Building Blocks* strategy. Pilot projects are under way to see how such programs can be implemented in British Columbia.

Once these pilot projects are complete, the challenge will be to implement these programs throughout the province. The evidence shows that such programs, if done well, will have economic benefits downstream. That is, they will save costs to the health care system, to the criminal justice system, and to social assistance and unemployment programs. To accomplish this, a fixed amount of ministry funding could be earmarked to finance a set of prenatal and early childhood intervention programs. For example, 1% of ministry budgets for Health, Attorney General, and Human Resources would amount to approximately 100 million dollars available for children's programs.

Recommended Action:

- ***Evaluation and wider implementation of the at-risk approach to early child development should be expeditiously completed and adequately funded.***

Economic Security

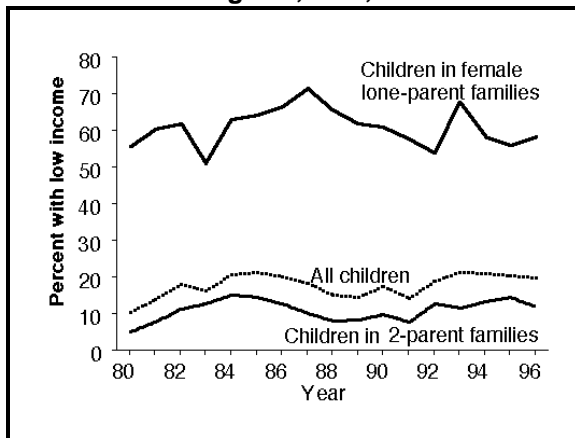
One child in five lives in a low-income family, and the trend is not improving. Not all children living in poverty have poor outcomes, but a stable and adequate family income provides greater opportunities for children to achieve health. We must recognize the right of every child to an adequate standard of living.

There is a close relationship between health and income. It is widely known that an adequate income is important for health and conversely, that low income is associated with poor health status.

Child Poverty in British Columbia

Child and family poverty remains an urgent issue in British Columbia. As shown in Figure 26, one child in five (20%) is living in poverty, and the trend is not improving. For children living in single-parent families, the situation is considerably worse – more than half (59%) live below the Statistics Canada low income cut-off.

Figure 26 Low Income Rates, Children Under Age 18, B.C., 1980-1996



Source: Statistics Canada. (1997). *Low income persons, 1980-1996*. Cat. No. 13-569-XPB.

It is well-established that child poverty is associated with poorer health outcomes. Studies from other jurisdictions show that abuse, poor school performance, criminal activity, teen pregnancy, and unemployment in later life are all more likely to be experienced by children raised in poverty. Yet, despite the repeated statements of governments at various levels acknowledging the devastating health effects of child poverty, no progress is being made.

Certainly, not all children living in poverty have poor outcomes, just as not all children living in wealthy families have good outcomes. Children brought up in caring families where they receive nurturing, a healthy diet, early educational opportunities, and enriched stimulating care typically do well.

The disadvantages suffered by children in poverty cannot be entirely overcome by extra care and services. Results from one major study showed that even children receiving enriched care had a 59% incidence of need for income assistance when they reached adulthood (Schweinhart, Barnes, & Weikart, 1993). Therefore, we must look beyond remedial measures and look at reducing poverty itself. Studies have shown that income supplementation can improve child health indicators such as low birthweight (Kehrer & Wolin, 1979).

In countries where the issue of child poverty has been identified and acted upon effectively, the child poverty rate has been reduced to 3%, less than one-fifth of British Columbia's rate (using the same definition of poverty for making the comparisons), as shown in Table 4.

Table 4 Poverty Rates, Children Under 18, B.C. (1994) and Selected Countries

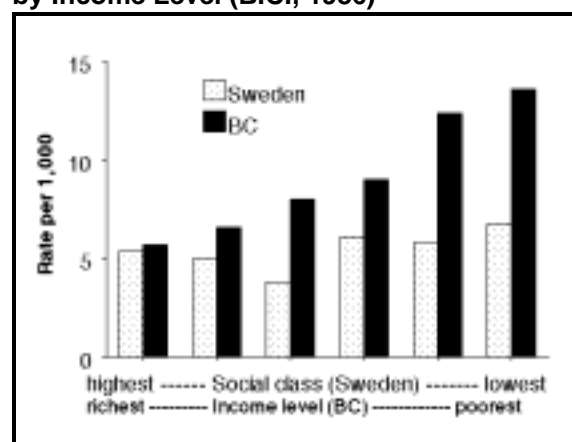
Rank		%
1	Finland	3
1	Sweden	3
1	Denmark	3
1	Switzerland	3
5	Belgium	4
5	Luxembourg	4
7	Norway	5
7	Austria	5
9	Netherlands	6
10	France	7
10	West Germany	7
12	Italy	10
12	United Kingdom	10
14	Israel	11
15	Ireland	12
16	Canada	14
16	Australia	14
	British Columbia	16
18	United States	22

Poverty line: 50% of national median income (after taxes and transfers). Sources: British Columbia data from Statistics Canada, unpublished tables. Country data from Rainwater, L. & Smeeding, T.M. (1995). *Doing poorly: The real income of American children in a comparative perspective. Luxembourg Income Study, Working Paper No. 127. In UNICEF (1996). The Progress of Nations, 1996, p. 45. P. Adamson, Editor.*

As a consequence of its efforts to reduce child poverty, Sweden, for example, has been able to both reduce the gradient between population sub-groups and the overall rate of infant mortality. In British Columbia, we continue to see a rather steep gradient between groups (Figure 27).

This is an important concept: working towards eliminating the gap in infant mortality will benefit not only children in poverty. The health of all children, including those of the most fortunate British Columbia families, could improve if we reduce child poverty – a truly win-win outcome. Furthermore, an improvement in infant health will not necessarily require more money. In dollar terms, British Columbia has consistently had a higher per capita income than Sweden.

Figure 27 Differences in Infant Mortality by Social Class (Sweden, 1985-1986) and by Income Level (B.C., 1986)



Sweden data were based on occupation and employment status of the mother's cohabitant, according to the British registrar general's social class categories (left to right) I, II, III non-manual, III manual, IV and V, and other/unclassified (includes births to mothers for whom no cohabitant could be identified). Source: Leon, D.A., Vagero, D., & Olasusson, P.O. (1992, September 19). Social class differences in infant mortality in Sweden: Comparison with England and Wales. *British Medical Journal*, 305, 687-691. British Columbia data are by the infant's neighbourhood income quintile, quintile 1 (richest neighbourhoods) through quintile 5 (poorest), for Vancouver and Victoria Census Areas, 1986. The bar at the far right is the rate for Status Indians in B.C., 1987. Sources: Income quintile data from Thomsen, M.E. (1994). Association between mortality and poverty. *BC Medical Journal*, 32(8), 337-338; data points were obtained from the author. Status Indian rate from B.C. Vital Statistics Agency.

A Fair Distribution of Income and Wealth

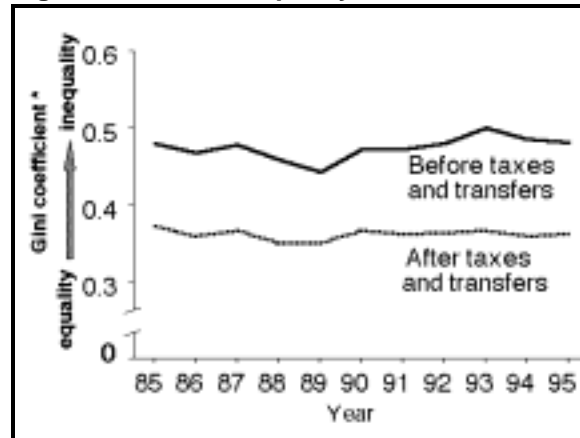
While poverty remains an important issue negatively affecting one in five children in this province, the way income and wealth are distributed is emerging as an even more important health issue that potentially affects the health of all children.

In terms of some of the standard population health indicators, there is strong evidence that the more equitable the distribution of wealth, the healthier the population. In countries where the gap between the rich and poor has been growing smaller, as in Japan, Asian countries, and some European countries, more rapid gains in health are being made. Conversely, in countries where the gap between the haves and have-nots is increasing, such as the United States, the United Kingdom, New Zealand, and some of the former Soviet block countries, gains in health are relatively smaller and in some cases are deteriorating rapidly. In the United States, the gap between the health of children in rich and poor families is widening (Montgomery, Kiely, & Pappas, 1996).

In Canada, Statistics Canada has done considerable analysis of the gap between low and high income earners. In recent years, there has been a tendency towards growing inequality in terms of earned income (income before taxes and transfers). On measures such as the "gini coefficient", the social safety net – through income tax, unemployment insurance, social assistance, and other transfer programs – has been successful in keeping the distribution of disposable income at a very constant level, at least until 1995, the most recent year for which data are available (Figure 28).

It is interesting to note that this has been true through a succession of federal governments of various political and social philosophies. This no doubt reflects the prevailing Canadian values concerning a willingness to share resources so that everyone can meet basic needs (Peters, 1995).

Figure 28 Income Equality, B.C., 1985-1995

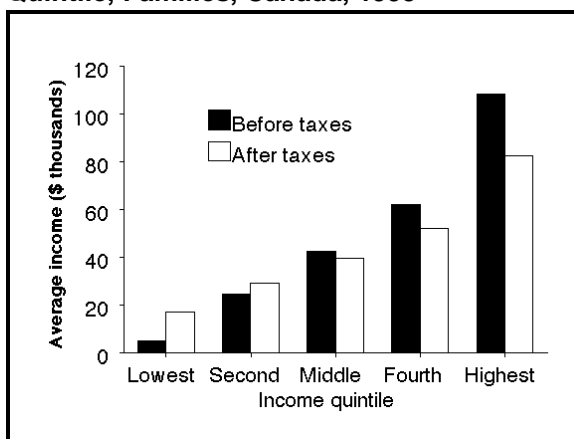


* Gini coefficient, a statistic used to measure the inequality in income distribution. The higher the number, the greater the inequality (0 = total equality, 1 = total inequality). Figures are for all units (families and unattached individuals). Source: Statistics Canada. *Income after tax, distributions by size in Canada*. Cat. No. 13-210.

Although the social safety net has helped to reduce the gap between the rich and the poor, there is still a wide disparity in incomes (Figure 29). Before taxes, the highest income families have an average of \$21 for every dollar the lowest income families receive (families in the highest income group averaged a pre-transfer income of \$108,309, compared to \$5,182 for families in the lowest income group). After taxes and transfers, the gap is reduced, so that, on average, high income families receive \$5 for every dollar the poorest families have.

There are concerns that with the erosion of social programs deemed necessary to reduce the deficit and debt, the gap in disposable income may well have increased and be at least partially related to the plateauing of some of the national population health indicators such as infant mortality and life expectancy. It will be important to monitor the pattern of these data, as they become available.

Figure 29 Average Income by Income Quintile, Families, Canada, 1995



Source: Statistics Canada. (1997). *Income after tax, distributions by size in Canada, 1995*. Cat. No. 13-210-XPB.

It is commonly understood that healthy families generally have healthy children. It is now clear that a more equitable distribution of income and wealth is closely associated with more supportive communities and families and improved health for children, youth, and adults. It would therefore seem important to our health to explore ways in which the gap between high and low earners could be diminished or at least prevented from growing. There are two principal ways this can be achieved:

- *Redistributing income through social policies and programs.* The Canadian pattern for the past 20 to 30 years, as discussed above, has been to correct for the gap in earned income through progressive income tax (the tax rate goes up as a person's earnings increase) and the provision of social programs such as employment insurance and welfare. As observed, this has been driven by the prevailing Canadian values concerning extending help to the less fortunate.

- *Creating a more equitable wage structure.* The pattern in Japan and some other Asian countries has been to achieve a reduced gap through a more equitable wage structure. This, it appears, is driven by prevailing Japanese values that consider it unfair that a Chief Executive Officer should earn 10 to 20 times as much as an average worker.

To move ahead in Canada, we need to act on what is known about the links between income, the distribution of income, and health.

Recommended Actions:

- *Recognize the right of every child to an adequate standard of living, as set out in the United Nations Convention on the Rights of the Child. As a society, we have a responsibility to ensure that basic needs such as food and shelter are met.*
- *Reduce the number of children living in poverty and reduce the depth and duration of poverty. Policies to reduce child poverty should include an access component (for example, access to public transport, grocery stores with fresh fruits and vegetables, libraries, and opportunities for recreation and sports).*
- *Provide the public with the facts about the important effect of income distribution on the health of all.*
- *Develop better information systems so that up-to-date, accurate data on earned and disposable income and the major population health indicators such as infant mortality rate, life expectancy, and low birthweight are available in a timely way.*

- *Ensure that senior policy makers at all levels of government are aware of the negative health consequences associated with growing inequities resulting from regressive taxation and the erosion of social programs, and that a balance with the need for fiscal responsibility must be struck.*
- *Encourage the corporate sector to adopt more equitable wage structures.*

Quality Care in Early Childhood

The most important intervention to improve the well-being of children, after reduction of child poverty, is the provision of stimulating, high quality care for young children. British Columbia should adopt a policy (modelled on the principles of Medicare) that all families should have access to good quality child care services, without financial barriers.

The Importance of Quality Care

The quality of care children receive, during their preschool years in particular, is linked to their success in later life.

Children who receive good quality care – whether by their parents at home, by other caregivers, or through formal child care arrangements – have better social skills, higher levels of language development, better coping skills, and fewer behaviour problems in school than those who have experienced lower quality care (Advisory Committee on Population Health, 1998).

Quality care means a safe and stable environment, with lots of affection from parents and caregivers, and opportunities for interaction, learning, and play. On average, children who receive quality care live longer, happier, and healthier lives than those who did not enjoy such starts.

Because of these links between early childhood care and health later in life, the quality of care we provide for British Columbia's children is critically important. In fact, the most important intervention to improve the well-being of children, after reduction of childhood poverty, is the provision of stimulating and supportive care.

Employers and governments can assist families in their efforts to provide quality care for young children. Family benefits such as maternity/paternity benefits, child-rearing leaves, and tax credits can help parents spend time with their children, especially during the first months of life – the time when parent-infant bonding is established. Parenting courses and self-help groups can assist parents in developing good parenting skills.

In British Columbia, as in other provinces, demand for non-parental child care arrangements continues to grow as a consequence of the changing nature of families and society. Governments have an important role to play in ensuring that child care services are high quality, accessible, affordable, and accountable.

The Need for Child Care Services

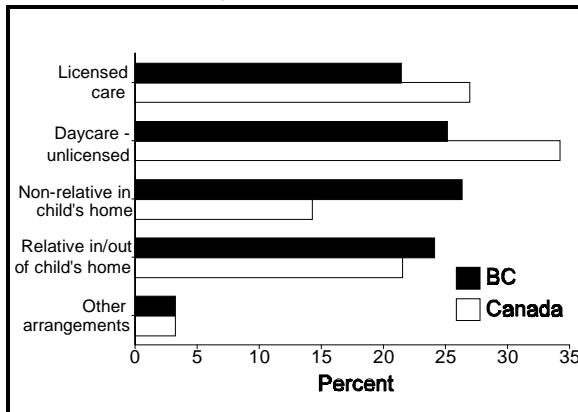
Family life has changed considerably in British Columbia. The traditional pattern of one breadwinner and one full-time stay-at-home parent is no longer the norm. Over two-thirds of women with children under age 6 participate in the paid workforce, and many parents work at part-time jobs or jobs with work hours other than "9 to 5". As a result, there is an ever increasing demand for child care with flexible options.

Current Situation

According to the National Longitudinal Survey of Children and Youth, about one-third of B.C. children age 0 to 11 are in some form of non-parental child care while their parents work or study.

Of those children in non-parental care (an estimated 190,000 in 1997), most (79%) are in unregulated (unlicensed and unmonitored) care arrangements (Figure 30).

Figure 30 Child Care Arrangements when Parent at Work or Study, Children Age 0 to 11, B.C. and Canada, 1994-95



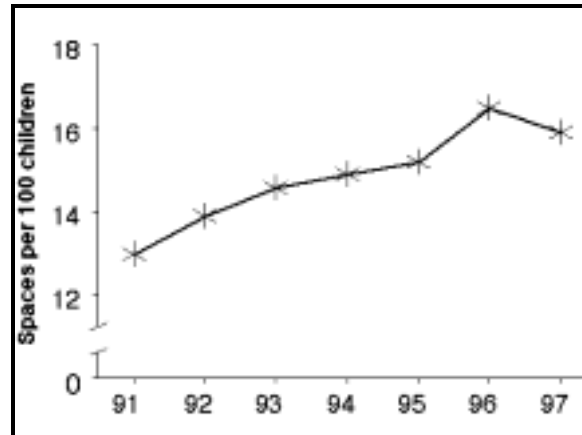
Approximately one-third (31.5%) of children age 0 to 11 are in non-parental care when parents work or study. The above graph shows the primary type of non-parental care used. Licensed care: Care provided by regulated child care centre or school program. Daycare - unregulated: Care provided by a non-relative in someone else's home, unregulated. Non-relative in home: Care provided by a non-relative in the child's home (such as a nanny), unregulated. Relative in/out of home: Care provided by a relative in the child's or someone else's home, unregulated. Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Provincial government funding for child care has increased substantially in recent years, from \$61 million in 1990/91 to approximately \$200 million in 1997/98. Government investment has helped to support a 50% increase in the number of licensed child care spaces, as well as increased funding to subsidize the child care costs for low-income families.

Although the number of licensed child care spaces has increased, there are still only 16 spaces available for every 100 preschool children (Figure 31), and the availability of licensed child care spaces varies considerably across the province (Table 5).

A specific target for the number of licensed child care spaces has not yet been established. However, information from the recent *Child Care Needs Assessment Survey* shows that there are many parents who are not able to access child care services that meet their needs and preferences.

Figure 31 Licensed Child Care Spaces per 100 Pre-School Children, B.C., 1991-1997



The number of child care spaces in licensed child care facilities, per 100 children under age six. Figures are as of March 31 each year. Source: Community Care Facilities Branch, B.C. Ministry of Health.

Table 5 Licensed Child Care Spaces per 100 Pre-school Children, B.C., March 1997

Health Region	Spaces *	Spaces per 100 children
East Kootenay	1,075	18.7
West Kootenay	989	17.1
North Okanagan	900	10.7
South Okanagan	2,455	16.2
Thompson	1,870	17.9
Fraser Valley	2,343	10.8
South Fraser Valley	5,332	10.8
Simon Fraser	4,570	17.6
Coast Garibaldi	973	15.8
Central Vanc Island	3,598	20.5
Upper Island	1,755	18.6
Cariboo	1,030	16.3
North West	1,149	12.3
Peace Liard	571	8.6
Northern Interior	2,073	17.5
Vancouver	5,399	17.1
Burnaby	1,757	14.5
North Shore	2,476	20.9
Richmond	1,859	16.7
Capital	5,313	24.8
British Columbia	47,487	15.9
Highest region		24.8
Lowest region		8.6

* Spaces: The number of child care spaces in facilities licensed under the *Community Care Facility Act* and the *Child Care Licensing Regulation*. Source: *Community Care Facilities Branch, Ministry of Health*.

There are financial and other barriers to accessing child care services. In the *1997 Child Care Needs Assessment Survey*, nearly one-third (31%) of parents reported experiencing a child-care barrier that interfered with their finding or keeping a job or pursuing education or training. Cost was the main barrier to child care – government's current funding covers only about 15% of what British Columbia parents spend on child care. Finding care that meets their child's needs, and that is available when and where needed, were other issues that parents identified (Table 6).

Regulated (Licensed) Child Care Facilities

In British Columbia, "licensed" child day care services are those that meet set standards of care – the standards required for licensing under the *Community Care Facility Act* and the *Child Care Regulation*.

Because studies have shown that jurisdictions with higher levels of regulation have, on average, a higher quality of child care (Doherty & Stuart, 1996), the availability of licensed child care spaces is sometimes considered a proxy measure for quality care.

Table 6 Barriers to Child Care, 1997 Child Care Needs Assessment Survey, B.C.

Barrier	Percent of parents
Child care is too expensive	19%
Do not feel comfortable leaving children with a non-relative	12%
Child care is unavailable during the hours when needed	10%
Lack of good quality child care	9%
Child care is too far away from home or work	6%
Don't know where or how to find child care	5%
Lack of child care that is sensitive to language or cultural needs	3%
One or more barriers	31%

Source: *Highlights: 1997 Child Care Needs Assessment Survey*. Human Resources Development Canada and B.C. Ministry for Children and Families.

The Economics of Quality Care

There is now ample evidence to show that children can benefit greatly from receiving good quality child care services. It has been shown from a number of studies that at-risk children who receive good child care are more likely to finish high school, to get a job, have higher pay, are less likely to get pregnant in their teens, less likely to be involved in crime and less likely to require social assistance. Because of these outcomes, it has been estimated that for every dollar spent on such programs, seven dollars are saved later on from police, social services, corrections, and health services (Schweinhart, Barnes, & Weikart, 1993).

What about children growing up in families not identified as being at-risk? The evidence is that children from all families can benefit from high quality day care or nursery school. In Sweden, for example, children commencing good child care during the first year of life outperformed home-care-only children on an array of indicators tested at ages 8 and 13 (Andersson, 1989; Andersson, 1992). This does not necessarily mean that care provided by parents is inferior, but shows that good quality child care services are a good partnership which helps parents provide for their child's optimal development.

A recent Canadian study concluded that publicly-funded child care services are a sound economic investment, for children from all income groups and social classes. The study found that every dollar spent on quality child care services* for 2 to 5 year-olds could provide two dollars worth of benefits for children, their families, and society (Cleveland & Krashinsky, 1998). Thus, by investing in quality child care services, society would gain in improved child development, higher incomes for working families, more tax revenues, and better life prospects for children.

So, we know that:

- Early childhood care is critical to later health, and
- Good quality child care is beneficial and cost-effective for all children, with particularly high pay-offs for children at-risk.

While high quality care is beneficial for children, lower quality care is not, and may lead to negative outcomes such as the development of aggressive behaviours (Lamb, Sternberg, Hwang, & Broberg, 1992). More work is needed to develop ways to measure the quality and outcomes of the child care being provided. At this time, we do not have sufficient information to assess whether all British Columbia children in need of child care services are getting access to an adequate standard of care. As currently designed, it is difficult to determine the extent to which publicly-funded child care programs are achieving their intended objectives (Office of the Auditor General, 1996).

** In this study, costs and benefits were based on the provision of high quality licensed child care to 2 to 5 year-olds for children of employed parents and enriched nursery school for 2 to 5 year-olds cared for primarily by their parents at home.*

The Need for a Coordinated Strategy

There are a number of issues that demonstrate the need for a coordinated strategy for child care in British Columbia:

- Child care services, even those of the highest quality, cannot replace the close contact and attachment that is formed between parents and babies in the first months of life (Cleveland & Krashinsky, 1998). Most British Columbia families have access to maternity leave. However, family leave and benefit policies in most European countries tend to be much more generous (Kamerman & Kahn, 1995).
- Much child care is provided in unlicensed, informal settings that do not require licenses, and there is an unknown amount of care in British Columbia being provided in settings that should be licensed and are therefore illegal.
- With so many parents relying on non-parental child care arrangements for their children, it is surprising that there is not more demand for accountability as to the outcomes associated with child care services. One such measure could be the routine assessment of all children for their school readiness, as measured by teacher assessment or a test instrument (see page 52).
- In child care facilities that are licensed, the standards that are applied are largely those of administration and health and safety (fire safety, hygiene, adequate space, adequate equipment and materials, staff qualifications). It is difficult to set and monitor standards for the day-to-day content and delivery of the actual care being provided.

- Pay for child care workers is extremely low - an undesirable situation for such an important task. Low pay often leads to high turnover. In general, the lowest pay will attract younger and less qualified caregivers, so that families with low incomes will generally have to use less expensive informal care arrangements, where the care is more likely to be of a lower or unknown standard.
- For many families, there are difficult decisions around child care. Often both parents need to work to sustain an adequate income, and certainly there is an abundance of evidence to suggest that adequate family income is very important for children's health. If the remuneration of child care workers were to rise, then many parents would not be able to afford it and would have to give up paid employment. This could have a negative impact on children.

One way to resolve this would be a government policy to ensure that all parents have access to good quality child care without financial barriers. This has also been promised politically at the national level.

Given the critical importance of early childhood care to the health of the population, the productivity of the future workforce and the civil progress of society, as well as the demonstrated cost-effectiveness of good quality child care programs, the federal and provincial governments should collaboratively consider the following recommended actions.

Recommended Actions:

- *Adopt the principle (modelled on the principles of Medicare) that all children in British Columbia should have access to quality care that optimizes their growth and development.*
- *Where parents or guardians elect to provide care for their children at home, they should be supported in their child-rearing efforts through tax credits or other incentives, opportunities to develop parenting skills, and other supports.*
- *Where parents elect to place their children in non-parental child care arrangements, all children in British Columbia should have access to quality child care without financial barriers. The implementation of this policy could be pursued as a partnership with the federal government, local health authorities, and the corporate sector.*
- *Encourage family-friendly workplace policies such as on-site child care, parental leave, and policies that allow employees to retain skills and contacts during extended leaves.*
- *Develop standards for quality in child care settings that can be used as guidelines for parents and providers in informal settings and as a means for appraisal in licensed child care facilities.*
- *Develop a system for identifying all at-risk children and proactively offering good quality day care or enriched nursery school experiences as part of a comprehensive program to assist at-risk families.*
- *Encourage further research into the outcomes associated with good quality child care services compared to home-only care.*
- *Routinely assess all children for school readiness and provide these data on a regional basis, so that parents are aware of progress in the provision of good care in early childhood.*

Healthy Neighbourhoods and Communities

Healthy neighbourhoods and communities provide children with support, protection, and opportunities to develop meaningful relationships with others outside their immediate family.

A healthy biological beginning and a healthy family environment are key factors that contribute to the healthy growth and development of children. Healthy neighbourhoods and communities are also important in providing nurturing and stimulating environments.

In the context of providing for the needs of children, a healthy neighbourhood is one where a child has an opportunity to develop meaningful relationships with children and adults outside of the immediate family and where parents can receive the support that is often needed to cope with the stresses of bringing up children.

The Importance of Social Networks

Some of the factors that put children at particular risk include single parenthood, teen pregnancy, low income, low parental education, new immigrant status, difficult temperament, and breakdowns in family relationships.

Research has shown that children considered to be in "at-risk" circumstances because of these factors do better if they have plenty of emotional support outside of the family. The Kauai study showed that this outside support can come from a variety of sources.

Resilient children tended to have one or more close friends and an informal network of neighbours, peers, and elders. Others made school a home away from home or were able to obtain emotional support from a church group, minister, sports club, recreational organization, musical group, or other community resource (Werner & Smith, 1982).

In Canada, the National Longitudinal Survey of Children and Youth also identified this connection between healthy neighbourhoods and healthy children. To help build strong families that can provide children with an advantageous start in life, evidence suggests that "rather than relying entirely on governments...the answer may lie in innovative approaches by neighbourhoods, communities, schools, child care centres, and businesses" (Taylor, 1996, p. 140).

What is Happening with Neighbourhoods?

It is clear that neighbourhoods are changing. Canadians are more and more living in cities - 82% of children now live in cities, compared to 70% in 1961 (Scott, 1996).

While there are many advantages of city life, such as increased employment opportunities, cultural diversity, and a wide array of social and health services, there can also be a tendency for people living in cities to experience increased family stress and a diminished sense of community.

Changing patterns of families and work impact the design of neighbourhoods and the opportunities that people have to interact with each other.

Healthy Neighbourhoods

What is a healthy neighbourhood? When this question is posed to people living in communities, the answers usually include the following:

- Safety, security, low crime rates, and absence of violence, abuse, and discrimination.
- A sense of belonging and mutual trust.
- Friends and social networks.
- Recreational facilities.
- Green space.
- Libraries, schools, and other educational facilities.
- Good local government.
- Employment.
- Clean air, water, and lack of exposure to toxic water.
- Access to health services.
- Child care availability and quality.
- Diverse cultural activities.

It is apparent that to achieve these things requires the cooperation of government at various levels, local businesses and corporations, professional service providers, and volunteer organizations including service clubs, sports clubs and churches.

There is evidence showing what people intuitively know – in communities where people feel connected and there is a strong spirit of voluntary participation, children are healthier (Putnam, 1993; Runyan et al., 1998).

Studies have also shown that income distribution plays an important role in the health of communities. As the gap between high and low income earners is decreased, there is greater social cohesion and greater social capital, that is, more cooperative activities (Wilkinson, 1996). This essentially means that where there is greater income equality, people feel more connected and are more willing to participate in a variety of activities in their communities that are helpful and supportive of one another. In other words, life becomes more civilized.

How Can We Measure the Health of Neighbourhoods and Communities?

Ultimately, the health of a given community must be assessed by a variety of measures and methods that are best suited to an individual community. These methods will include both quantitative data such as the number of clubs, parks, libraries, and so forth, but also the more qualitative assessments that are captured through stories and the public resolution of issues through the political process.

There are some indicators that have been developed for tracking social participation. These include voter turnout, participation in voluntary organizations, and charitable donations (Table 7). While some surveys are in progress, there is still a great deal that is not known about the voluntary sector and participation in community life (Dow, 1997).

Table 7 Social Participation Measures, B.C. and Canada

	B.C.	Canada
Voter turnout [1]	75%	60%-82%
Membership in voluntary organizations [2]	37%	34%
Rate of volunteering [3]	29%	27%
Charitable donations [4]	\$170	\$150

[1] Percent of voters who voted in provincial elections circa 1990. Provincial and territorial elections offices. In K. Scott, *Progress of Canada's Children 1996*, p. 34. [2] Percent of population age 20+ who were members of a voluntary organization or association. Statistics Canada. National Population Health Survey 1994-95 microdata files. Prepared by Policy, Planning, and Evaluation Division, B.C. Ministry of Health. [3] Percent who had performed volunteer work in the previous year. Ross, D.P., & Shillington, E.R. (1989). *A Profile of the Canadian Volunteer: A Guide to the 1987 Survey of Voluntary Activity in Canada*, Table 3, p. 8. Ottawa: National Voluntary Organizations. [4] Median charitable donations per taxfiler, 1995. Statistics Canada. Small Area and Administrative Data Division, November 1996.

What Can Be Done?

Civic vitality is an area that is worthy of more extensive research and monitoring (Lomas, 1997). However, there are strategies that can be undertaken to improve the health of neighbourhoods on a number of fronts and scales:

- *National and provincial levels:* Adopt policies that will tend to reduce income inequities rather than increase them. For example, changes in income taxation should be in the direction of being more progressive (the tax rate goes up as a person's earnings increase).

National policies that extend the array of effective social services will also have a beneficial effect in neighbourhoods. These include health services, education, income support, child benefits, and child care.

- *Provincial and regional:* Provide seed funding for social development, e.g., Healthy Communities projects, recreational and cultural activities. Extend public knowledge of the interactions between economic policies, healthy communities, and children's health.
- *Local:* Design roads, neighbourhoods, public buildings, and community programs that provide children with opportunities for recreation and social interaction.
- *Corporate:* Adopt policies that encourage social participation and more equitable wage structures. Develop ways for companies to report on the social impact of their activities, e.g., through "social auditing".

Recommended Actions:

- *Develop a provincial or national program to create "healthy neighbourhood" or "child-friendly" scores for each community.*
- *Encourage "social auditing" scores for corporations.*
- *Support community-level policies and projects that build "social capital", e.g., participation in voluntary activities, community gatherings, opportunities for recreational, cultural, and social interaction.*

Child Growth and Development

4

Most children are growing up healthy and emotionally well-balanced. Low birthweight, inequalities in school readiness, teen smoking, physical inactivity, and mental and emotional problems are major threats to our children's health and development. Comprehensive strategies, with special attention to at-risk groups, can help provide all children with the attitudes and skills they need to lead long, healthy, and productive lives.

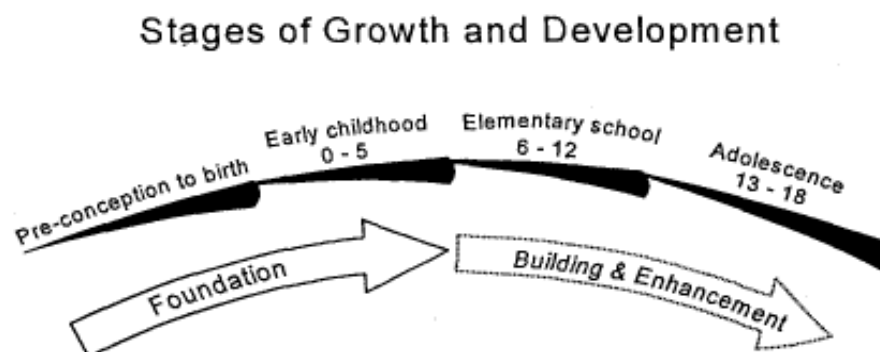
What is healthy child development? It means good physical health, a sense of identity, an ability to learn, good social and coping skills, including handling stress, psychological well-being, and self-esteem.

In this chapter, we will explore how well children in British Columbia are doing on some measures of these.

Stages of Growth and Development

Children progress through various stages of growth and development (Figure 32). Research has shown that the time from before birth through age 5 is especially critical, as it provides the foundation for school years and beyond (Guy, 1997). Pre-conception through early childhood is an important "window of opportunity" for helping children receive a good start in life (Advisory Committee on Population Health, 1998).

Figure 32



Source: Adapted from *Building a National Strategy for Healthy Child Development*. Report of the Federal/Provincial/Territorial Advisory Committee on Population Health, Working Group on the National Strategy on Healthy Child Development. Health Canada Cat. No. H39-424/1998E, page 6.

The school-age years are also important for building and enhancement of skills. Children who have not had a healthy start may lack the skills they need to adapt to school and community life. Such children can be given extra help during this phase. However, it takes more effort and resources to overcome developmental problems than to prevent them by investing during the earlier "foundation" years.

As children grow and develop, the transitions between developmental stages are particularly important. Birth and adjustment to family life is the first transition that children face. After the early childhood years, children start formal schooling and adapt to classroom life; this sets the stage for learning and social interactions.

As they become adolescents, children experience the changes associated with puberty. At about this time, children enter high school; school, peers, and community play an increasing role in the young person's life.

This chapter focuses on child growth and development from birth through the elementary school years. A special report on the health of youth is in the planning stages, and will be available at a later date.

Note: Most health databases do not routinely provide data that exactly correspond to the developmental stages shown in Figure 32. In general, health statistics are produced by 5-year age groupings (ages 0 to 4, 5 to 9, 10 to 14, and so on). Thus, many of the indicators presented in this report pertain to the 0 to 14 age group.

Healthy Physical Growth and Nutrition

Most children are born healthy and continue to grow and develop normally. Low birthweight, insufficient breastfeeding, and problems with food and nutrition are a cause for concern. These problems can be tackled by supporting women at risk of having low birthweight babies and by helping children establish healthy eating patterns.

This section describes growth and development from birth through the school-age years, providing data on the physical and motor development in British Columbia's children.

Measuring Growth and Nutrition

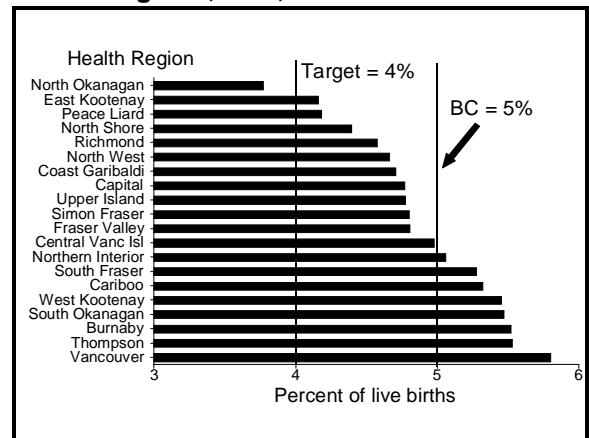
Children go through spurts and plateaus of growth. Growth charts are commonly used to track children's weight and height over time, with deviations from their regular pattern of growth prompting a look for underlying causes. There is no Canadian growth standard, so the U.S. National Centre for Health Statistics charts are commonly used.

Although growth charts and other measures are used to track the health of individual children, there is no ongoing program to consolidate these data or to assess the growth and nutritional status of British Columbia's children. To identify trends and problems related to child growth, we rely on birthweight – an important measure of a baby's health and chance of survival – along with occasional surveys and research activities.

Birthweight

Most children are born with a healthy birthweight. About 5% have a low birthweight (below 2,500 grams), and this rate has been quite steady in recent years. Comparisons both within British Columbia (Figure 33) and with other countries indicate that a lower rate of low birthweight is possible.

Figure 33 Low Birthweight Rate, Health Regions, B.C., 1992-1996



Source: B.C. Vital Statistics Agency. *Vital Statistics Annual Report 1996. Appendix 3, Table C.*

As low birthweight is an important risk factor for poor health throughout childhood, measures taken to improve birthweights can be expected to result in better child health overall.

Reports prepared by the Ministry for Children and Families and the Provincial Health Officer have established a benchmark of 4% – the low birthweight rate achieved by Finland, Norway, and Ireland (UNICEF, 1998). To achieve this, the following strategies should be considered:

- **Poverty.** In Canada, the low birthweight rate is 40% higher in low-income neighbourhoods compared to high-income neighbourhoods (Wilkins, Sherman, & Best, 1991). This contributes significantly to the much higher infant mortality rates and other poor health outcomes in low-income families.

Low birthweight rates are related to a variety of factors, including adequacy of nutrition, access to prenatal care, likelihood of smoking, and substance abuse. It has been shown that providing income supplements to low-income mothers will improve low birthweight rates (Kehrer & Wolin, 1979). In British Columbia, there are programs to help pregnant women combat the effects of poverty and other risk factors (see pages 88-89). Such programs need to be accessible to all women at risk of low birthweight.

- *Prenatal smoking.* Smoking during pregnancy is the most important behavioural cause of low birthweight. Almost one mother in five (20% of B.C. mothers with children less than two years old) smoked during part or all of the pregnancy, according to the 1994-95 National Longitudinal Survey of Children and Youth.

When health professionals routinely check to determine if their patients smoke and offer advice, counselling, or other treatments, a significant number (10%-15%) will quit smoking. Such smoking cessation interventions have been shown to be a cost-effective way to decrease the number of low birthweight infants (Canadian Task Force on the Periodic Health Exam, 1994; U.S. Department of Health and Human Services, April 1996).

Unfortunately, the organization of health care in British Columbia does not provide remuneration or other incentive to implement an effective program to reduce prenatal smoking. The reasons for this are complex and are related to the relationship between the government and health provider organizations. Both government and provider groups should show leadership by introducing changes in the system to allow for an effective program to identify pregnant women who smoke and to provide smoking cessation services.

Breastfeeding

Breast milk is the ideal food for infant growth and development. Breast milk contains the optimal mix of nutrients, gives babies increased resistance to infections and fewer allergies, and provides opportunities for mother-infant bonding.

The Ministry of Health and other authorities have adopted the WHO recommendation that breast milk be the exclusive source of nutrients during the first four to six months of an infant's life. Breastfeeding, supplemented with age-appropriate food, should continue into a baby's second year.

British Columbia mothers achieve considerably higher rates for breastfeeding than the Canadian average. Of mothers with children less than two years old, 89% of B.C. mothers have breastfed or are currently breastfeeding their child, compared to 75% for Canada (National Longitudinal Survey of Children and Youth microdata, 1994-95).

Although most babies are initially breastfed, studies from around the province indicate that by six months of age, only about 30% of babies are breastfed. Thus, we are some way away from the recommended practice of breastfeeding for the first six months of a baby's life.

Two international initiatives that promote, support, and protect breastfeeding are the *International Code of Marketing of Breast Milk Substitutes* and the *Baby-Friendly* initiative, which has the *Ten Steps to Successful Breastfeeding* as a minimum standard. According to a 1995 survey, many British Columbia hospitals have adopted Baby-Friendly practices. However, some hospitals continue to accept free formula and to distribute free pacifiers, formula, and bottles to mothers (Table 8). When breastmilk substitutes are free and accessible, it may influence how newborn babies are fed (Enkin, Keirse, Renfrew, & Neilson, 1995).

Table 8 Percent of Hospitals that have Implemented Baby-Friendly Policies, B.C., 1995

Steps to Successful Breastfeeding	Percent of Hospitals
1: Have a written breastfeeding policy, routinely communicated to all staff.	47% have policy. 34% use policy for in-service.
2: Train health care staff in skills to implement policy.	76% provide educational opportunities for staff.
3: Inform all pregnant women about benefits and management of breastfeeding.	93% give out information on breastfeeding.
4: Help mothers initiate breastfeeding within 30 minutes of birth.	Most hospitals attempt to have breastfeeding initiated within two hours of birth.
5: Show mothers how to breastfeed and how to maintain lactation if separated from their infants.	67%
6: Give newborns no food/drink other than breastmilk, unless medically indicated.	44%
7: Practise rooming-in 24 hours a day.	73%
8: Encourage breastfeeding on demand.	93%
9: Give no artificial pacifiers.	57% do not distribute pacifiers, 88% do not distribute formula at discharge.
10: Foster establishment of breastfeeding support groups and refer mothers to them on discharge.	57%

Source: B.C. Ministry of Health. (1995). Status Report on Breastfeeding Support in BC Hospitals and Health Units/Departments. Seventy-five (75) out of 85 maternity-serving hospitals responded to this Ministry of Health survey.

To increase the rates of breastfeeding and compliance with these international guidelines, breastfeeding families need adequate and consistent advice and support.

There must be greater community acceptance of breastfeeding, especially of older babies. Health professionals will need to educate and support mothers in breastfeeding. Hospitals, workplaces, and public places will need to be more baby-friendly and more mother-friendly.

The official launch of the Baby-Friendly Hospital Initiative will take place in November 1998 in Vancouver. Assessors will visit hospitals to determine eligibility for Baby-Friendly status. All maternity hospitals should be encouraged to work towards achieving this designation.

Nutrition Concerns

Although we lack British Columbia data, experts have observed a number of nutrition trends that are a cause for concern. Problems such as childhood obesity, calcium deficiency, hunger, and eating disorders have health implications for children, both in the short-term and later in life.

- *Obesity in children.* Depending on the definition used, between 10% and 40% of children are obese, and rates appear to be increasing (Canadian Fitness and Lifestyle Research Institute, 1997; Canadian Task Force on the Periodic Health Exam, 1994).

Obesity is an excess of body fat that can result in impaired health. Obesity during childhood can lead to psychosocial problems, including feelings of rejection, isolation, and low self-esteem. A proportion of obese children will continue to have excess body fat as young adults, putting them at increased risk of hypertension, heart disease, and diabetes.

Obesity in children stems in part from a lack of physical activity. All children, whether they are thin, fat, short, muscle-bound or not, will benefit from efforts to establish healthy eating patterns, while becoming more physically active.

- *Nutrient intake.* Most children can obtain the energy and nutrients they need through a mixed diet with a variety of foods. Eating patterns such as unhealthy snacking and breakfast skipping often mean that key nutrients are missing.

A recent Heart and Stroke Foundation survey found that only one in five children (age 6 to 12) eats the recommended servings of fruits and vegetables, with only 28% eating predominantly whole grain breads and cereals (Heart and Stroke Foundation, February 1998). These eating patterns contribute to concerns about inadequate

intakes of nutrients, calcium and iron in particular. Nutrient deficiencies can also occur among infants. A study of nine-month-old infants in Vancouver found that 7% had iron-deficiency anemia and 24% for low iron stores (Innis, Nelson, Wadsworth, MacLaren, & Lwange, 1997).

To ensure optimal growth and development, children's eating should be built around a pattern of more grain products, vegetables, and fruit, while getting recommended amounts of milk products, lean meats, and meat alternatives such as beans and tofu – foods that are excellent sources of calcium and iron.

- *Poverty and hunger.* Insufficient food can affect children's growth, resistance to infection, and ability to learn. Hunger in children has also been linked to behavioural and emotional problems such as aggression, anxiety, and irritability (Kleinman et al., 1998).

Poverty is a primary cause of hunger. While we think of malnutrition as a problem of developing countries, food cost estimates show that there are children in this province who may not be getting enough to eat. In British Columbia in 1996, the average cost for a Nutritious Food Basket was \$721 per month for a family of four, while the income assistance allowance (to cover food, transportation, clothing, recreation, and toiletries) was \$589 (Provincial Health Officer, 1997). Low-income earners may experience similar problems in affording adequate and nutritious food.

The use of food banks provides another indication that many British Columbia families are not able to purchase sufficient food. In 1994, food banks served more than 600,000 people, and almost half of the food bank clients were children (B.C. Heart Health Coalition, 1997).

- *Eating disorders.* Many young people, especially girls, are excessively concerned about their appearance, weight, and dieting. In a 1992 survey of high school students in British Columbia, 28% of underweight girls said they wanted to lose weight. Of the female students who were trying to lose weight, 7% acknowledged using unhealthy practices such as purging after meals and/or taking diet pills (The McCreary Centre Society, 1993). Such behaviours can interfere with growth and maturation, with both short-term and long-term health consequences.

Prevention of eating disorders requires minimizing social and media pressures to be thin and helping young people to have healthy attitudes about themselves, their bodies, food, and weight. Early recognition and treatment of eating disorders are also important, since anorexia, bulimia, and similar conditions can result in serious health effects or even death.

Kindergarten Nutrition Screening

Although there are no province-wide nutrition monitoring programs, some regions have undertaken special surveys or screening programs. One example is the Kindergarten Nutrition Screening Program carried out in the South Okanagan-Similkameen and Peace Liard Health Regions.

Based on the screening questionnaire, two of every three children were considered at moderate or high risk requiring nutrition intervention. Common nutrition concerns identified were parents' pressuring their children to eat, children not eating enough fruit and vegetables, children drinking too much juice or sweet drinks, and parents having concerns about their child's body weight or size.

Taking Action

To encourage healthy eating, a coordinated and comprehensive strategy is required. This should include the following:

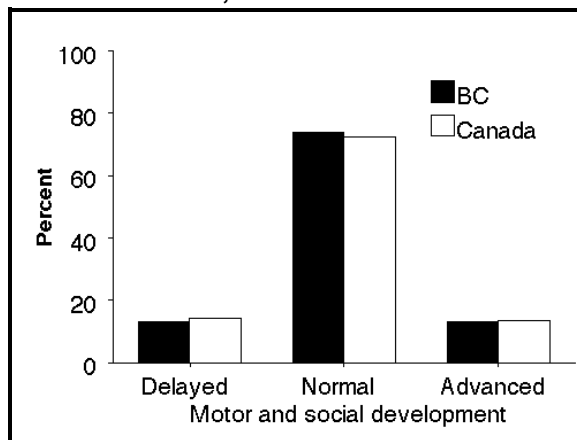
- *Research and evaluation.* Nutrition research should be encouraged, along with collection of data to track trends and to evaluate the effectiveness of nutrition programs.
- *Regular physical activity.* Children should be encouraged to develop a pattern of regular physical activity, beginning early in life (for more information on physical activity, see page 63).
- *Healthy attitudes towards eating.* Children should be helped to develop a good sense of self and healthy attitudes about their bodies, food, and their weight. Media and advertising are powerful influences and should reflect realistic expectations about body shape and size.
- *Healthy eating practices.* Messages about healthy eating practices, as outlined in Canada's Food Guide, should be reinforced.
- *Attention to at-risk groups.* Efforts to promote healthy eating should consider the special needs of nutritionally vulnerable populations, which include pregnant women, children, and in particular those in low-income and disadvantaged communities.
- *Healthy eating policies.* Dietary knowledge needs to be translated into policies that support healthy eating. For example, schools could ensure that an adequate nutritious diet is available in the cafeteria, sugar-laden soft drinks are replaced with drinking water, and school breakfast or lunch programs are available to those who need them.

Motor and Social Development

The National Longitudinal Survey of Children and Youth has, for the first time in Canada, provided data on the motor and social development of young children.

The data in Figure 34 show the combined results of indicators that measure motor, social, and cognitive development of children age 0 to 3. The questions were designed to be age-appropriate. For example, parents of newborns were asked whether their baby could follow a moving object from side to side, while parents of older children were asked about speech and toilet training. While most children (87%) had skills within or above the normal range, a considerable number scored as developmentally delayed.

Figure 34 Motor and Social Development, Children Age 0 to 3 Years, B.C. and Canada, 1994-95



Standardized scores on the motor and social development (MSD) scale. Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

In the National Longitudinal Survey, low birthweight emerged as an one prominent correlate of delayed development: 13% of children of normal birthweight were assessed as developmentally delayed, compared to 31% of children with low birthweight (Ross, Scott, & Kelly, 1996). However, there are many factors that can contribute to children being developmentally delayed. These include:

- *Established risk factors.* Established risk factors are disorders and illnesses in which developmental delay is part of the syndrome or condition. Down Syndrome, Fetal Alcohol Syndrome, visual impairment, cerebral palsy, cystic fibrosis are some examples. An estimated 15% to 25% of children with developmental delays fall into this established risk category (Rossetti, 1997).
- *At-risk factors.* These conditions increase the potential for slow development, especially when the child has two or more at-risk factors. This category includes both biological and environmental issues, such as low birthweight, health problems in the family, poverty, lack of family stability, or poor living conditions.

Recommended Actions:

- *Ensure that all women at risk of low birthweight have access to prenatal care and supports that combat the effects of poverty and other risk factors.*
- *Ensure that all children have access to enough nutritious food for healthy growth and development.*
- *Ensure that the cost of nutritious food is within the Income Assistance support allowance, for each region of the province.*

- *Introduce an effective program to identify pregnant women who smoke and to provide smoking cessation services.*
- *Local health authorities should encourage all maternity hospitals to promote and protect breastfeeding by following the International Code of Marketing of Breast Milk Substitutes and the Ten Steps to Successful Breastfeeding from the World Health Organization and UNICEF. Performance against these standards should be reported to the public and media through published reports or other means.*
- *Promote breastfeeding-friendly environments in work places and public places. Inform women of their maternity benefits and policies regarding reasonable accommodation for employees who are breastfeeding, such as flexible schedules, job sharing, and breastfeeding rooms.*
- *Implement a coordinated, comprehensive strategy to encourage healthy eating, physical activity, and healthy body image, along with a method to evaluate effectiveness.*

Learning Opportunities

Most British Columbia children enter school "school-ready", have positive attitudes about school, and achieve reading, math, and science skills that are comparable to children in other industrialized countries. Targeted programs can help provide a level playing field, so that all children are able to take advantage of learning opportunities.

Early childhood is a critical time for acquiring the knowledge and skills needed to participate fully in life. Families provide the first learning experiences for children. Parents' interactions with their children – the way in which families talk, work, and play together and the learning materials and activities parents provide for their children – set the stage for learning in more formal environments in school and beyond. Good child care supports the role of the parent in this, often by expanding and enhancing children's early learning experiences.

Schools and extra-curricular activities equip children with basic learning skills, an appreciation for learning, and a sense of self-worth, personal initiative, and social responsibility. These skills provide children with a sense of control and mastery over life's circumstances and increase their opportunities for jobs, income security, and job satisfaction.

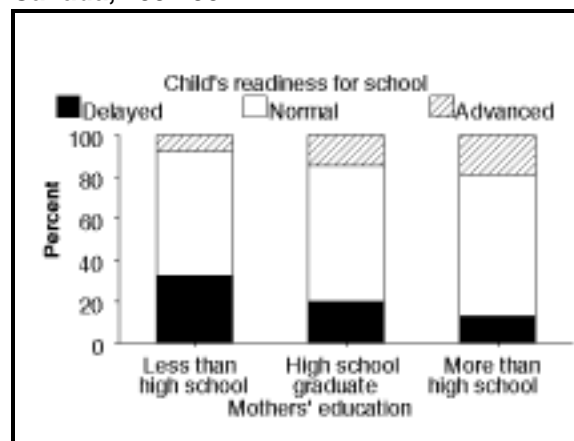
Some measures of the learning opportunities being provided for children include school readiness, student performance in national tests, and children's attitudes towards school and learning.

School Readiness

According to the National Longitudinal Survey of Children and Youth, most British Columbia children (81%) are "ready for school" (based on the Peabody Picture Vocabulary Test, which measures verbal ability of four and five-year olds).

Children with low school readiness scores – 19% of B.C. children – may be unable to take full advantage of educational opportunities, because poverty, abuse, neglect, hunger, or other conditions compromise productive learning. Canadian data show that characteristics such as low income and low levels of parents' education place children at a disadvantage (Figure 35).

Figure 35 Children's School Readiness by Parents' Level of Education, Canada, 1994-95



School readiness of children age 4 to 5 years, as measured by the Peabody Picture Vocabulary Test, as measure of verbal ability. Children with delayed verbal development can be considered at-risk for school problems in that they arrive at school with less verbal knowledge than their classmates. Source: Prepared by the Department of Health Care and Epidemiology, University of British Columbia using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Intervention Programs

Quality care and opportunities for learning are important for all children – those at-risk and those not. For children who are disadvantaged, targeted programs can help to neutralize threats to their ability to learn – **before** learning difficulties result in school failure or low self-esteem. Some examples of targeted programs are speech and language therapy, Inner City Schools, and School Meal programs.

Speech and Language Therapy

Speech and language ability is strongly correlated with later intelligence and school performance. As many as 15% to 19% of children have delays in speech and language development (Rossetti, 1997; Beitchman, Nair, Clegg, & Patel, 1986).

For children with speech and language or other disabilities, early identification and early intervention increase the chance of success. It is possible to improve children's language skills, with younger children showing the greatest gains.

Inner City Schools

Another example of a targeted program in British Columbia is Inner City Schools, which provides additional resources, such as junior kindergarten and other school readiness programs, to schools where learning is complicated by poverty or other social conditions.

Vancouver has the largest number of inner city schools, but there are other communities that meet the program criteria – communities where many families live in poor neighbourhoods with inadequate housing, in dangerous environments, and with incomes below the poverty line. In a 1995 survey, educators identified Inner City Schools as very effective, with improvements noted in school attendance, attitude and behaviours, school atmosphere, and academic achievement.

Interest in these programs is high among school staff and school districts, and outcomes are being monitored and evaluated.

School Meal Program

A third example of a targeted program is the School Meal Program, which provides nutritious meals to students who would otherwise go hungry. Meals are available at no charge to students in need. Teachers have recorded improvements in student health, classroom behaviours, knowledge of nutrition, happiness, well-being, and readiness for learning as a result of participation in School Meal Programs.

Inner City Schools and school meal programs are promising programs that may help provide children with equal access to learning opportunities. Development of ongoing, systematic evaluations, including measures of child development outcomes, will help to measure the effectiveness of these programs.

Until outcome measures become available, participation rates can provide an indication of the extent to which programs are available to those who need them. An estimated 9% of school children participate in school meal programs, which is about half the number who live in poverty (20% of children live in low-income families; see page 28). Approximately 6% have received special education, and 7% have received help from a tutor (Table 9). This is about the same percentage (6% of children age 5 to 14) who were reported to have a disability of some type, such as a learning disability, mental handicap, or problem with hearing, vision, or speech (Statistics Canada, 1990).

Table 9 Educational Characteristics, Children Aged 6 and Over

	B.C.	Canada
Received help from a tutor	7%	7%
Received special education	6%	7%
Participated in School Meal Program	9%	

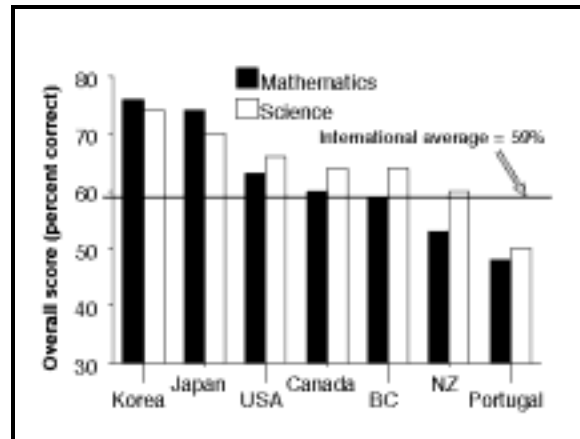
Sources: School Meal participation rate from B.C. Ministry for Children and Families. All other data prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

School Performance

In an international study of mathematics and science skills, Grade 4 students from British Columbia scored about mid-range in mathematics achievement and above the international average in science (Figure 36). Several Pacific Rim countries out-performed British Columbia, in mathematics in particular. Of the five Canadian provinces that participated in the study, Alberta had the highest scores in both math and science.

Within Canada, a series of tests called the School Achievement Indicators Program has produced similar results. In national assessments of reading and writing skills (1994) and science (1996), British Columbia's results were comparable to the Canadian average, with Alberta students achieving the highest scores (Council of Ministers of Education, 1997).

Figure 36 Mathematics and Science Performance of Grade 4 Students, B.C. and Selected Countries



Twenty-six countries and five Canadian provinces participated in the study at the Grade 3-4 level. Source: The Third International Mathematics and Science Study. D.F. Robitaille, A.R. Taylor, & G. Orpwood. (1997). *TIMSS-Canada Report. Volume 2: Grade 4*, pages 18 and 55. Department of Curriculum Studies, University of British Columbia.

School accreditation reports identify some of the strengths of the education system, as well as areas for improvement. For elementary schools, literacy, physical education and recreation, and students valuing learning have been perceived as strengths by both internal and external reviews. Technology skills, critical thinking, science, and citizenship were seen as areas needing improvement (Gray, 1996) (Table 10).

Table 10 Elementary School Strengths and Weaknesses, B.C., 1995/96

Strengths	Weaknesses
INTELLECTUAL DEVELOPMENT	
<ul style="list-style-type: none"> • Literacy • Physical education • Students valuing learning 	<ul style="list-style-type: none"> • Technology skills • Critical thinking • Science
HUMAN AND SOCIAL DEVELOPMENT	
<ul style="list-style-type: none"> • Self-worth and confidence • Appropriate social skills • Physical and recreation activities 	<ul style="list-style-type: none"> • Social equity awareness • Physical health and nutrition • Multi-cultural, human rights

Source: Gray, L. (1996, September). Analysis of accreditation reports: 1995-96, pages 78 and 80. (Available from Evaluation and Information Reporting, B.C. Ministry of Education)

A major concern is that, while our educational system works well for most children, there are some groups who are being left behind. Two groups we are failing to reach are Aboriginal students and students from a background of poverty.

Although Aboriginal students have made gains in their educational performance, they remain below other students on traditional measures such as grade progression, graduation rates, and grade point average. Of every one hundred Aboriginal students entering Grade 8, only 31 continue on directly to high school graduation, compared to 71 for non-Aboriginal students (Table 11).

Table 11 Grade Progression and Direct Transitions to Post-Secondary Education for 1990 Grade 8 Students, B.C.

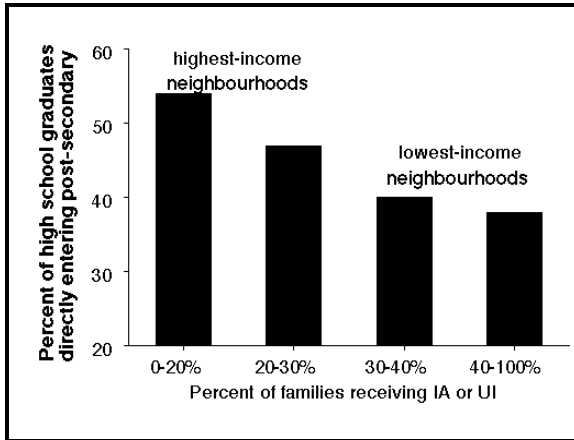
Of every 100 students who enter Grade 8, the number who...	Aboriginal students	Non-Aboriginal students
Enter Grade 8	100	100
Enter Grade 9	88	94
Enter Grade 10	82	93
Enter Grade 11	71	89
Enter Grade 12	53	82
Graduate	31	71
Go directly on to post-secondary education	12	34

Source: School Finance and Data Management Branch and Evaluation and Accountability Branch. In B.C. Ministry of Education, Skills and Training 1995/96 Annual Report, page 27.

Poverty is strongly related to educational attainment and performance. For example, data analyzed by the Ministry of Education show that high school graduates living in high-income neighbourhoods are more likely to continue on to post-secondary education (54%) than are students from low-income neighbourhoods (38%) (Figure 37).

To create a more level playing field in learning opportunities, we need to identify and provide effective ways of reaching disadvantaged students. Efforts should focus on identifying young students with problems at an early age and fixing these problems.

Figure 37 Direct Transition to Post-Secondary Education by Percentage of Families Receiving Income Assistance or Unemployment Insurance in Enrolment Areas, B.C., 1994



Percentage of Grade 12 students moving to post-secondary education in the fall after graduation. Source: BC Records Linkage File, Evaluation and Accountability Branch and Statistics Canada. In B.C. Ministry of Education, Skills and Training 1995/96 Annual Report, page 26.

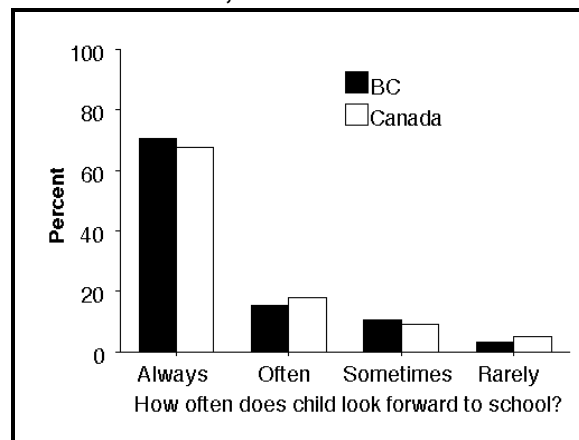
Attitudes Towards Learning

Students generally have a positive opinion of their school environment. In a 1994 survey of B.C. students, most elementary school students (80% of those in grades 4 to 7) said school does a good job in making sure they have reading, writing, math, and science skills. About three-quarters said that they talk to their parents about what goes on in school, are liked by other students, and feel safe at school. Elementary students have also reported high educational aspirations: nearly three-quarters intend to continue to college or university (Ministry of Education, March 1995).

Parents confirm that most children have positive attitudes about school: 86% "always" or "often" look forward to school (Figure 38). Children who rarely or almost never look forward to school – 3% of children age 6 to 11 – are more likely to have a difficult time

learning, and this may affect their mental and physical health in the short term as well as later in life. This 3% could indicate ineffective teaching, a lack of support at home for education, or a reluctance to attend on the part of those children who have an exceptionally difficult time at school. Parents and the school system can work together to assist these children who are uncomfortable with the school environment.

Figure 38 Positive Attitude about School, Children Age 6 to 11, B.C. and Canada, 1994-95



Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Recommended Actions:

- **Ensure early identification and prompt intervention for developmental problems for all children.**
- **Extend effective school readiness, school meal, and other equity programs to all children who are or should be eligible.**
- **Continue to monitor student outcomes and performance, among students overall, disadvantaged students, and students who participate in targeted programs.**

Mental and Emotional Health

Available data show that the emotional health of children is a cause for concern in British Columbia, as in other jurisdictions. While most children are healthy and well-adjusted, about one in every five children has an emotional or behavioural problem of some type, and others experience feelings of sadness, discouragement, and distress.

A critical aspect of children's health is their mental and emotional well-being. The mental and emotional health of children is established through the combined effects of their biological make-up and the care the child receives.

A child's biological endowment includes temperament, any congenital disease or abnormalities, and birth injuries. There are many preventable causes of congenital problems such as folic acid deficiency and the effects of alcohol and drugs in pregnancy. These congenital problems are discussed in other sections of this report (pages 114-124).

A child's early care environment is critical to mental well-being during childhood and throughout life. Some aspects of the care environment that are known to be important are birth experiences, early bonding, breastfeeding, parenting skills, family functioning, social supports (family, extended family, neighbourhoods, community), and the quality of child care arrangements.

There are many conditions or situations that may adversely affect children's mental and emotional health. While these at-risk factors do not always have a negative effect, they should serve as an early warning system, particularly where several are present together. These are: single parenthood, teen parenthood, low income, parental mental disorder, low social support, more than four children in a family, difficult child temperament, low parental education level, and parental substance abuse.

It is fortunate that most children, despite the presence of many of these adverse factors in their lives, turn out well – they are well-adjusted, have a healthy outlook on life, and are able to participate as community members when they become adults. This is called "resiliency": the ability to bounce back despite adversity.

Resiliency is fostered when children have the opportunity to form "healthy attachments" – warm, responsive, and trusting relationships with a consistent caregiver and other adults (relatives, neighbours, teachers, recreation workers, church members, etc.). Also, consistent positive parenting helps a child to develop resiliency. Both child care and community organizations can contribute to resiliency.

Indicators of Mental and Emotional Health

So how are children in British Columbia doing in the area of mental and emotional health?

There are various indicators now available to allow us to assess the state of children's mental and emotional health. There are indicators that measure how well children are developing, adjusting, and behaving, and also for the many factors discussed above that influence the development of resiliency and the risk factors for healthy child development.

Much of the data in this report come from the first cycle of the National Longitudinal Survey of Children and Youth. This "first wave" of survey data allow baseline comparisons between provinces, but do not yet allow us to measure progress over the years.

Research in other jurisdictions has found that about 18% of children and youth have a mental health problem of some type (Offord et al., 1987), and that 5% suffer from a serious emotional disturbance (Stroul and Friedman, 1986). These estimates have been widely-cited and have been used as a basis for planning children's mental health services in British Columbia (B.C. Ministry of Health, 1994).

The National Longitudinal Survey of Children and Youth confirms that many children experience emotional and behavioural problems. About one-fifth (21%) of B.C. children age 4 to 11 had an emotional or behavioural problem of some type such as physical aggression, hyperactivity, anxiety or depression, school failure, or trouble getting along with others (Table 12). All of these disorders and problems were more common among boys than girls, based on data for Canada overall (Figure 39). As with most other health status measures, children from low-income families had much higher rates of problems than did those from well-off families (Offord & Lipman, 1996).

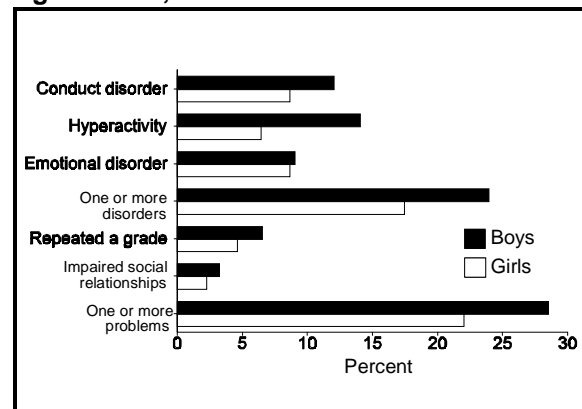
Note: Emotional and behavioural problems are a leading cause of children's visits to medical specialists (see page 8). For more information on hyperactivity, see "Ritalin Prescribing", pages 94-95 and Most Common Diagnoses, Children's Visits to Medical Specialists, page 93.

Table 12 Frequency of Emotional and Behavioural Problems, Children Age 4 to 11*, B.C. and Canada, 1994-95

Problem	B.C.	Canada
Conduct disorder	**	10.3%
Hyperactivity	9.2%	10.3%
Emotional disorder	9.5%	8.8%
One or more disorders	18.5%	20.7%
Repeated a grade	**	5.6%
Impaired social relationships	**	2.7%
One or more problems	20.8%	25.3%

* Percent who "repeated a grade" is for 6 to 11 year-olds; other figures are for children age 4 to 11. ** Figures not available or not reliable due to small numbers. Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Figure 39 Frequency of Emotional and Behavioural Problems, Canadian Children Age 4 to 11*, 1994-95



* Percent who "repeated a grade" is for 6 to 11 year-olds; other figures are for children age 4 to 11. Source: Prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95.

Available data show that the emotional well-being of young people is a cause for concern in British Columbia, as in other jurisdictions. While most children get along well with others and have a sense of self-worth, a significant proportion express feelings of sadness, discouragement, and distress (Table 13).

Our goal should be to ensure that all children have a healthy outlook on life and feel capable of dealing with the challenges they face. With such high rates of emotional and behavioural problems, this will indeed be a challenging goal to achieve.

Some mental and emotional problems can be prevented by ensuring that children are born healthy and receive good care from their parents and caregivers. For children with existing mental and emotional disorders, treatment and supports can dramatically reduce the negative impact of these problems on children and their families. Solutions will require cooperative efforts of those involved in the child's family, school, and other environments, along with the health, child welfare, education, and judicial systems.

Surveys such as the National Longitudinal Survey of Children and Youth are shedding light on this very important aspect of child health. Yet, there is still much to be learned about the mental health status of children, the types of interventions that are most effective, and the level of unmet need.

Recommended Action:

- *Continue to gather and analyze data to determine how children's mental and emotional health is progressing and the degree to which mental health services are meeting the needs of children with mental and behavioural problems.*

Table 13 Feelings and Relationships, B.C. Children

	B.C.	Canada
Positive Relationships and Sense of Self-Worth		
Percent of 10 and 11 year-olds who get along very well or quite well with their:		
● mother	76%	80%
● father	82%	81%
● brothers and sisters	36%	37%
● friends and classmates	81%	79%
High self-esteem:		
● grade 7 boys	53%	
● grade 7 girls	42%	
Poor Well-Being and Emotional Distress		
Percent of 10 and 11 year-olds who are often or sometimes:		
● sad or depressed	46%	49%
● worried	52%	53%
● miserable, unhappy, tearful, or distressed	40%	36%
● nervous, tense, or high strung	41%	47%
Considered suicide in past year:		
● grade 7 boys	9%	
● grade 7 girls	13%	
Low self-esteem:		
● grade 7 boys	4%	
● grade 7 girls	9%	

Sources: Data for 10 and 11 year olds prepared for the Ministry for Children and Families by the Centre for International Statistics using National Longitudinal Survey of Children and Youth microdata, 1994-95. Data for grade 7 students from Adolescent Health Survey: Province of British Columbia, pages 54 and 58. The McCreary Centre Society, 1993.

Making Healthy Choices

Lifestyle behaviours established in childhood are often carried into adulthood. One in five British Columbia teens is a smoker, and two-thirds of children are not active enough to enjoy the health benefits of physical activity. Comprehensive strategies are needed to prevent young people from starting to smoke and to encourage regular physical activity.

Practices such as smoking, use of alcohol and other drugs, dietary habits, physical activity, exposure to the sun, and other health behaviours affect health and well-being. Many common diseases and health problems are linked to these lifestyle behaviours. While individuals make decisions about these behaviours throughout life, many health attitudes and patterns are established during childhood.

Smoking

Approximately one in five British Columbia teens (age 12 to 18) is a smoker, and about twenty children in B.C. start smoking every day. Experimentation with smoking occurs at an early age. Most teen smokers have their first cigarette by age 12 and become habituated around age 13 (Heart and Stroke Foundation, 1997).

Those who start to smoke early in life are very likely to become heavily addicted, are less likely to quit, and are at great risk of developing a smoking-related illness. Preventing young people from starting to smoke is the key to reducing smoking-related illness.

To reduce tobacco use among young people will require a comprehensive approach, involving all levels of government working with non-government organizations and the business community. The elements of a successful approach to tobacco reduction include:

- Legislated restrictions on sales to minors.
- Restrictions on advertising.
- Education campaigns targeted at youth.
- Policies that discourage smoking and eliminate exposure to second-hand smoke.
- Cessation services.
- Regular monitoring of smoking rates.

Restricting Sales to Minors

Access to tobacco by underage youth cannot be totally prevented. However, prohibiting sales to minors has the potential to reduce youth access to tobacco and is an important component of a comprehensive program of tobacco reduction.

Within the community, tobacco enforcement staff educate retailers about tobacco legislation regarding sales to minors. In 1996/97, 5,304 compliance checks (test purchases) and 1,403 decoy purchases were carried out in British Columbia. While most retailers were in compliance, about 20% were not, and a total of 1,287 sales-to-minors violations were issued. Fifteen retailers had their authorization to sell tobacco revoked in 1996/97 (after two or more convictions, a retailer's authority to sell tobacco products can be suspended). This is a powerful means of getting the message across that compliance is expected.

Across the province, there were differences in the reported compliance rates (Table 14). In part, these may be due to variations in compliance check methods or characteristics of the test shoppers. It is of concern that in some regions, no compliance checks were being done.

Table 14 Percent of Retailers in Compliance with Sales to Minors Legislation, Health Regions, B.C., 1996/97

Region	Percent in Compliance	
	Compliance Checks	Decoy Purchases
East Kootenay	76%	*
West Kootenay	52%	*
North Okanagan	*	*
South Okanagan	*	*
Thompson	77%	77%
Fraser Valley	*	*
South Fraser	92%	82%
Simon Fraser	86%	73%
Coast Garibaldi	*	*
Central Van Isl	71%	53%
Upper Island	64%	87%
Cariboo	*	*
North West	76%	*
Peace Liard	94%	*
Northern Interior	85%	74%
Vancouver	57%	64%
Burnaby	86%	89%
North Shore	98%	85%
Richmond	85%	86%
Capital	88%	84%
B.C.	81%	76%
Highest region	98%	89%
Lowest region	52%	53%

* No compliance checks or decoy purchases undertaken in 1996/97. Source: Joint Tobacco Enforcement Program in British Columbia. Operational Report: Fiscal Year 1996-1997. Available from Tobacco Reduction Strategy, B.C. Ministry of Health, Victoria.

Restricting Advertising

Restrictions on advertising are largely a federal responsibility. Pending federal legislation will restrict advertising targeted to the youth market, particularly in the form of sponsorship of entertainment events. Provincial and local health authorities can show support for these restrictions and urge that no exceptions be made to the ban on tobacco sponsorship.

Education of Youth

School-based smoking prevention programs are cost-effective. These programs have the potential to reduce teen smoking rates and save many times their cost in health care and other costs (Stephens, Kaiserman, McCall, & Sutherland-Brown, in press).

All students should be equipped with the personal skills to recognize and resist the pressures to start smoking. Education about the addictive properties and disease potential should be part of the school curriculum and should be examinable. Because data show that most smokers begin by grade seven or eight, education programs should be intensified just before junior high school entry and during the first year or two of junior high school.

School Policies

Schools, child care centres, and recreation centres that are totally smoke-free – both indoors and out – help to decrease negative modelling, and thus decrease the likelihood that children will take up smoking. In British Columbia, school smoking policies are the responsibility of individual school districts. Licensed child care facilities are subject to the *Community Care Facility Act* and the *Child Care Regulation*. These place restrictions on smoking in facilities that care for children, and further restrictions are under consideration.

A 1995 survey, the most recent data available, found that two-thirds (67%) of B.C. schools and one-half (53%) of daycare centres were smoke-free (a complete ban on smoking, both indoors and out) (Stephens & Associates, 1995). We should aim to establish smoke-free policies in all public places, beginning with schools, child care centres, and sports and recreation facilities. The Workers' Compensation Board has established new regulations that have the potential to reduce indoor exposure to environmental tobacco smoke (see pages 68 and 70).

Cessation Services

It is well-established that routine intervention by health professionals is a highly cost-effective means of helping smokers quit (see page 46). The provincial government should take the lead in working with physicians and other health care providers to provide appropriate financial incentives and performance monitoring to ensure that smoking cessation services are being offered to all smokers.

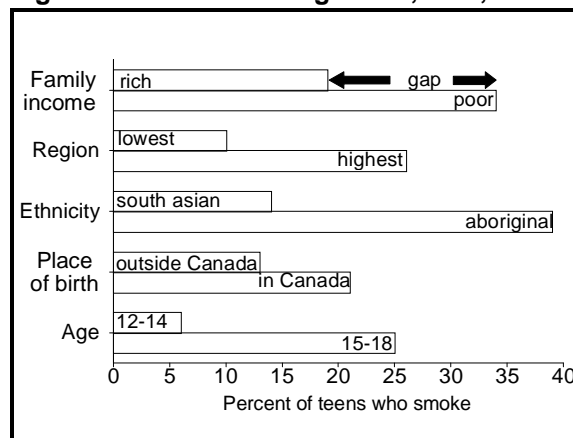
Regular Monitoring of Smoking Prevalence

The only way of tracking progress in reducing smoking is to conduct regular surveys of smoking rates. This must be done in a way that allows comparisons both over time and among regions and population sub-groups.

A comprehensive, province-wide survey of smoking prevalence was carried out for the first time in 1997 (Heart and Stroke Foundation, 1997). As part of this survey, a special investigation of teen smoking was conducted. Results demonstrated that smoking is a serious health problem among teens, with Aboriginal teens and teens in low-income families having the highest smoking rates – 39% and 34%, respectively (Figure 40). Information gathered in this survey will help to guide prevention activities. Conducting this type of smoking survey at regular intervals should be a high priority for the province, local health authorities, and health organizations.

Continued research and outcome evaluation of tobacco reduction interventions also needs to occur. For example, enforcement activities should be monitored to ensure that compliance with sales-to-minors legislation is leading to a reduction in youth access to cigarettes and to reduced tobacco use. One recent U.S. study suggests that more research may be needed to determine whether this approach is successful (Rigotti, DiFranza, Chang, Tisdale, Kemp, & Singer, 1997).

Figure 40 Teen Smoking Rates, B.C., 1997



Source: Heart and Stroke Foundation of B.C. and Yukon. *Tobacco Use in BC 1997*.

Recommended Actions:

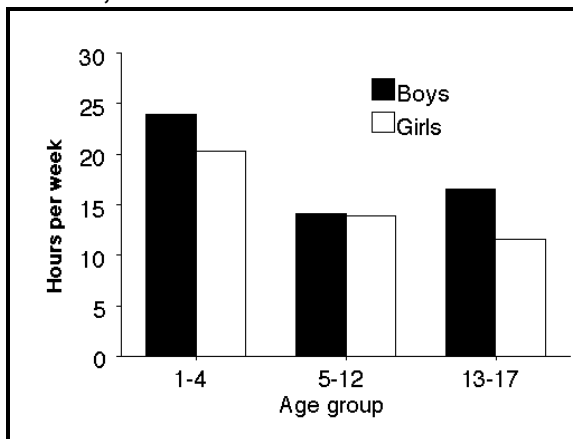
- ***The B.C. Minister of Health and every local health authority chair should recommend to the federal minister that there be no exceptions to the ban on tobacco sponsorship.***
- ***School-based smoking prevention programs should be intensified.***
- ***All schools should adopt smoke-free policies, indoors and out.***
- ***The provincial government, the medical profession, and other health care providers should work together to ensure that smoking cessation services are offered to all smokers. Financial incentives and performance monitoring should be implemented to ensure that an effective smoking cessation program is in place.***
- ***The provincial government, cooperatively with local health authorities, should monitor smoking prevalence and the outcomes of tobacco reduction activities on a regular basis.***

Physical Activity

Physical activity has many health benefits, including reducing the risk of specific health problems such as heart disease, hypertension, adult-onset diabetes, osteoporosis, and depression (U.S. Department of Health and Human Services, 1996). In children, regular physical activity contributes to growth and development, improves self-esteem, and establishes activity patterns that often extend into adulthood.

There is growing concern that children are not receiving an adequate level of regular, vigorous physical activity. On average, preschoolers (age 1 to 4) spend about 22 hours per week in different kinds of physically active play, primarily running and kicking games, swimming, and biking. School-age children and adolescents participate in a wider range of activities, but are less active, especially adolescent girls (Figure 41) (Canadian Fitness and Lifestyle Research Institute, October 1996).

Figure 41 Hours Spent on Physical Activity in a Typical Week, Children Age 1 to 17, Canada, 1995



Source: Canadian Fitness and Lifestyle Research Institute. *Progress in Prevention*, Bulletin No. 8, October 1996.

To achieve optimal health benefits, physical activity needs to be high quality. For children, this means one hour or more each day of moderate-to-vigorous activity (for an energy expenditure of six to eight kilocalories per kilogram of body weight per day). According to a survey by the Canadian Fitness and Lifestyle Research Institute, only one-third of Canada's children (age 5 to 17) met this guideline (Canadian Fitness and Lifestyle Research Institute, October 1997).

Schools are an ideal location for providing regular physical activity and helping children to establish active living patterns. Yet, there are no requirements of any kind for physical activity in the preschool setting. Physical education is a required subject from kindergarten through grade 10 and an optional course at Grades 11 and 12. Although the provincial curriculum requires 10% of instructional time to be allocated to physical education, as many as 98% of schools may not be meeting this guideline (B.C. Heart Health Coalition, 1997).

Recommended Actions:

- *Develop and implement strategies that encourage children to adopt a physically active lifestyle, starting at a very young age.*
- *Encourage adults to be physically active, as good role models for children.*
- *Improve children's access to safe places where they can be physically active, by reducing barriers such as cost and lack of transportation.*
- *Require quality, daily physical education in each school grade. School-based programs should include education about the health benefits of physical activity and participation in moderate-to-vigorous physical activity, with an emphasis on physical activities that can be enjoyed throughout life.*

Dietary Fat

Healthy eating patterns, if established early in life and maintained into adulthood, will promote life-long health and reduce the risk of nutrition-related diseases such as heart disease, diabetes, some cancers, osteoporosis, and dental caries.

While childhood is an important time for establishing healthy eating habits, children have special nutritional needs. For example, the same emphasis is not put on lower fat food choices for children as it is for adults. In fact, fat plays an important role in child development, as it provides a concentrated source of energy and fat-soluble vitamins that children need for growth. Too much restriction on fat can actually impair growth and development. Health Canada and the Canadian Paediatric Society recommend a gradual transition from the high-fat diet of infancy (50% of calories come from fat) to the 30% recommended for adults. Children can include more nutrient-dense, but higher-fat foods such as cheese, nuts, and ice cream in their diets, in moderation.

With regard to diet, messages of moderation and variety are the most important ones children can take into adulthood.

Provincial Health Officer's Report on Youth Health

Health patterns and behaviours begin to be established during early childhood. However, adolescence and early adulthood in particular are times when decisions and lifestyle choices are made that shape an individual's prospects for health and well-being in later life.

A feature report on the health of youth is in the planning stages, and will be available at a later date. Topics such as alcohol and drug abuse, physical activity, sexual practices, and other health behaviours will be discussed in this upcoming report.

Physical Environment

5

Children's health can be affected by their physical environments – the surroundings in which they live, breathe, eat, attend school, and play. Contaminants and hazardous conditions can be a threat to today's children and to future generations.

All children need a safe and healthy physical environment. This includes clean air to breathe, safe food to eat, safe water to drink, and safe places to live and play.

Children can be adversely affected by contaminants and hazardous conditions in their surroundings. They are physically smaller than adults, and their bodies are developing and growing very rapidly. Children eat more food, drink more water, and breathe more air for their size than adults, which means they may receive higher exposures than the adults around them.

Children's stages of development and daily activities may influence their sources of exposure to environmental agents. Infants can be exposed to environmental toxins while they are growing in their mother's womb; toddlers may eat sand or dirt, and school-aged children may be injured on playgrounds or while riding bicycles.

There are several ways in which children face health risks from the physical environment:

- *Exposures with immediate health outcomes.* In the short term, eating food contaminated with pathogenic organisms can result in diarrhoea or other symptoms; ingesting non-edible plants can lead to toxic reactions, and air pollution can cause coughing or asthma attacks.

- *Exposures that lead to health outcomes later in life.*

Childhood exposure to tobacco smoke, lead, pesticides, or ultraviolet radiation can increase the risk of cancer or other chronic diseases later in life.

- *Activities that threaten the sustainability of the environment.*

Contamination of the environment, depletion of natural resources, and activities that contribute to global climate change pose a threat to the physical and economic survival of our children's children and future generations.

In 1997, delegations from eight countries* signed a declaration on children's environmental health, committing themselves to action to reduce environmental risks to children.

According to the declaration, some of the most important environmental health threats to children world-wide are microbiological and chemical contaminants in drinking water, air pollution that exacerbates illness and death from respiratory problems, polluted waters, toxic substances, and ultraviolet radiation (Canada, Department of the Environment, 1997).

The declaration identified the following areas for action to protect children's environmental health:

- Assessment of risks and standards.
- Lead exposure.
- Microbiologically safe drinking water.
- Air quality.
- Environmental tobacco smoke.
- Endocrine disruptors.
- Global climate change.

In the following sections, we will look at some of these environmental issues as they affect British Columbia's children.

* *Canada, the United States, Germany, Japan, the United Kingdom, France, Italy, and Russia.*

Clean Air

Air pollution can damage children's lungs, with short-term and long-term health effects. For children in British Columbia, the greatest airborne risks are exposure to second-hand smoke, small airborne particles called PM_{10} , and substances that can cause allergic reactions such as house dust mites, pet dander, household moulds, and pollens. In some areas of the province, exposure to naturally-occurring radon gas is also a concern. Many air quality problems can be corrected through low-cost or no-cost solutions, such as smoke-free policies or proper cleaning and maintenance practices.

Indoor Air

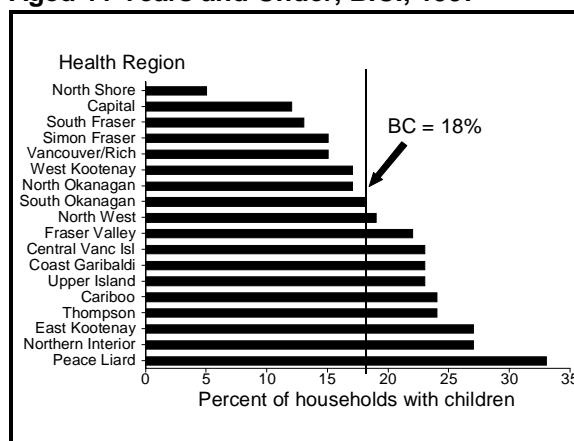
Indoor air pollutants can damage children's lung tissues, leading to infections and other types of illnesses. From a child health perspective, an important indoor air contaminant is environmental tobacco smoke (ETS), sometimes called second-hand smoke. Other indoor air concerns include radon, house dust mites, pet dander, and moulds.

Environmental Tobacco Smoke

Environmental Tobacco Smoke (ETS) is a carcinogen – a substance that can cause cancer. ETS has also been shown to have numerous other negative effects on human health. In children, exposure to ETS can cause respiratory infections such as bronchitis and pneumonia, ear infections, and decreased lung function. ETS also increases the frequency and severity of asthma. Long-term exposure can lead to lung cancer and heart disease later in life.

ETS is a common environmental toxin to which no child should be exposed. Yet, almost one-fifth (18%) of households with children under age 11 have daily or nearly daily exposure to second-hand smoke in the home. In some areas of the province, the percentage of homes with ETS is even higher (Figure 42).

Figure 42 Every Day or Nearly Every Day Exposure to ETS in Homes with Children Aged 11 Years and Under, B.C., 1997



Note: Simon Fraser region includes Burnaby. Source: Heart and Stroke Foundation of B.C. & Yukon. Tobacco Use in BC 1997.

There are a number of measures that should be taken to reduce children's exposure to ETS. These recommendations are intended to be considered by all levels of government, communities, families, and volunteer groups, as well as health professionals.

Measures to reduce children's exposure to environmental tobacco smoking include:

- *Making all enclosed public places smoke-free.*

The Workers' Compensation Board has established new regulations that have the potential to reduce workplace exposure to ETS. By taking a leadership role in eliminating involuntary exposure to ETS, the WCB has provided a strong public message about the health hazards of ETS. To implement the new policy will require a cooperative effort to enact legislation banning ETS in all places over which the WCB has jurisdiction. The ban should be extended to all enclosed public places, including children's licensed child care facilities and schools.

- *Encouraging parents to maintain smoke-free homes.*

Because it will be impossible for regulatory bodies to control ETS exposure in homes, it will be necessary to provide public education about the hazards to children of ETS. Parents should be encouraged to maintain smoke-free homes and smoke-free vehicles.

- *Continuing current efforts to reduce the use of tobacco.*

It will also be important to take ongoing action to reduce the use of tobacco. In 1997, British Columbia stepped up its anti-smoking activities, including tougher enforcement of laws prohibiting the sale of tobacco to minors, tobacco education programs for all B.C. schools, and a survey on smoking behaviour to guide future anti-tobacco measures. With continued effort, it will be possible to achieve substantial reductions in the use of tobacco.

- *Addressing the underlying factors that contribute to tobacco use.*

The decision to start smoking and the ability to quit smoking are both considerably influenced by social and economic circumstances. Therefore, there should be ongoing efforts to reduce poverty and unemployment, to increase both the quality and duration of education for all children (including skills in resisting peer and media pressures) and to provide optimal care and nurturing for children, particularly during the early childhood years.

Children and Tobacco

In the past year, British Columbia has greatly expanded its tobacco reduction efforts.

Tobacco can affect many aspects of a child's health – during pregnancy, early childhood, and later in life – and protecting children from tobacco must continue receive high priority.

Tobacco and its impact on child health are discussed in several sections of this report. See Prenatal Smoking (pages 46), Making Healthy Choices (pages 60-62), Aboriginal Children (pages 110-111), SIDS (pages 125-127), and Respiratory Disease (pages 128-133).

Moulds and Other Biological Contaminants

Moulds (a type of fungus), house dust mites, pet dander, dust, and pollens can cause a number of health effects in children. Studies in Canada and other countries have found that symptoms such as cough, wheezing, asthma, bronchitis, and eye irritation are more common among children exposed to these air pollutants.

Moulds and other biological contaminants are very common. A 1988 survey of Canadian homes with children found that dampness or mould growth occurred in almost four in ten homes surveyed, based on the parent's report (Dales, Zwanenburg, Burnett, & Franklin, 1991; Dekker, Dales, Bartlett, Brunekreef, & Zwanenburg, 1991). Given the potential for adverse health effects in so many children, efforts should be made to remove or control these air pollutants.

The basic advice for dealing with most biological contaminants is to keep houses clean, dry, and well-ventilated and to remove the source or reduce the level of the pollutant. The Canadian Mortgage and Housing Corporation (CMHC) has a kit to assist homeowners in identifying and correcting air problems in the home.

Radon

Radon is a radioactive gas that can cause lung cancer. It has been estimated that about 100 cases of lung cancer in British Columbia each year are attributable to radon exposure.

Radon is a naturally-occurring gas that comes from traces of uranium in soil and rock. In the open air, it is so diluted that it causes less risk than indoor exposure. However, radon gas can enter buildings through cracks and openings in the foundation and sometimes through the water supply. In enclosed spaces such as homes or schools, radon can sometimes build up to levels that create a substantial health risk. When it is breathed, radon gas releases radiation that can damage the lungs and lead to lung cancer. Radon can combine with cigarette smoke to amplify its effects, so that homes with smokers are at highest risk. Short-term exposure is not a danger, but people exposed continuously to high concentrations over a lifetime have a 5% to 10% risk of dying from lung cancer.

Health Canada considers a radon level of over 150 Becquerel per cubic meter (4 picocuries per litre) to be elevated, and levels of over 750 Bq/m³ (22pCi/L) to require action. In most cases, improving ventilation is a simple, effective, and inexpensive way to reduce exposure to radon.

Radon surveys have been done in more than 20 B.C. communities. Based on the surveys, it is estimated that between 1% and 5% of homes in the Interior (the Kootenays, the Okanagan Valley, and the Prince George and Peace River areas) may have radon levels above the Health Canada guideline. The Ministry of Health recommends that homeowners in these radon-prone areas have their homes tested.

Because radon is odourless and colourless, a special monitoring device is required to measure it. Homes with children should be targeted for radon testing because children are potentially exposed longer to the cancer-causing effects of radiation and have a higher risk of developing lung cancer than those exposed later in life.

Radon in schools can also contribute to childhood exposure. In areas of the province where high radon levels have been identified, assessments have been made in schools and where necessary, corrective measures are being implemented.

Northern Interior was one of the regions identified as having areas with a high concentration of radon. Testing devices were offered to homeowners on a cost recovery basis. To date, about 50 devices have been taken. It is too early to assess the effectiveness of the testing program, as the devices must be left in place for several months before measurements are complete. So far, two homes have been identified as requiring corrective action, and these homeowners have been given advice on how to reduce the risk. The local health authority is considering additional ways to increase public awareness about the need for radon testing.

Asbestos

Asbestos is a mineral that was used for many decades as an insulator and fire retardant. Although it is no longer used in construction, it is present in most homes built prior to 1975-1980.

Long-term exposure to asbestos can cause asbestosis (a lung disease), lung cancer, and some other cancers. These dangers apply primarily to asbestos workers, who have received high daily exposures over a period of many years, with little or no protective covering of any kind.

In recent years, there has been great public concern about asbestos. In Canada and the United States, schools have been closed, and many millions of dollars spent on removing asbestos from public buildings. In fact, asbestos poses very little threat to health in most circumstances. Removing it can actually increase the risk, because the removal process increases the amount of fibres in the air. In most situations, asbestos should be left contained and undisturbed, and should only be removed if the building is being upgraded or renovated.

As with other environmental hazards, it is important to consider the risks, costs, and health benefits of fixing the problem. At this time, we do not have complete information about the amount of money spent to remove asbestos from schools or public buildings in British Columbia. And there are no data to compare asbestos levels before and after removal, so the results of remediation cannot be measured.

Indoor Air Quality in Schools

Indoor air quality in schools is an issue of growing concern. Insufficient ventilation is perhaps the most common finding, but other problems include moulds, water leaks, and poor heating. Many air quality concerns pertain to portable classrooms, but most come from fixed structures.

Problems such as inadequate outside air supply and poor air distribution can be related to the design and/or the operation of the building. Design-related problems can be expensive to correct, but many indoor air quality problems can be corrected through low-cost or no-cost solutions such as proper cleaning or fine-tuning of heating, ventilation, and air conditioning systems (Collett, Ross, & Sterling, 1994).

Most air quality issues are handled locally at the school district level. The provincial Ministry of Education gets involved when schools request funding for new ventilation systems or other capital projects.

In April 1998, new health and safety regulations from the Workers' Compensation Board came into effect. These regulations will create new standards for all workplaces, including schools, colleges, and universities. The need to implement these new regulations is providing an opportunity to bring together the many groups involved in school health and safety: school district administrators, school health and safety committees, the B.C. Teachers' Federation, the School Plant Officials' Association, Workers' Compensation Board, Medical Health Officers, and the ministries of Health and Education.

Outdoor Air

From a public health perspective, the most important outdoor air pollutants in British Columbia are small airborne particles. These very fine particles quite easily find their way into indoor air spaces. Particles less than 10 microns (PM₁₀) can be inhaled into the lungs, leading to various health effects, ranging from increased respiratory symptoms to an increased risk of premature death.

In recent years, there have been significant reductions in air pollution levels. However, PM₁₀ still has a measurable impact on our health.

A 1995 study estimated that in British Columbia each year PM₁₀ accounts for 82 deaths, 146 hospitalizations, and 354 emergency room visits, with much larger impacts for activity restrictions, school absenteeism, and respiratory symptoms among children (Vedal, 1995). Young children, along with the elderly and those with lung and heart disease, are the most sensitive groups. As shown in Table 15, PM₁₀ has been estimated to cause 169,000 days of school absences and 280,000 child-days of coughs and other respiratory symptoms.

Note: Asthma and other respiratory diseases are discussed in greater detail on pages 128-133.

Sources of PM₁₀

Airborne particles are produced by a variety of sources, both natural and human-caused. In the Greater Vancouver Regional District, "point sources" (fixed sources, such as smoke stacks, that operate under air discharge permits) account for about half of the PM₁₀ emissions. Point sources include shipping terminals and plants that process paper or other forestry products. Road transport accounts for about one-quarter of emissions.

Table 15 Estimated Health Impacts due to Fine Particle Air Pollution (PM₁₀), B.C., 1995

Events Caused by Increased in PM ₁₀ Pollution	Est'd Impact Each Year
DEATHS	
Respiratory disease	24
Heart disease	27
Other causes	31
Total	82
HOSPITALIZATIONS	
Respiratory disease	69
Heart disease	60
Asthma	17
EMERGENCY ROOM VISITS	
Asthma	283
Chronic bronchitis	71
ACTIVITY LIMITATION	
School absences (days)	168,663
Respiratory-restricted activity days	178,316
Minor restricted activity days	231,403
RESPIRATORY SYMPTOMS	
Child-days of lower respiratory symptoms	125,881
Child-days of upper respiratory symptoms	73,144
Child-days of coughs	80,958

Source: Vedal, S. (1995, June). Health effects of inhalable particles: Implications for British Columbia. Prepared for the Air Resources Branch, B.C. Ministry of Environment, Lands, and Parks.

Outside the Greater Vancouver area, beehive burners, pulp and paper mills, railways, and burning are the major sources of PM₁₀. From a public health perspective, wood stoves are a significant source, since wood smoke is often released in heavily populated areas.

Secondary PM₁₀ (particles formed by chemical reactions in the atmosphere) and road dust are not captured by emission data, but do add significant amounts of PM₁₀ to the atmosphere.

Air Quality Measurement

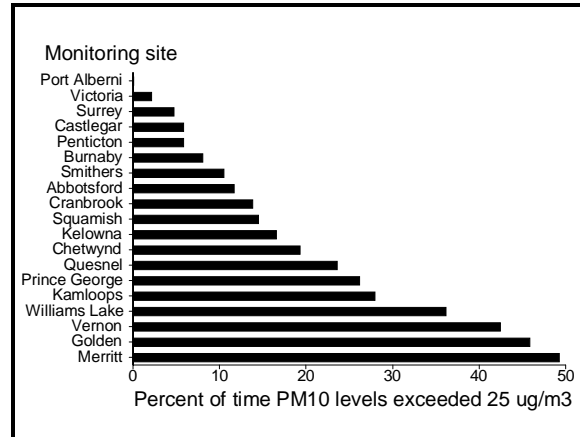
PM₁₀ levels are measured at more than 50 sites around the province by BC Environment and by the Greater Vancouver Regional District. Measurements are made in a variety of locations, from industrial to residential. Concentrations of air pollutants can vary greatly, even among communities and measurement locations that are fairly close together. A detailed comparison of PM₁₀ levels between sites requires taking into account the sources of PM₁₀ sampled at the various types of sites.

Within the province, the highest concentrations are found in the central interior. In 1996, PM₁₀ concentrations in some central interior communities were above 25 micrograms per cubic metre – the level above which health effects may occur – for four or five days out of ten (Figure 43). The lowest levels are generally in the lower mainland and on Vancouver Island.

Air quality improvements have been attributed to the phasing out of beehive burners, new smoke control regulations, and a switch from wood heating to natural gas (B.C. Ministry of Environment, July 1997). Further actions are needed and include:

- Greater awareness of the effects of domestic wood-burning stoves and backyard burning.
- More controls on emissions for motor vehicles, particularly diesel vehicles and those vehicles used or registered for use in urban areas. The State of California has designated diesel exhaust as a carcinogen.
- More controls on agricultural burning and industrial sources such as beehive burners.

Figure 43 Percent of Time that PM₁₀ Levels were High Enough to Cause Health Effects, Selected Monitoring Sites, B.C., 1996



Percent of time in 1996, at each sampling station, that fine particulate levels exceeded 25 micrograms per cubic metre, the level above which there may be health effects. Source: Air Resources Branch, Ministry of Environment, Lands, and Parks. Note: This graph shows only a few of the monitoring sites throughout the province; see Appendix page F-7 for a list of the sampling stations. For information on PM₁₀ levels at other sites, please contact the Air Resources Branch. Information on fine particulates is also available from the B.C. State of Environment website, <http://www.env.gov.bc.ca/spp/soerpt/fineparticulates>.

Recommended Actions:

- *Set a goal of increasing the proportion of children who are brought up in non-smoking environments.*
- *Improve coordination of health and safety efforts in schools.*
- *Require an evaluative component when corrective measures are taken to reduce environmental risks (e.g., asbestos removal).*
- *Continue efforts to reduce exposure to airborne particles from industrial sources and domestic woodburning.*
- *Consider increased controls on motor vehicle emissions, particularly diesels.*
- *Promote public and alternate transportation systems.*

Safe Food, Water, and Soil

Intestinal diseases are common among children – more than 2,000 cases were reported in 1996. Handwashing is a simple but effective way to prevent the spread of intestinal diseases, many of which are caused by consuming contaminated food or water. In the past, lead was a major environmental hazard for children, but exposures have been dramatically reduced.

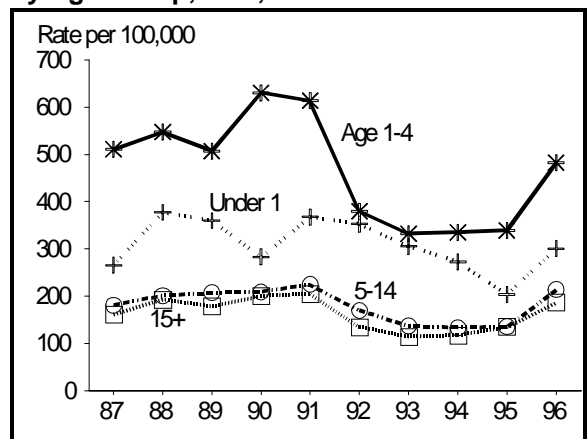
Adequate amounts of clean water and nutritious food are critical for the growth and health of children. In British Columbia, the quality of food and drinking water is generally very good. However, contamination of food, water supplies, and soil does occur. Bacteria, protozoa, viruses, chemicals, or other hazards can cause illnesses of various types. These often have a more severe outcome for children.

Intestinal Illnesses

Children are more susceptible than adults to intestinal diseases, many of which may be caused by consuming food or water contaminated with bacteria or viruses.

The exact number of children who get intestinal diseases is not known, because many cases are not recognized, and most are not reported. Some studies have found that children under age 10 experience about two episodes a year, compared to one for young adults (Monto, 1992). In 1996, more than 2,100 cases of intestinal infections were reported among British Columbia children. The highest rates were for preschoolers 1 to 4 years of age (Figure 44).

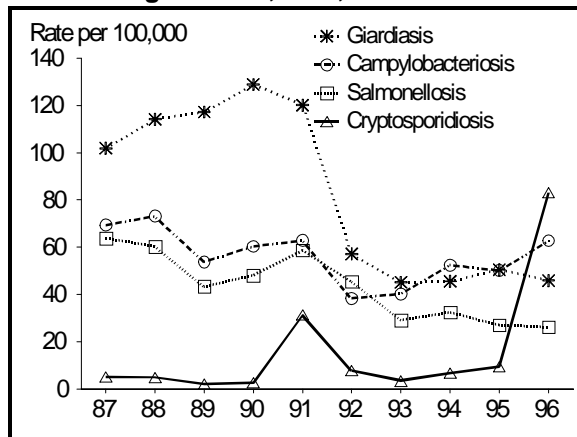
Figure 44 Enteric (Intestinal) Disease Rates by Age Group, B.C., 1987-1996



Reported cases of enteric (intestinal) infections per 100,000 population. Includes all diseases classified as "enteric" by Communicable Disease Epidemiology. Source: Communicable Disease Epidemiology, B.C. Centre for Disease Control Society. Data acquired from the Health Planning Database.

Campylobacteriosis, giardiasis, salmonellosis, unspecified gastroenteritis, and yersiniosis are the most commonly-reported intestinal diseases among children. In 1996, there was a substantial increase in the occurrence of cryptosporidiosis (Figure 45), primarily in the Thompson-Okanagan-Kootenay area of the province. Two community-wide outbreaks of illness – one in Kelowna and one in Cranbrook – were attributed to contamination of municipal drinking water supplies. Increases also occurred in the Kamloops, Penticton, and Vernon areas. Children (age 0 to 14) accounted for almost half of the 1,293 cryptosporidiosis cases reported.

Figure 45 Enteric (Intestinal) Disease Rates, Children Age 0 to 14, B.C., 1987-1996



Source: *Communicable Disease Epidemiology, B.C. Centre for Disease Control Society. Data acquired from the Health Planning Database.*

Intestinal diseases can be spread through contaminated hands, toys, and other objects. Good personal hygiene and safe food handling practices are the best way to prevent the spread of these illnesses. Handwashing, at home and in child care facilities, can reduce the occurrence of diarrhoeal diseases.

Food and water supplies also need continued monitoring and protection to ensure that they are safe from contamination. This involves activities such as water treatment, food regulation, quality control, remedial actions, public advisories, and consumer education.

Even with careful management, it is not possible to eliminate all risk to the public. In some cases, additional protections are available but are very costly. For example, there are water treatment methods that are designed to remove cryptosporidium and other small parasites. This type of water treatment could cost as much as one billion dollars for the Greater Vancouver Regional District. Consumers will need to be aware of the risks, benefits, and costs of additional protection, in order to make the best decisions about how food and water supplies should be managed.

Lead

Children may be exposed to lead through contaminated food, water, air, dust, or soil.

Reduction of lead content in paint, food, and gasoline has lowered children's exposure dramatically. But low-level exposures still occur, and can affect young children in particular, for whom even small amounts can impact their health. Typically, toddlers have the highest lead levels, because crawling exposes them to house dust and soil and because they frequently put things in their mouths.

The adverse health effects of lead have been recognized for centuries. A major threat, in addition to acute lead poisoning, is neurological damage in children. Small children are at special risk because of their higher exposure, because their bodies absorb a greater percentage of the lead they ingest, and because their developing central nervous systems are more sensitive to low-level effects. High levels can cause profound mental retardation, seizures, and death, while low levels can result in delayed intellectual development, impaired hearing, and learning disabilities (Grandjean, 1992; Needleman, Schell, Leviton, Allred, & Bellinger, 1990).

Lead is a public health success story. High blood lead levels used to be among the most common childhood conditions. A very important route of exposure for children was the ingestion of lead-based paint chips or plaster, dust, or dirt containing lead. Gasoline additives, industrial pollution, and lead-soldered cans were other important sources.

When the causes and health impacts were recognized, major efforts were made to decrease the levels of lead in gasoline, paint, industrial emissions, and products intended for use by children. As a result, the risk to children's health from lead is now much lower than in the past.

Although the risk from lead has never been lower, some children do have elevated blood levels. Lead in the home environment (such as paint or plaster in older homes) and industrial pollution are the major remaining sources.

In the area surrounding the city of Trail, lead in the air, house dust, and soil is still an issue. Although levels are still high compared to other areas of the province, the trend in average blood lead levels for Trail children is decreasing over time (Figure 46). The percentage of children with lead levels of 15 ug/dL or higher – the Trail Lead Program "level of concern" – has also declined, from 42% of Trail children in 1991 to 15% in 1997.

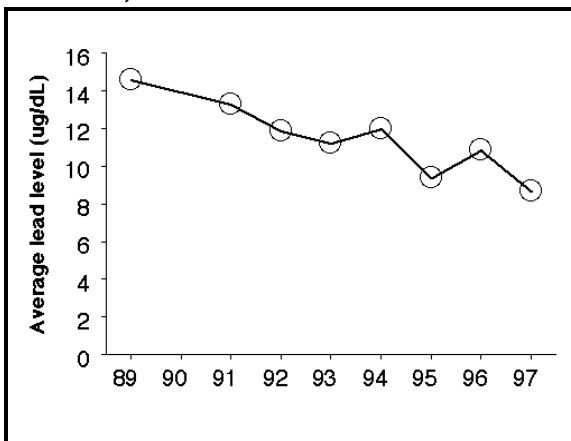
The improvements in Trail lead levels have been achieved through cooperative efforts, spearheaded by a task force that includes representatives from the government ministries of health and environment, municipal government, the smelter, the union, the school district, parents, and the local environmental network.

Continued efforts are being made to eliminate or reduce children's exposure to lead and to make parents aware of possible risks. More could be done, however, in monitoring children's blood lead levels. The United States, for example, has much better trend data in this area. In order to respond effectively, British Columbia should enhance its surveillance capability.

Recommended Actions:

- **Take into account the characteristics of children when doing risk assessments and setting standards for protection of food and water supplies.**
- **Improve surveillance of children's exposure to lead.**

Figure 46 Trend in Average Blood Lead Levels, Children Age 6 Months to 60 Months, Trail B.C., 1989-1997



Source: Trail Lead Program. Average blood lead levels are age and area-adjusted for children tested for the first time between 1989 and 1997.

Safe and Well-Designed Environments

Physical injuries are one of the most important environmental health threats that children face. Through collaborative efforts, homes, schools, parks, playgrounds, and streets can be made safer.

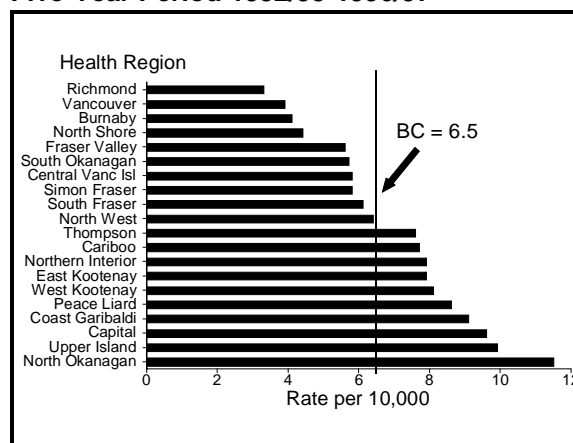
Another aspect of environmental health is protection from physical injury. A healthy environment requires making homes, schools, and streets safer for children.

Injuries are a major threat to children's health. The leading causes of injuries, and some actions British Columbia is taking to prevent them, are discussed later in this report (pages 137-141).

Well-designed homes, buildings, parks, and playgrounds help to prevent injuries and to ensure the safety of children. Some examples of data that communities can use to assess the safety and design of their children's environments include:

- **Hospital data.** Hospital data can provide information about the types of serious injuries children experience. For example, falls from playground equipment result in almost 500 children's hospitalizations each year, with children age 5 to 9 having the highest rates. Based on hospitalization rates, some areas of the province experience far more playground injuries than others (Figure 47).
- **School incident reporting system.** School incident statistics can be used to study injuries occurring at school that result in medical attention or loss of class time. Patterns can be analyzed to determine when, where, and how injuries occur. Based on provincial data, most school injuries occur during recess or sports-related activities. Playing fields and gymnasiums are the most common places that injuries occur (Figure 48).

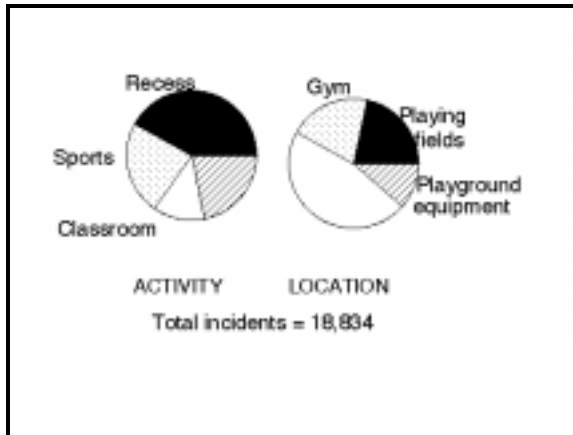
Figure 47 Hospitalizations Due to Falls from Playground Equipment, Children Age 0 to 14, Health Regions, B.C., Annual Average for Five-Year Period 1992/93-1996/97



Hospital cases due to falls from playground equipment (ICD9 E884.0). Source: LAN Accident Reporting System, version 2.34. Information and Analysis Branch, B.C. Ministry of Health.

- **Surveys of safety practices.** Surveys can provide important information about how children think, feel, and behave. British Columbia's Adolescent Health Survey provided information about students' use of seatbelts, bicycle helmets, and swimming with a lifeguard or adult present (The McCreary Centre Society, 1993). This major survey is scheduled to be repeated in 1998. At the community level, surveys are often done on specific topics. Infant car seats may be checked for safe installation, bicycles checked for safe brakes and helmets, and so on.

Figure 48 School Incidents by Activity and Location, B.C., School Year 1996



Source: Risk Management Branch, B.C. Ministry of Finance and Corporate Relations.

Once the number and types of injuries are known, injuries can be prevented by local efforts. Playground injuries may be reduced by upgrading surfaces and equipment, installing guard rails, making regular inspections or safety checks, and/or improving the level of supervision. Municipalities, local health authorities, school boards, sports and recreation associations, and parent groups can work together to reduce the occurrence and severity of playground injuries.

Recommended Action:

- ***Encourage local efforts to track the number and type of injuries that children experience, as a basis for targeted injury reduction measures.***

A Sustainable Environment

Children's health is ultimately dependent on the health of our ecosystems. Making good decisions about global contamination, resource depletion, and other environmental threats will require scientific data, as well as public discussion about risks and the options for managing them.

Sustainability and Human Health

Human health and well-being are ultimately dependent on the health of the physical environment. If nature's productivity is used up, healthy living and working conditions will not be sustainable.

The health of children is intricately dependent on adequate family income and economic sustainability. This in turn relies on ecological sustainability. Our ecological footprint – the amount of land required to provide the material and energy the average person uses and to absorb waste products – is much higher than nature can sustain in the long run (Wackernagel & Rees, 1996).

In global terms, we have already surpassed the carrying capacity of the planet. The rates at which resources continue to be consumed and waste generated are important indicators of sustainability.

In recent years, efforts have been made to measure and report on sustainability – the extent to which we are maintaining and improving the health of our ecosystems. A 1997 report concluded that the average condition of British Columbia's ecosystems is "moderate" – somewhere between sustainable and unsustainable. While large parts of the province are still in a natural or near-natural state, in areas where people are concentrated, ecosystem well-being is no better than in other industrialized countries (Hodge & Prescott-Allen, 1997).

World-wide, greenhouse gas emissions leading to global warming and ozone depletion represent real potential for negative health consequences in the coming years. Global climate change can cause increases in air pollution, expanding populations of pest species and vector-borne diseases, and impaired food production due to floods, droughts, and windstorms. Because their lives are just beginning, today's children – and those of future generations – will be among the most affected by these changes.

Ultraviolet Radiation

Depletion of the ozone layer above the earth's surface poses a particular environmental risk to children – exposure to ultraviolet radiation leading to the development of skin cancer in adulthood.

Ozone is linked directly to ultraviolet (UV) radiation, which in turn is linked to increased risk of skin cancer. About 85% of all skin cancers are caused by UV exposure.

Researchers believe that severe sunburns in early life can increase the likelihood of developing malignant melanoma, the most fatal kind of skin cancer. As much as 60% to 80% of our lifetime exposure to UV occurs before age 18, while the risk of cancer occurs later in the child's life. This is different from the case of lead (see pages 74-75), where both the exposure and the health outcomes occur in children.

Efforts to teach children and parents about the dangers of overexposure to the sun have had some success. In 1994, 70% of Canadian parents said that their children use sunscreen with a sun protection factor of 15 or higher (Scott, 1996).

In British Columbia, the incidence of skin cancers has been increasing. Awareness and protection messages need to be targeted toward children, parents, schools, child care facilities, and organizations who work with children and youth.

Protective actions can include posting signs that warn about exposure to the sun, ensuring that sufficient shade is available, incorporating shade into future development plans, and organizing children's activities so that they take place in natural or constructed shade away from the sun.

Making Decisions about the Environment

In the development of environmental policies and standards, we must acknowledge that trade-offs have to be made. A reduction in greenhouse gases or PM₁₀ emissions may well require restrictions on industry that lead to job and income loss, to make all schools earthquake-proof could consume the entire provincial budget, and so on. It is important, as much as possible, to identify these trade-offs and to strive for the optimum societal outcomes in terms of health and other broad social objectives.

Scientific data are a critical part of the information base for making decisions about the environment. There is much that is not yet known about the mechanisms by which chemicals and physical agents harm human health, the degree of risk involved, and the long-term impact of trends such as global warming. Where data exist, public perceptions of environmental risks do not always match those of scientific estimates. A better understanding will require more research, along with public discussion about risks and the options for managing them.

It is not possible to quantify, predict, or eliminate all environmental health risks that children face. However, parents and others who make decisions must be provided with the best available information, so they can make informed decisions that protect children – and future generations of children – from environmental health threats in homes, schools, and communities.

Recommended Actions:

- ***Encourage scientific research and public discussion about environmental risks and the options for managing them.***
- ***In developing policies, standards, and other decisions about the physical environment, give explicit scientific consideration to children's characteristics and behaviour.***
- ***Take measures to protect children from exposure to the sun. Ensure that sufficient shade is incorporated into plans for schools, playgrounds, sports grounds, and other public areas, and organize children's activities to take place away from the sun.***

Health Services for Children

6

Families and other caregivers are the front-line providers of children's health services. Beginning with pregnancy and birth, children have contact with the publicly-funded health services system, which includes well-baby care, treatment of common childhood illnesses, and specialized services for specific health problems. Health services statistics provide some information about the conditions that affect children. More planning and evaluation and better information systems are required before we are able to obtain a comprehensive picture of the health services children receive, whether they are being provided in a coordinated way, and whether they lead to improved health.

Those who care for children on a day to day basis are part of the child's health care system. Families and other caregivers usually decide on first-line treatment (such as over-the-counter remedies) and when to seek medical attention. As our understanding of health advances, it is important that this front line of children's health care providers is educated about appropriate care.

This chapter provides examples of some of the preventive and treatment services that British Columbia children receive through the publicly-funded health system. Some of the challenges in defining appropriate care will also be explored.

Appropriate Care

All children have the right to receive health services – preventive and treatment-oriented – that will help them achieve health. British Columbia provides a wide range of services to meet the special health needs of children. To make the best use of public resources, we need to ensure that children are receiving appropriate care – the right health service, at the right time, by the right provider, in the right place.

According to the United Nations *Convention on the Rights of the Child*, all children have the right to receive health services that are medically-necessary and that will help them achieve the highest attainable standard of health. The *Canada Health Act* affirms this right through the "principles of medicare", which require that essential medical services be comprehensive, available to everyone, and accessible without financial barriers.

Appropriate Care

Appropriate and high quality health services, when and where they are needed, make an essential contribution to children's health. At the same time, unnecessary or ineffective services can actually be harmful and can use up public resources that could be better spent elsewhere to improve health.

Deciding exactly which health services to provide and how to provide them is not an easy task. Appropriate care can be thought of as consisting of at least four dimensions: the right service, at the right time, by the right provider, in the right place (Table 16).

Services for Children

There are many health services that are highly effective in terms of preventing or curing illness or enhancing health. Effective health services contribute to child health through:

- *Promoting behaviours and environments that help children to grow and develop.* This includes services such as prenatal and parenting education, and efforts to promote breastfeeding, smoke-free environments, good nutrition and hygiene, and quality child care.
- *Reducing preventable illness and premature death.* Some of the diseases and conditions amenable to prevention include low birthweight, certain birth defects, child abuse and neglect, injuries and poisoning, and communicable diseases.

Usually, health promotion and prevention services are population-based or universal in nature.

- *Identifying and treating conditions in their early stage.* Examples of conditions that can be corrected or improved through early treatment include metabolic diseases such as phenylketonuria (PKU), congenital hip dislocation, and impairments in vision, hearing, and speech.

Table 16 Dimensions of Appropriate Care

The Right Service

- Is likely to provide a net benefit to children, according to the best available scientific evidence. Often, reassurance rather than treatment is required.
- Is guided by the preferences of children and their families, who are fully informed about possible risks and benefits.
- Costs no more than an equally effective alternative service.

The Right Time

Services are provided according to scientific evidence about timing. For example,

- Childhood immunizations are done according to schedule.
- Effective screening programs are implemented.
- Effective services are provided without lengthy waiting.
- Urgent cases receive care without delay.

The Right Provider

Children have access to experienced and competent providers:

- Children and their families are taught, as much as possible, to manage their own health problems.
- Children have access to the most cost-effective provider:
- Many services are provided by family doctors instead of specialists, and others are provided by nurses or other health professionals, instead of doctors.
- Providers have sufficient technical skill to deliver their services.

The Right Place

- Many services are available in or near the home, according to the preferences of children and their families.
- Some community care is delivered in home-like alternatives to the acute care hospital, e.g., birthing centres, day surgery.
- Highly specialized services are clustered in regional and teaching hospitals, while more routine care is provided in community hospitals.

Source: Adapted from M. Rachlis & C. Kushner, 1994. Strong Medicine: How to Save Canada's Health Care System, p. 97. Toronto: HarperCollins Publishers.

- *Treating injuries and diseases and preventing complications from health conditions.* This includes providing emergency medical care and treatment for common illnesses such as ear infections, skin infections, asthma, or gastroenteritis.
- *Providing care and supports for children and families who have physical health problems or other special needs.* Support programs help to build or re-build a family's capability to respond to problems or stressful events. Rehabilitation programs, respite care, and counselling are examples of support services.
- *Providing care for children with mental, emotional, or behavioural problems.* Depression, anxiety, physical aggression, and hyperactivity are some of the mental and emotional problems that children experience (see page 58). Assessment, medical and non-medical treatment, and support services help children and their families manage these problems.

Research on early childhood development shows the particular vulnerability of children to troubled home environments. Thus, services for children are beginning to focus on the promotion and enhancement of children's self-esteem and coping skills, as well as on the need for coordination. Child care workers, teachers, and social workers are key to the early detection of emotional and behavioural difficulties in children.

Doing the Right Things Right

British Columbia provides a wide range of services to meet the special health needs of children. This network of services has evolved over the years since the establishment of traditional public health services and the introduction of hospital and medical insurance.

Table 17 illustrates some of the services for children in British Columbia that are funded by the Ministry of Health and/or the Ministry for Children and Families. There are many more services that are provided by these and other ministries, non-government organizations, or community groups.

Given the array of services currently and potentially available, how do we ensure that effective services are provided, that high quality services are reaching children who need them, that children and their families are satisfied with the services they receive, and that services provided are leading to improvements in child health? In other words, how do we know that we are doing the right things right?

If a health service is being provided, there should be reasonable evidence that it has a positive impact on health. Determining whether there is an evidence base for a particular service usually requires an analysis of literature on effectiveness, combined with expert judgement of clinicians.

Evaluation helps to ensure that we are providing the right services in the right way. Evaluating health services is a complex and challenging task, and often we lack information needed to answer important questions about the quality, cost, and outcomes of services provided. In the following sections, some examples of child health services will be considered.

Table 17 Services for Children, B.C.

Promotion of Healthy Behaviours and Environments

Breastfeeding promotion/support
Healthy Schools
Licensing/inspection of child care facilities
Tobacco enforcement (sales to minors)

Prevention and Well-Child Care

Child abuse prevention/education
Genetic counselling
Immunization
Well-baby care
Maternity care
Prenatal and parenting education
Home visits to new mothers and babies

Screening for Health Problems

Screening of pregnant women
Newborn screening
Nursing priority screening (infants/preschoolers)
Hearing screening (newborns and kindergarten)
Dental and vision screening (kindergarten)

Early Support for Children At Risk or with Identified Health and Development Problems

Pregnancy Outreach Program
Infant Development Program
Nobody's Perfect (parenting program)
Occupational and physical therapy
B.C. Hearing Aid Program
Speech and language therapy
School Meal Programs

Treatment of Injuries, Diseases, or Conditions

Physician services (family doctors, specialists)
Acute care hospitals
Drug and Poison Information Centre
Day care surgery
Cancer outpatient
Mental health services

Support Services for Children and their Families

Counselling services
At Home program
Rehabilitation facilities (Sunny Hill, Queen Alexandra)
Nursing support services
Respite care

Note: This table illustrates some of the services for children funded by the B.C. Ministry of Health and the B.C. Ministry for Children and Families.

Prevention, Screening, and Early Support

Most British Columbia children are receiving immunization, screening, and other effective population programs designed to maintain health. Targeted programs such as prenatal outreach can be very effective in helping groups of children achieve the healthiest possible start in life. Effective preventive and early support programs need to be continued, along with efforts to measure whether these services are available and accessible to all children who need them.

Immunization and Screening Services

Immunization and screening for specific diseases and risk factors are examples of services that are known to be highly effective. Access to these and other effective services depends on the availability of resources (service providers, vaccines, diagnostic equipment) and on a system to finance the services. To be used, services need to be available when and where they are needed. And, in the case of children, someone has to take the child for care.

As a result of immunization programs, childhood deaths from vaccine-preventable diseases such as diphtheria, tetanus, and pertussis (whooping cough) are now rare. Most of the population and many clinicians have never seen the damage that these illnesses can cause. With the fading of collective memory, some parents may question the need for immunization.

In the United Kingdom, concerns about rare neurological reactions to pertussis vaccine caused a significant drop in vaccine use. This resulted in a number of deaths – many more than the adverse reactions reported. To be optimally effective, immunization should be universally accepted in order to prevent a reservoir of disease remaining in the community. In this way, smallpox was eradicated.

We are now close to eliminating other vaccine-preventable diseases such as polio, Haemophilus influenza b, and measles, but to accomplish this will require a continued high rate of immunization uptake.

For services that are of proven effectiveness, the utilization rate – the proportion of the population who receive a given health service – provides one measure of whether services are reaching those who need them.

For some well-established services, such as Rh screening of pregnant women and screening for metabolic diseases in newborns, coverage is very high: virtually all pregnant women and newborns receive these services (Rh is a factor in the blood, which, before the development of Rh screening, was responsible for many cases of jaundice, anemia, and other serious conditions in newborns).

Table 18 shows the extent to which children are receiving certain well-established services: immunizations, screening for developmental risk factors, and screening for problems related to hearing and vision. These programs are reaching most (80%-90%) children, although comparable services and/or data are not available for all areas of the province.

Prenatal testing for HIV is a relatively new health service that helps to prevent mother-to-child transmission of HIV/AIDS. Prenatal testing rates have increased rapidly since the program was established in 1994, and approximately half of pregnant women are currently tested (see page 158).

Recommended Action:

- *Continue to provide immunization, screening for developmental risk factors, and other population health programs designed to maintain children's health.*

Table 18 Utilization of Selected Child Health Services, B.C.

Region	Percent of Children Receiving the Service				
	Immunization [1]	High Priority Screening [2]	Hearing (infants) [3]	Hearing screening [4]	Vision screening [5]
East Kootenay	91%	84%	97%	94%	74%
West Kootenay	86%	92%	92%	71%	73%
North Okanagan	67%	96%	85%	88%	99%
South Okanagan	90%	100%	96%	90%	94%
Thompson	95%	94%	90%	73%	90%
Fraser Valley	68%	100%	83%	82%	94%
South Fraser	N/A	81%	100%	100%	N/A
Simon Fraser	69%	93%	70%	100%	92%
Coast Garibaldi	91%	93%	82%	79%	31%
Central Vancouver Island	83%	91%	88%	60%	64%
Upper Island	78%	99%	83%	100%	85%
Cariboo	69%	84%	100%	80%	86%
North West	82%	76%	76%	56%	78%
Peace Liard	88%	92%	91%	95%	85%
Northern Interior	87%	83%	99%	59%	97%
Vancouver	N/A	N/A	N/A	N/A	N/A
Burnaby	N/A	N/A	84%	100%	N/A
North Shore	N/A	N/A	N/A	N/A	N/A
Richmond	99%	N/A	83%	61%	N/A
Capital	88%	N/A	82%	88%	N/A
B.C. total	81%	91%	88%	90%	86%
Highest regional rate	99%	100%	100%	100%	99%
Lowest regional rate	67%	76%	70%	56%	31%
Target	97%	---	100%	95%	---

"N/A" means data are not available. Due to differences in services provided and differences in data collection systems, comparable data are not available for all regions of the province.

[1] Percent of two-year-olds fully immunized against diphtheria, tetanus, and polio, April 1997. Source: Public Health Nursing, B.C. Ministry of Health. These figures are based on a one-month sample of children who were two years old in April 1997 and may not reflect immunization rates for all B.C. children. For more information on childhood immunizations, see *Vaccine-Preventable Diseases*, pages 147-156.

[2] Estimated percent of newborns screened for physical, emotional, and social risk factors using the Priority Assessment for Infants and Preschool Children (HLTH 184), 1993/94. Areas served by the (former) Central Fraser Valley Health Unit are included in the B.C. total, but are not included in the regional data. Source: *Selected Summary Statistics: Public Health Nursing Activities, Provincial Health Units, 1991/92-1993/94*. Prepared for Public Health Nursing, B.C. Ministry of Health, August 1995.

[3] Estimated percent of infants screened for hearing problems, High Priority Hearing Registry, 1996/97. Source: B.C. Ministry for Children and Families.

[4] Estimated percent of kindergarten children screened for hearing problems (1996/97). Source: B.C. Ministry for Children and Families.

[5] Estimated percent of kindergarten children screened for vision problems, 1995/96. Source: Public Health Nursing, B.C. Ministry of Health. Coast Garibaldi figure is for Howe Sound (School District 48) only. Central Vancouver Island figure includes Cowichan and Nanaimo (School Districts 65 and 68) only. Capital region does not provide population-based screening.

Prenatal Outreach

Pregnancy Outreach Programs (POPs) are one example of an effective program for which there are many evaluative measures in place, including measures of utilization and outcome.

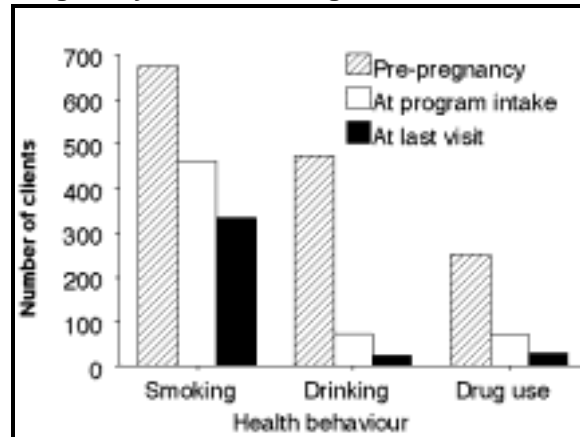
POPs are based on research that shows that poor nutrition, smoking, and alcohol and drug use during pregnancy have a direct impact on birthweight and the health of a newborn. POPs, which operate in 21 sites across the province, provide education, counselling, food supplements, and support to women at risk of having a low birthweight baby or other poor pregnancy outcomes.

Many POP clients are women who do not access traditional prenatal health services. They are usually young, single women receiving income assistance. The majority have not completed high school, and nearly 30% are Aboriginal women.

To evaluate program usage and quality, POP tracks indicators on client characteristics, client retention and dropout rates, and timing and intensity of service. POP measures the outcomes of its services in terms of improved health behaviours that are linked to birth outcome, as well as birth outcomes per se, such as incidence of low birthweight among clients compared to the total population.

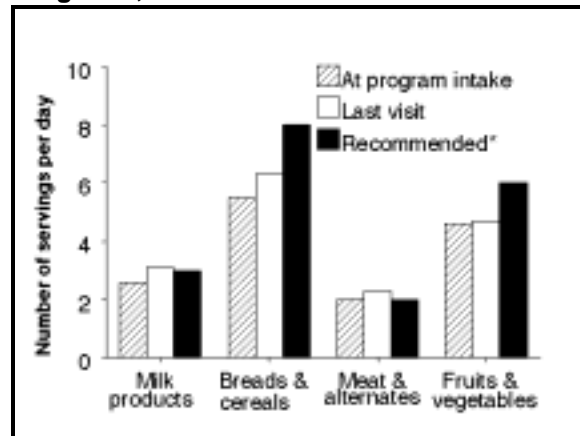
In 1995/96, many POP clients improved their choices in the areas of smoking, drinking alcohol, and using drugs (Figure 49), and the percent of clients who reported consuming the recommended servings of food showed steady increases between intake and the last visit (Figure 50). Even a small decrease in the amount smoked can effect the birthweight of the baby, resulting in improved outcomes for those women and their babies and savings to the health care system. A Montreal program similar to POP estimates that every dollar spent on pregnancy outreach saves eight dollars in costs of caring for low birthweight babies (Duquette, 1994).

Figure 49 Health Behaviours, Clients of Pregnancy Outreach Programs, 1995/96



Source: *Pregnancy Outreach Program Status Report, 1995/96. Nutrition Section, B.C. Ministry of Health.*

Figure 50 Number of Servings by Food Group, Clients of Pregnancy Outreach Programs, 1995/96



* Recommended number of servings per day, according to Canada's Food Guide. Source: *Pregnancy Outreach Program Status Report, 1995/96. Nutrition Section, B.C. Ministry of Health.*

Although POP and other prenatal outreach programs are able to help many women, they are not able to reach all women who are at risk of poor pregnancy outcomes. It is estimated that 10% of babies – about 4,500 each year – are born to mothers considered to be at-risk by pregnancy outreach criteria. In 1997/98, POP and other prenatal outreach programs served 3,180 women.

The availability of pregnancy outreach services varies considerably throughout the province. Ten regions are considered to have a significant lack of outreach services, and four regions have none (Table 19). Efforts are being made to improve coordination of prenatal programs and to ensure that spaces are available in areas where they are most needed.

Recommended Actions:

- *Ensure that prenatal outreach programs are available and accessible to all women at risk of poor pregnancy outcomes due to factors such as poverty, substance abuse, or inadequate nutrition.*
- *Health authorities and service providers should continue efforts to improve coordination of all facets of reproductive health care.*

Prenatal Outreach

The first Pregnancy Outreach Programs (POPs) were established in British Columbia in 1988.

Other programs providing similar comprehensive prenatal outreach services include *Canada Prenatal Nutrition Programs*, the *Community Action Program for Children*, and *Healthiest Babies Possible* and *Sheway* in Vancouver.

Table 19 Availability of Prenatal Outreach Services, Health Regions, B.C., 1997/98

Health Region	Target population	Clients served
East Kootenay	78	122
West Kootenay	74	121
North Okanagan	119	144
* South Okanagan	219	0
Thompson	149	184
* Fraser Valley	325	96
* South Fraser Valley	747	418
* Simon Fraser	406	0
* Coast Garibaldi	86	44
Central Vanc Island	251	362
Upper Island	137	144
Cariboo	97	154
North West	142	259
* Peace Liard	100	30
Northern Interior	177	173
Vancouver	604	604
* Burnaby	210	94
* North Shore	187	0
* Richmond	172	0
* Capital	310	231
British Columbia	4,588	3,180

* These regions are considered to have a significant lack of services.

Target population: 10% of live births 1996 (1997 data not yet available). An estimated 10% of pregnant women are considered to be at-risk by pregnancy outreach criteria. Clients served: Number of clients enrolled in Pregnancy Outreach Programs (POP), Canada Prenatal Nutrition Programs (CPNP), Community Action Program for Children (CAPC), Healthiest Babies Possible, and Sheway in 1997/98; "0" means no comparable prenatal outreach program. Source: Infant and Child Team, B.C. Ministry for Children and Families.

Note: Prenatal outreach is only one aspect of reproductive health services. Other elements of reproductive care include sexuality education, contraceptive services, maternal care, control of reproductive tract infections, prevention and management of infertility, and treatment of reproductive cancers. See Provincial Health Officer's Annual Report 1995, pages 126-155.

Early Intervention

A range of services are provided for children with or at risk of developmental disabilities. These services include speech and language therapy, occupational therapy, physiotherapy, and family support worker services. These services are provided by various agencies and facilities throughout the province.

The value of providing early intervention for children with special needs has been well-established (Guralnick & Bennett, 1987; B.C. Ministry for Children and Families, September 3, 1997). However, until recently it has been difficult to measure the outcomes or impacts of services provided here in British Columbia.

Over the past few years, an outcome-oriented information system called Developmental and Rehabilitation Information System (DRIS) has been developed to support the delivery and evaluation of services for children with developmental disabilities. DRIS has been implemented in approximately 65 sites serving children and youth with special needs around the province. For 1997, data on 249 children were reported via the DRIS system.

Based on data reported to DRIS, most children (91%-92%) have made progress towards reducing their disability(ies), from the perspective of the child and/or family and the service provider (Table 20). "Progress" is based on goals and targets tailored to each client, such as "learn twenty new words in sign language" or "not be depressed at school". About 41% of the clients and/or families who provided a satisfaction rating were satisfied with the progress they or their child had made toward goal attainment.

The number of clients for whom these data have been reported is very small at this time. However, these early results illustrate the type of information that can be collected about client outcomes. The number of clients for whom these data are available is expected to increase over time.

Table 20 Goal Attainment, Preschool and School Children Receiving Services for Developmental Disabilities, B.C., 1997

Outcome	Percent
Progress in attaining goals (as rated by the client/family)	91%
Progress in attaining goals (as rated by the service provider)	92%
Satisfied with progress (as rated by the client/family)	41%

Percent of clients who made progress toward treatment goals, as determined by data and the perceptions of clients/families and service providers. Source: Developmental and Rehabilitation Information System (DRIS). B.C. Ministry for Children and Families. Note: Above data are based on 249 clients (183 preschool children, 66 school children) with developmental disabilities. This reflects only a small percentage of the total number of clients served in 1997.

Recommended Action:

- **Health authorities should continue to develop information to monitor the outcomes of population health services provided to children and youth.**

Treatment Services

There are many services that are highly effective in treating illness and restoring health. At this time, information systems do not routinely measure the extent to which these services are being provided across the province. For many services, we do not know what the "right" level of use should be. Levels of antibiotic prescribing and regional variations in services such as ritalin prescribing, myringotomy, and tonsillectomy suggest that some children may be receiving unnecessary treatments.

Effective Services

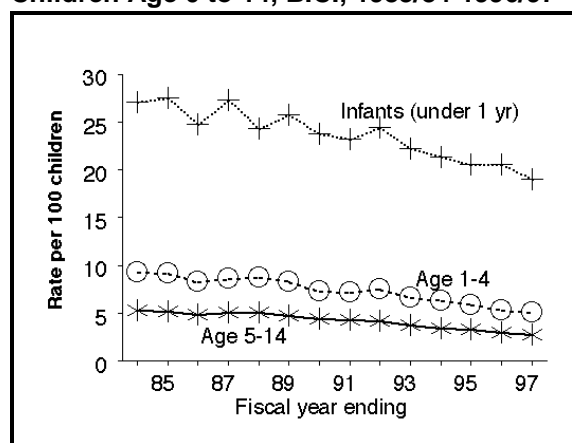
There are many services that are highly effective in curing illness and restoring or enhancing health. These range from counselling and guidance by family doctors and public health nurses, the provision of first aid and emergency medical care, to treatment of specific medical conditions. At the present time, information systems do not measure the extent to which these services are being appropriately provided across the province.

New methods of gathering and analyzing data are being developed. However, at the present time, we have limited information about which children receive what health service for what purpose, whether those services are leading to improved health, and whether children have health needs that are not being met.

Based on hospital data, we know that for children age 0 to 14:

- Fewer children are being admitted to hospital each year - between 4 and 5 cases for every 100 children in 1996/97, compared to 8 per 100 in the early 1980s (Figure 51). It is important to remember that over this time period, different ways of delivering the same service have been developed.

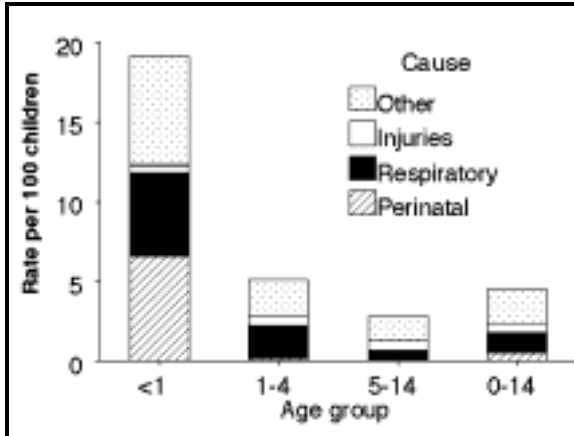
Figure 51 Hospitalization Rates, All Causes, Children Age 0 to 14, B.C., 1983/84-1996/97



Source: Information and Analysis Branch, B.C. Ministry of Health. Hospital cases per 100 population, acute and rehabilitation care.

- Respiratory disease, injuries, and perinatal conditions (especially for the under-one age group) are the main reasons for which children are hospitalized (Figure 52).

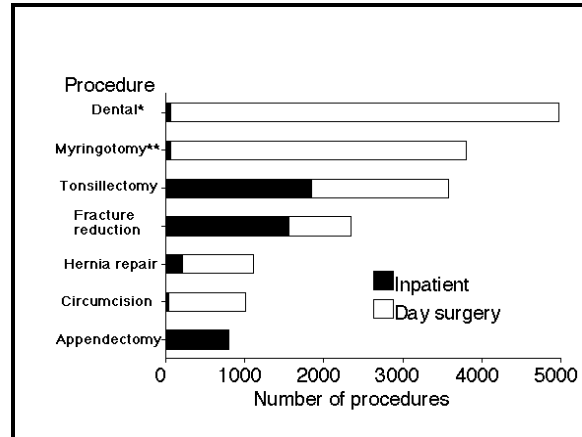
Figure 52 Hospitalization Rates by Cause, Age 0 to 14, B.C., 1996/97



Source: Information and Analysis Branch, B.C. Ministry of Health. "Perinatal" includes perinatal conditions and congenital anomalies.

- Dental procedures, myringotomy (a surgical treatment for middle ear infections), and tonsillectomy are the most common surgical procedures (Figure 53). Of the 32,527 total surgical procedures on children in 1996/97, most (63%) were done on a day surgery basis.

Figure 53 Most Common Surgical Procedures, Children Age 0 to 14, B.C., 1996/97



* Dental procedures, including tooth extractions, fillings, and other dental work done in hospitals.
 ** Putting tubes in the ears, a surgical treatment for middle ear infections. Source: Hospital Comparative Reports, version 1.3. Information and Analysis Branch, B.C. Ministry of Health.

Surgical Procedures

Dental procedures are the most common surgical procedures that children receive in hospitals. Dental procedures include tooth extractions, fillings, and other restorative dental work done in hospitals, usually on a day surgery basis. A hospital setting is often required for children's dental procedures, due to their young age and the length of time required for treatment. Because of the specialty nature of children's dental surgery and their anesthetic risk, many children requiring this type of surgery are referred to Children's Hospital in Vancouver.

Childhood dental disease is preventable. For more information about prevention, see Dental Health, pages 163-166.

Data from physicians' billings to the Medical Services Plan tell us how many children received services from family doctors or specialists, and how much those services cost. Respiratory infections and middle ear infections are the leading causes of physician office visits, while asthma, strabismus (an eye disorder), and otitis media (ear infections) are the most common reasons for which children are referred to specialists (Table 21).

Statistics such as those in Figures 51-53 and Table 21 provide a general awareness of the conditions that affect children. However, more detailed research is required to shed light on the utilization patterns of health services for children.

Table 21 Most Common Diagnoses, Children's Visits to Medical Specialists, Children Age 0 to 14, B.C., 1996

Diagnosis (ICD9 code)	Number of Children	Number of Services	Payments (\$000s)
Asthma (493)	7,513	8,472	1,068
Strabismus (an eye disorder) (378)	5,932	6,699	426
Otitis media (ear infection) (381)	5,823	6,196	374
Hyperactivity (314)	4,940	5,517	829
Allergic rhinitis ("hay fever") (477)	4,550	4,678	569
Dermatitis (skin inflammation) (691)	3,975	4,282	287
Total - all causes	133,457	184,702	18,009

Number of patients, services, and Medical Services Plan payments for specialist medical exams, children age 0 to 14. The above table shows the leading causes according to individual 3-digit ICD9 diagnostic codes. Diagnoses may be grouped in various ways. Depending on how diseases and disease codes are grouped, the leading causes will differ. Source: Medical Services Plan. Prepared by Clinical Support Unit, Community Health.

Ritalin Prescribing

Attention Deficit Hyperactivity Disorder (ADHD) consists of a group of behaviours that include distractibility, impulsive behaviour, and physical hyperactivity. These symptoms are usually much more noticeable in the classroom or other group settings, where children with ADHD may be restless, have trouble concentrating or paying attention, act without thinking, and have difficulty awaiting their turns in games or groups.

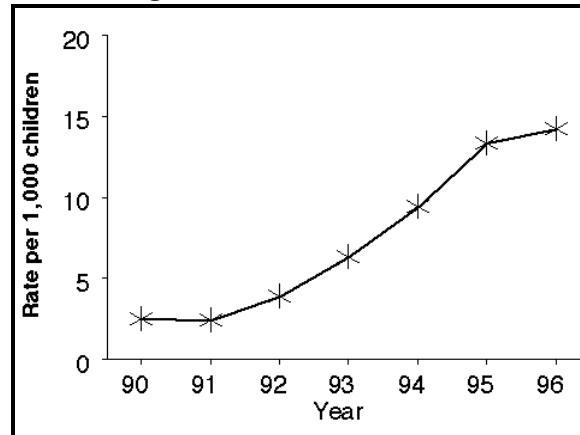
Drug treatment can be effective in helping children with ADHD, especially when drugs are combined with other forms of support such as counselling or extra help in the classroom. While drug treatment is appropriate for children whose behaviour meets the criteria for ADHD, there is no definitive test for ADHD, and the line between normal behaviour and disorder is blurred. This has led to questions about the use and potential overuse of prescription drugs, primarily Ritalin.

In one major population-based study (the Ontario Child Health Study, conducted in 1983), 9% of boys and 3% of girls were found to have ADHD, and three of every 1,000 children (aged 4-18) were receiving medication specifically for ADHD.

In British Columbia, the rate of methylphenidate* prescribing has been increasing in recent years (Figure 54). Increases in prescriptions to children have occurred in all other provinces over this time period, although data systems do not provide statistics that are directly comparable or readily available. Usage of Ritalin and other stimulant medications is lower in British Columbia than in the United States, but higher than in European countries, where Ritalin is rarely used.

** Methylphenidate is a stimulant medication prescribed for ADHD. One brand, Ritalin, accounts for about 80% of all medications prescribed for children with this condition. Ritalin is also a drug that can be abused and may get diverted for this purpose.*

Figure 54 Methylphenidate Use Among Children Age 0 to 19, B.C., 1990-1996



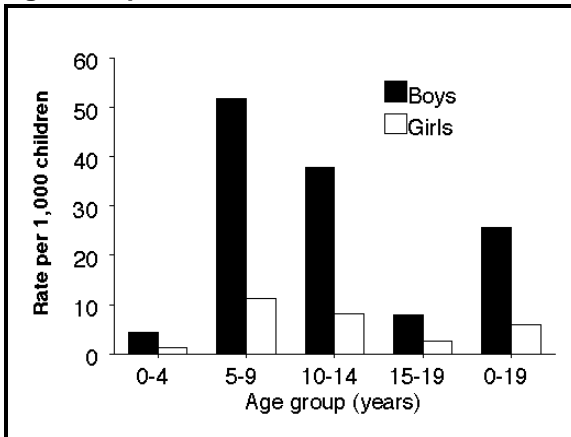
Methylphenidate use: the number of children age 0 to 19 years receiving prescriptions for methylphenidate (Ritalin is the most commonly prescribed brand), per 1,000 children in this age group. Source: Miller, A.R., Lalonde, C.E., & Armstrong, R.A. Unpublished tables.

Over the 7-year period 1990-1996, 14,989 British Columbia children (16 per 1,000 age 0 to 19) received prescriptions for methylphenidate. Usage was highest among boys 5 to 9 years old, with 5.2% of boys in this age group receiving prescriptions (Figure 55). The male-female difference is not surprising, as surveys such as the Ontario Health Survey and the National Longitudinal Survey of Children and Youth have found hyperactivity symptoms to be much more common among boys than girls.

We have no information about other services (such as counselling or classroom support) that were provided at the same time. This is a concern, since drug treatment alone is believed to be less effective than combined forms of therapy in long-term management of ADHD.

Because there are no universal guidelines about diagnosis and treatment of ADHD, we do not know what the "right" level of ritalin use should be. Treatment of ADHD depends on clinical judgement, which includes an assessment of how the problem is impacting the child and his/her family.

Figure 55 Methylphenidate Rates by Age Group and Sex, B.C., 1990-1996



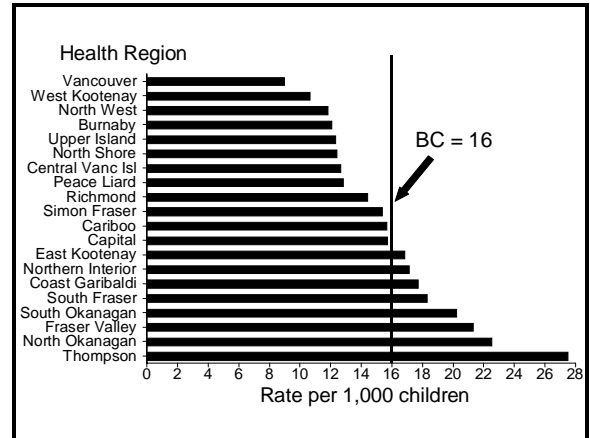
Number of children who received a prescription for methylphenidate per 1,000 children in each age group. Each child is counted only once during the 7-year study period. Source: A.R. Miller, C.E. Lalonde, & R.A. Armstrong. B.C. Methylphenidate Survey. Unpublished tables.

To treat a chronic disorder such as ADHD, most children will require multiple (six or more) prescriptions. A high rate of single prescriptions may indicate questionable diagnostic and treatment practices for children who have behavioural and/or learning problems. For example, single prescriptions may reflect the use of Ritalin as a diagnostic test, though this would represent a faulty management strategy.

While 42% of children received six or more prescriptions, about 33% of children received one or two only (Miller, Lalonde, & Armstrong, unpublished). This rate of single and two-only prescriptions is lower than in the United States. Although receiving only one or two prescriptions of methylphenidate is appropriate in some situations, these results suggest that some inappropriate prescribing may be occurring, and supports the need for standard guidelines and treatment.

Regional variations in methylphenidate prescribing indicate that treatments for ADHD are not being uniformly provided. Children in the Thompson, North Okanagan, and Fraser Valley regions are up to three times as likely to receive a methylphenidate prescription as are children in Vancouver (Figure 56).

Figure 56 Methylphenidate Rates, Children Age 0 to 19, Health Regions, B.C., 1990-1996



Source: A.R. Miller, C.E. Lalonde, & R.A. Armstrong. B.C. Methylphenidate Survey. Unpublished tables. See Appendix pages F-10 and F-11 for additional data and notes.

Diagnostic and treatment guidelines – and supports to implement them – are needed to ensure that children are receiving the best possible care for emotional and behavioural problems, including ADHD. In addition, we need to ensure that cost-effective non-medical forms of therapy are available and accessible.

Recommended Actions:

- **Assess costs and effectiveness of medical and non-medical treatment for ADHD.**
- **When guidelines for ADHD are available (currently being developed by the Canadian Pediatric Society), assist clinicians to use the published guidelines and establish methods for monitoring adherence to guidelines.**

Antibiotic Treatment

Appropriate treatment of common infections is important to child health in the short term, because children who are treated properly get better more quickly. Appropriate treatment is important in the longer term, too, because too much use of antibiotics can lead to organisms that are resistant to first-line drug treatment. Antibiotic resistance is an increasing problem world-wide, with potential to reduce the success of this useful family of drugs.

Appropriate treatment also ensures that we are getting the best value for our health dollars. Spending on unnecessary drugs means less money is available for other health services that do improve health.

Treatments change, as we learn more about diseases and as drugs, surgical procedures, or other therapies are developed or improved. Previously, treatments for infections depended on the distinction between bacterial infections (for which antibiotics are prescribed) and viral infections (which do not respond to antibiotics). Now there is an added dimension: allergic versus non-allergic respiratory conditions.

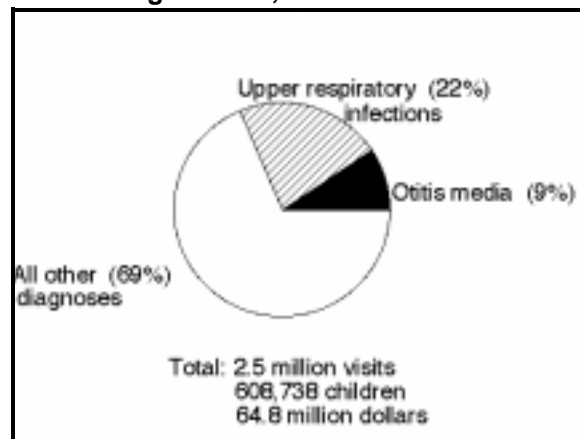
A 1994 survey of family practitioners in British Columbia found that physicians tended to use antibiotics in a consistent manner. In general, appropriate drugs were prescribed for conditions involving single organisms, but there were different patterns of prescribing for more complex cases (Bryce, Riben, & Noble, 1997).

To assist medical practitioners in prescribing the right treatments for infections, guidelines and formularies have been developed (Ontario Anti-infective Review Panel, 1997; Levine, Lexchin, & Pellizzari, 1995). To assess whether we are doing the right things right, this section looks at the extent to which doctors in British Columbia are complying with these guidelines.

The data presented here pertain to two common health problems - upper respiratory tract infections and otitis media (middle ear infections). These conditions are the leading causes of children's visits to their family doctors. On average, for every 10 children age 0 to 14, 4 visited their doctor for an upper respiratory infection and 2 for otitis media in 1996.

Together, upper respiratory infections and otitis media account for about one-third of physician office visits (ages 0 to 14) and more than \$20 million in Medical Services Plan payments each year (Figure 57).

Figure 57 Physician Office Visits*, Children Age 0 to 14, 1996



* Medical Services Plan services for physician office visits, fee codes 100 and 107. These services are usually provided by family doctors. Acute upper respiratory tract infections (ICD9 codes 460-465). Otitis media: ICD9 381-382. Source: Medical Services Plan. Prepared by Clinical Support Unit, Community Health.

Prevention of Upper Respiratory Infections and Otitis Media

This section focuses on the treatment of upper respiratory tract infections and otitis media. Prevention of these conditions is also important, and can be achieved through the reduction of risk factors such as exposure to tobacco smoke and through protective behaviours such as breastfeeding.

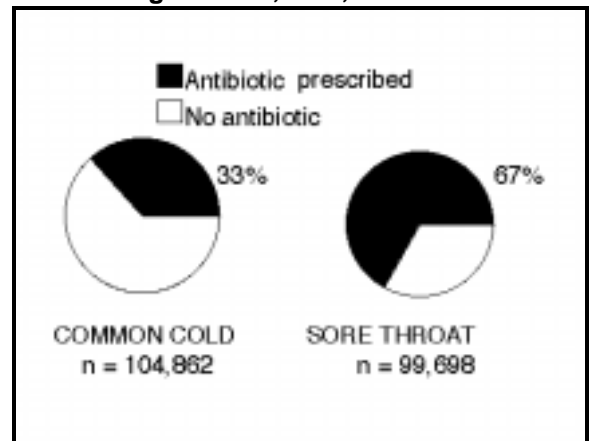
For additional information on prevention, see Respiratory Diseases (pages 128-133) and Breastfeeding (pages 46-47).

Upper Respiratory Tract Infections

Most respiratory infections are caused by viruses, and children will recover without need for drug treatment. When children are sick, parents need reassurance and information about how to care for and comfort their sick children. In the case of common colds, flu, or other viral infections, parents need to know that it is all right to leave the doctor's office without a prescription.

Only a small proportion of upper respiratory infections require treatment with antibiotics. Yet, one-third of children diagnosed with common colds and two-thirds of those with sore throats received prescriptions for an antibiotic (Figure 58).

Figure 58 Percent of Children Receiving a Prescription for Antibiotics for the Common Cold or for Sore Throat, Children Age 0 to 14, B.C., 1996



Percent of children diagnosed with common cold (ICD9 460) or with sore throat (ICD9 462) who received a prescription for an antibiotic on visiting a doctor's office. Source: Medical Services Plan and PharmaNet. Prepared by Clinical Support Unit, Community Health.

Otitis Media

Otitis media, commonly referred to as "ear infection", is one of the most common problems of infancy and early childhood. Otitis media is an inflammation of the middle ear. This causes pain and discomfort in children and anxiety in their parents. In some cases, otitis media can cause temporary hearing loss.

During early childhood, most children will have experienced at least one ear infection, and a significant number will have repeated episodes (Stool et al., 1994). Otitis media is most frequent among infants 6-12 months of age, among boys, among children whose brothers and sisters have had ear infections, children who are not being breastfed (Teele, Klein, Rosner, 1989), and children whose parents smoke in the home (Collet, Larson, Boivin, Suissa, & Pless, 1995).

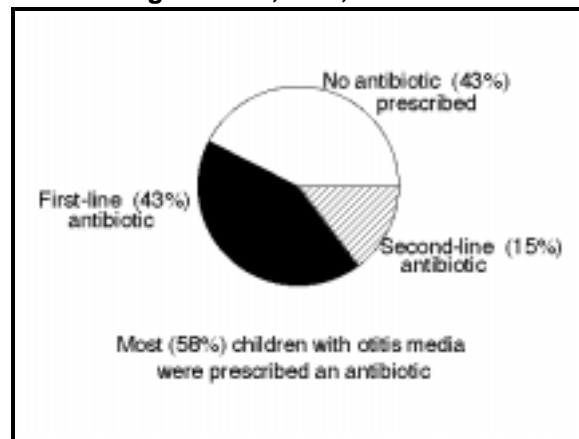
Children are much more likely to develop ear infections than are adults. In children, the immune system is still developing, and there are also anatomical differences in the ear. In addition, with increased number of children attending child care centres, the chances of coming into contact with another infected child are greater (Osterholm, 1992). It is normal for children to have an increased number of infections, as their immune system "learns" about the world.

Although otitis media is extremely common, uncertainties persist about the most appropriate treatment. In most (60%-90%) cases, children's ear infections will get better on their own whether one treats with antibiotics or not (University of Leeds, 1992; Lehnert, 1993; Rosenfeld et al., 1994; Stool et al., 1994). This is because most ear infections are caused by viruses, and antibiotics are only effective against bacteria. Similarly, allergic congestion can mimic an ear infection; allergic conditions do not respond to antibiotics.

Because it is difficult to determine if a middle ear infection is viral or bacterial, some physicians choose to treat all children with antibiotics if a middle ear infection is diagnosed.

Of the 133,292 children who visited general practitioners because of otitis media, almost 60% (76,577) received a prescription for antibiotics. For most children, Amoxicillin, the first-line antibiotic recommended in the anti-infective guidelines, was prescribed. About one-quarter of the children receiving antibiotics received second-line treatments as their first prescription (Figure 59).

Figure 59 Percent of Patients Receiving Antibiotics for Otitis Media, Children Age 0 to 14, B.C., 1996



Percent of children diagnosed with otitis media (ICD9 381-382) who received a prescription for antibiotics after visiting a general practitioner and percent who received first-line (first choice) or second-line (alternative) treatment on their first prescription. Source: Medical Services Plan and PharmaNet. Prepared by Clinical Support Unit, Community Health. First-line and second-line antibiotics those specified in the Ontario Anti-infective Review Panel's Anti-infective guidelines for community-acquired infections (2nd ed.). Toronto, ON: Publications Ontario, 1997.

Actions to Promote Appropriate Use of Antibiotics

Tools such as self-care handbooks and the provision of telephone advice can help parents know when to seek medical attention and what constitutes appropriate treatment of common health problems. A pilot project is now under way in the Capital Health Region to evaluate the effectiveness of such tools.

Clinical practice guidelines can assist medical practitioners in prescribing the most effective treatments. Typically, such guidelines are based on an analysis of literature on effectiveness, combined with expert judgement of a panel of clinicians.

British Columbia has not yet developed specific protocols or antibiotic prescribing guidelines for otitis media or upper respiratory infections. However, British Columbia's Therapeutics Initiative has endorsed and distributed the *Anti-Infective Guidelines for Community-Acquired Infections*, developed by Ontario's Anti-infective Review Panel (1997). Use of these published guidelines, particularly when combined with other education and positive feedback, can improve the appropriateness of prescribing practices.

Communities can also take action together to reduce inappropriate use of antibiotics.

In Port Pirie, Ontario, the community, the local physicians, and the pharmaceutical industry worked together to reduce this problem. Town hall meetings were organized to educate community members not to always expect an antibiotic for common infections. Physicians used professional anti-infective guidelines, and industry restricted marketing activities to support these guidelines in their contacts with doctors.

The results were dramatic. Compared to the rest of Ontario, where antibiotic prescribing continued to increase, prescribing rates in Port Pirie declined by 20% overall. In addition, the proportion of inappropriate antibiotic prescriptions (using second-line drugs) was also reduced by 20%.

Recommended Actions:

- ***Educate parents and other caregivers about appropriate treatment of common childhood diseases such as upper respiratory infections, otitis media, and allergies. This could be done through the use of tools such as self-care handbooks and the provision of telephone advice.***
- ***To prevent the spread of antibiotic resistance, community education campaigns involving citizens, prescribers, and pharmaceutical advertisers should be undertaken to increase local awareness, change expectations, and improve prescribing practices.***

Regional Variations

For many health services and procedures (such as Ritalin prescribing, pages 94-95), we lack clear evidence and standards as to when and how services should be provided. Where standards exist – antibiotic prescribing, for example – it is not always practical to obtain data to measure compliance.

Some types of care are known to be ineffective or even harmful, i.e., the service has been shown to lead to no improvement in health. Examples include routine supplements of water for breastfed babies, routine circumcision of newborns, and urine tests to screen for urinary tract infections in healthy children. Other health services are controversial, and many experts believe that the risk of complications often outweighs the potential health benefit. Removal of tonsils and adenoids is an example.

One way to compare levels and appropriateness of services is to study regional variations in rates for services or procedures. Age standardized rates are used to allow for comparisons of populations of different sizes and age composition. A large variation in rates suggests a lack of agreement about the most appropriate care, differences in diagnostic coding practices, and/or that some inappropriate care may be occurring.

May Not Require Hospitalization (MNRH)

In the case of hospitalization, large differences in admission rates – overall and for specific causes – suggest that there are factors other than rates of illness that are influencing decisions about when to treat children as outpatients and when to admit them to hospitals. One measure that has been developed is a group of diagnoses and procedures that "may not require hospitalization" (MNRH). MNRH cases are those where patient characteristics usually mean that care could be provided on an outpatient basis.

According to this measure, 5,355 pediatric cases – 16% of in-patient cases and 8% of hospital days – were classified as MNRH in 1996/97. This does not mean that all children falling in the MNRH category could have been treated on an outpatient basis, or that outpatient services exist to provide an alternative. However, MNRH data such as that shown in Table 22 can help identify opportunities for reducing pediatric admissions.

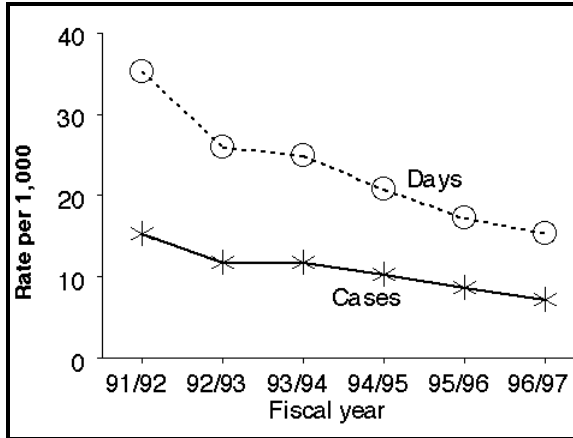
Table 22 Hospitalization Rates, Cases that May Not Require Hospitalization (MNRH), Children Age 0 to 14, Health Regions, B.C., 1996/97

Health Region	MNRH Cases	Rate per 1,000
East Kootenay	248	15.1
West Kootenay	149	9.2
North Okanagan	186	7.9
South Okanagan	239	5.9
Thompson	288	10.5
Fraser Valley	374	7.1
South Fraser Valley	561	4.8
Simon Fraser	441	7.1
Coast Garibaldi	125	8.3
Central Vanc Island	352	7.6
Upper Island	206	7.8
Cariboo	136	7.9
North West	203	8.6
Peace Liard	173	10.4
Northern Interior	396	13.0
Vancouver	345	4.7
Burnaby	146	5.4
North Shore	169	5.7
Richmond	123	4.3
Capital	477	8.7
Unspecified	18	
British Columbia	5,355	7.2
Highest region		15.1
Lowest region		4.3

Source: Age Standardized Utilization Rates, version 2.2. Information and Analysis Branch, B.C. Ministry of Health.

Provision of data and discussion of appropriate rates can have a positive impact on utilization. Due, in part, to increased discussion and awareness, utilization rates for MNRH cases have been falling over the past six years (Figure 60).

Figure 60 Hospitalization Rates, Cases that May Not Require Hospitalization, Children Age 0 to 14, B.C., 1991/92-1996/97



Source: Age Standardized Utilization Rates, version 2.2. Information and Analysis Branch, B.C. Ministry of Health.

May Not Require Hospitalization

"May not require hospitalization" (MNRH) is a classification developed by the Canadian Institute for Health Information. MNRH is used to describe cases in which the combination of diagnosis, procedure, and age usually mean that care can be provided properly on a non in-patient basis. Examples are tonsillectomies, sprains and strains, croup, and sore throat.

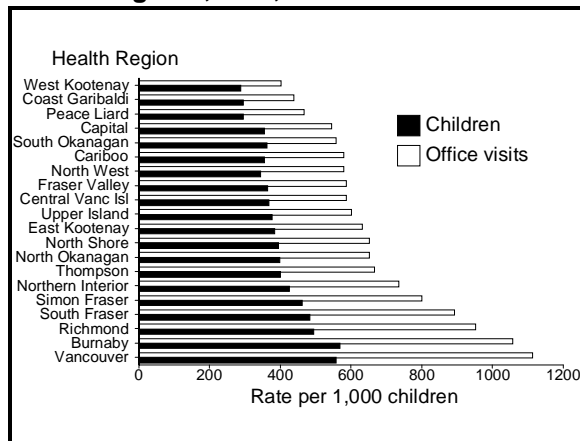
MNRH prompts a review of in-patient cases to identify opportunities for reducing hospital admission by providing more care in outpatient settings.

Physician Office Visits

In the discussion of antibiotic resistance, we saw that upper respiratory infections and otitis media were the leading causes of children's visits to their family doctors.

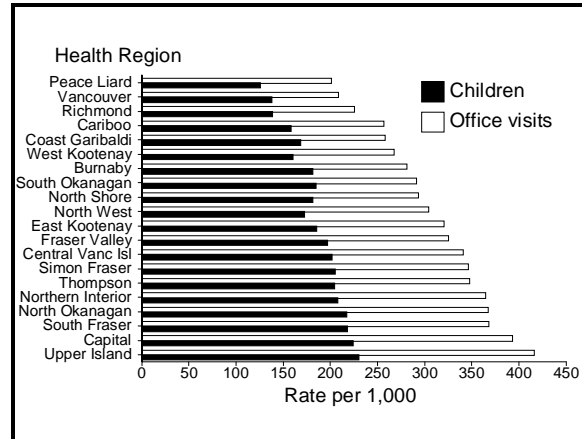
Around the province, there is a considerable variation in rates for which children visit their doctors for these conditions. Based on Medical Services Plan statistics, children in Vancouver and the lower mainland have the highest office visit rates for respiratory infections (Figure 61). For otitis media, Upper Island and Capital regions have the highest rates (Figure 62).

Figure 61 Physician Office Visits for Upper Respiratory Infections, Children Age 0 to 14, Health Regions, B.C., 1996



Age standardized rates per 1,000 population for physician office visits, acute upper respiratory tract infections (ICD9 codes 460-465). Children: Patients age 0 to 14 receiving MSP services for this diagnosis; each child is counted only once. Office visits: MSP services for this diagnosis; each child may have received more than one service. Provincial total: 314,973 children, 551,527 office visits. Source: Medical Services Plan. Prepared by Clinical Support Unit, Community Health.

Figure 62 Physician Office Visits for Otitis Media, Children Age 0 to 14, Health Regions, B.C., 1996



Age standardized rates per 1,000 population for physician office visits, otitis media (ICD9 381-382). Children: Patients age 0 to 14 receiving MSP services for this diagnosis; each child is counted only once. Office visits: MSP services for this diagnosis; each child may have received more than one service. Provincial total: 141,919 children, 238,279 office visits. Source: Medical Services Plan. Prepared by Clinical Support Unit, Community Health.

There are also large regional differences in the treatments children receive for these common conditions. Myringotomy, a surgical treatment for recurrent otitis media, is an example.

Myringotomy

Infection of the middle ear (otitis media) is among the most common childhood infections.

Often, fluid persists in the middle ear cavity after the acute infection has subsided (this is called effusion). This can result in decreased hearing in the affected ear, and can predispose to repeated bouts of pain and infection. It has been argued that prolonged periods of hearing impairment can lead to delays in language development and learning disabilities.

Myringotomy, a surgical incision in the ear drum to drain residual fluid and the insertion of small tubes, can prevent the reaccumulation of fluid in the middle ear. This procedure is one of the commonest surgeries performed on children in British Columbia.

The question remains, is it effective in reducing the frequency of recurrent infections and in preventing learning disabilities associated with hearing loss?

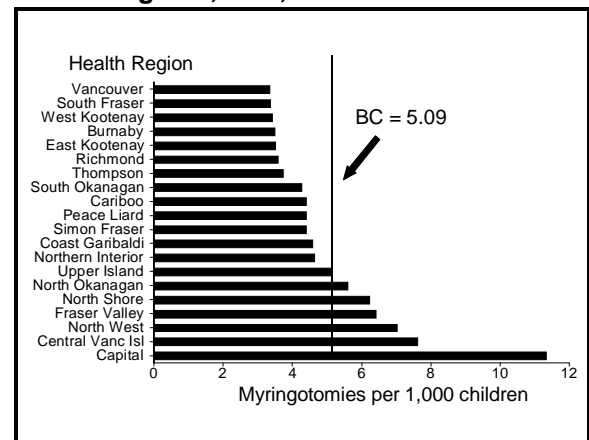
When assessing the effectiveness of any surgical procedure, the outcomes must be compared with what happens if no treatment is given. A European study (Zielhuis, Rach, & Broek, 1989; Zielhuis, Rach, Bosch, & Broek, 1990) reviewed the rates of middle ear effusions in a large cohort of Dutch children, with the following results:

- Between 18 months and six years of age, between 15% and 20% of children will have middle ear effusions. This drops to 2.5% by the age of 8.
- 50% of the affected ears resolve spontaneously after three months, and only 5% last a year or more.

Given the high rate of spontaneous remission, the most appropriate organization of health services for this very common problem should include a period of "watchful waiting", with repeated measurement of hearing to identify those children most at risk for the consequences of learning disability. This would ensure that only children who would benefit from surgery receive it.

Within the province, there is a three-fold variation in the rate of myringotomy (Figure 63 and Table 23). Variations also occur in other jurisdictions. For example, a six-fold variation has been reported among district health councils in Ontario (To, Coyte, Feldman, Dick, & Tran, 1996).

Figure 63 Hospitalizations for Myringotomy, Children Age 0 to 14, Health Regions, B.C., 1996



Age standardized rates per 1,000 for myringotomy (Surgical Short List 035), acute, rehab, and day surgery care levels, 1996/97. Source: Age Standardized Utilization Rates, version 2.2. Information and Analysis Branch, B.C. Ministry of Health, 1997.

Since outcome evidence suggests that this procedure should be reserved for children with persistent hearing lost, these variations in surgical rates suggest that some children may be receiving unnecessary surgery for a condition that may resolve spontaneously.

Table 23 Myringotomy Rates, Children Age 0 to 14, Health Regions, B.C., 1996/97

Health Region	Cases	Rate per 1,000
East Kootenay	55	3.5
West Kootenay	53	3.4
North Okanagan	127	5.6
South Okanagan	167	4.3
Thompson	100	3.7
Fraser Valley	344	6.4
South Fraser Valley	403	3.4
Simon Fraser	281	4.4
Coast Garibaldi	70	4.6
Central Vanc Island	351	7.6
Upper Island	130	5.1
Cariboo	72	4.4
North West	168	7.0
Peace Liard	74	4.4
Northern Interior	141	4.6
Vancouver	243	3.3
Burnaby	94	3.5
North Shore	187	6.2
Richmond	99	3.6
Capital	621	11.3
Unspecified	16	
British Columbia	3,796	5.1
Highest region		11.3
Lowest region		3.3

Hospital cases and age standardized rates for myringotomy (Surgical Short List 035), inpatient and day surgery, 1996/97. Source: Age Standardized Utilization Rates, version 2.2 Information and Analysis Branch, B.C. Ministry of Health.

Tonsillectomy

It was once common to remove children's tonsils and adenoids. Large research trials have failed to demonstrate clinical benefit from widespread use of these procedures. Today, in recognition of the risks, costs, and limited benefits, tonsillectomy and adenoidectomy are done less often.

Tonsillectomy and/or adenoidectomy may be recommended if specific criteria are met, such as frequent severe strep or ear infections or enlarged tonsils or adenoids that cause severe breathing difficulty or sleep disturbance.

Although less common than in the past, tonsillectomy remains one of the most common operations performed on children. Over 3,700 tonsillectomies were performed in 1996/97.

The wide variation in rates across the province (Table 24) indicates that there is still lack of agreement about the effectiveness of tonsillectomies, and suggests that some unnecessary procedures may be occurring. Physicians need to agree on who benefits from procedures such as myringotomy and tonsillectomy.

Table 24 Tonsillectomy Rates, Children Age 0 to 14, Health Regions, B.C., 1996/97

Health Region	Cases	Rate per 1,000
East Kootenay	220	13.2
West Kootenay	88	5.4
North Okanagan	124	5.2
South Okanagan	169	4.2
Thompson	128	4.6
Fraser Valley	253	4.8
South Fraser Valley	451	3.9
Simon Fraser	260	4.2
Coast Garibaldi	65	4.3
Central Vanc Island	156	3.3
Upper Island	151	5.7
Cariboo	142	8.3
North West	172	7.2
Peace Liard	105	6.3
Northern Interior	284	9.2
Vancouver	240	3.4
Burnaby	98	3.7
North Shore	123	4.1
Richmond	59	2.1
Capital	279	5.1
Unspecified	9	
British Columbia	3,576	4.8
Highest region		13.2
Lowest region		2.1

Hospital cases and age standardized rates for tonsillectomy and adenoidectomy (Surgical Short List 045-047), inpatient and day surgery, 1996/97. Source: Age Standardized Utilization Rates, version 2.2 Information and Analysis Branch, B.C. Ministry of Health.

Recommended Action:

- *Continue to develop practice guidelines and encourage less reliance on surgery to treat common childhood illnesses.*

Challenges in Appropriate Care

It is not easy to ensure that we are providing the right services to the right children, at the right time and place, and with the right provider. As shown in the previous pages, for many services we lack appropriateness criteria or methods for applying them.

Making good decisions about which services to provide and where and how to provide them will require input from researchers, health service providers and their clients, parents and others who provide care for children, local health authorities, ministry representatives, and the public. As recommended in the 1996 Provincial Health Officer's Annual Report, all stakeholders should work together to:

- Recommend child health programs and practices.
- Monitor outcomes and performance, including client satisfaction and coordination of services.
- Support regional health boards, community health councils, and community health services societies in providing high quality care.
- Provide a means by which to be accountable for health funds expended.
- Identify and reduce inappropriate and ineffective services, which will make resources available for a more effective health system and a healthier population.

For children's health services in particular, the organization of the health care system is critical. All children should have access to essential preventive and treatment services. We must pay more attention to the role of parents and other caregivers – the front-line providers of children's health care. Caregivers should be knowledgeable about child growth and development, common childhood diseases, when and how to access the health services system, and what to expect.

Recommended Actions:

- ***Provide parents and caregivers with information about child growth and development, common childhood diseases, when and how to access the health services system, and what to expect.***
- ***Improve information systems to provide better information about utilization, quality, and outcomes of health services for children.***
- ***Set targets for the proportion of health resources that will be allocated to evaluation and quality improvement.***

Aboriginal Children

7

On most measures of health, Aboriginal children do not fare as well as others. For Aboriginal children to have an equal opportunity to survive, grow, and develop, actions must be taken to improve the health and social conditions of Aboriginal communities, so that they are able to provide a safe and healthy environment for children, before and after birth.

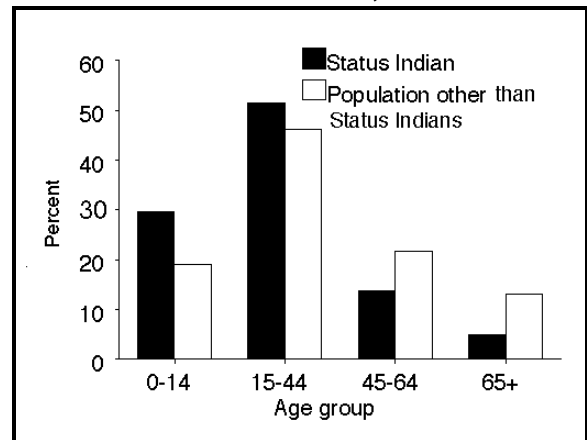
About 5% of British Columbia's children – 35,260 children age 0 to 14 – are Status Indian.

The Status Indian population is much "younger" than is the province overall. Children make up 30% of the Status Indian population, compared to 19% for all British Columbia (Figure 64). In Aboriginal communities, the needs of children, youth, and young families will continue to be an important focus for health and social services, while other communities pay increasing attention to an aging population.

Traditionally, caring for Aboriginal children was a communal responsibility. Over the past two centuries, Aboriginal peoples have experienced major social change and change of cultural identity. As a result, their ability to provide a safe and healthy environment for children has been jeopardized.

On many measures, Aboriginal children's level of health is below that of others and similar to children living in developing countries (Health Canada, 1995; Aboriginal Nurses Association of Canada, 1996;). However, Aboriginal children have made significant health gains in recent years, and many Aboriginal communities have begun to make improvements in the conditions that affect their health.

Figure 64 Population Distribution, Status Indian and Total B.C., 1996



Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Aboriginal Children

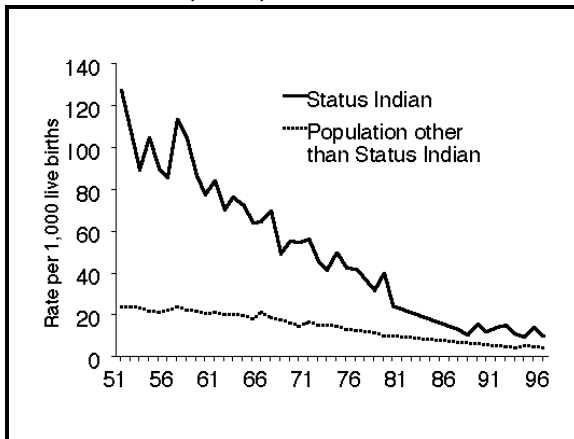
Aboriginal children include Indian children (Status and non-Status), Inuit children, and Metis children. Because Status Indians have recognition in Canadian law, their status is recorded in certain health databases. Thus, much of the data about the health of Aboriginal children are based on the Status Indian population. The available data will not necessarily reflect the health status of all Aboriginal children in all communities. For example, there may be important differences between children living on or off-reserve.

Health Status of Aboriginal Children

Numerous reports have documented the fact that the health status of Aboriginal children is significantly poorer than their non-Aboriginal counterparts (for some examples, see Canadian Institute of Child Health, 1994; Health Canada, 1995; B.C. Vital Statistics Agency, 1997; and previous Provincial Health Officer's Annual Reports). On average, Aboriginal children are less likely to survive and less likely to achieve healthy growth and development. While this lower level of health remains unacceptable, there has been some progress in narrowing the health status gap between Aboriginal and non-Aboriginal children.

In the 1950s, one in every ten Status Indian babies died during infancy – a rate that was five times the provincial average. Since then, the Status Indian infant mortality rate has dropped dramatically (Figure 65).

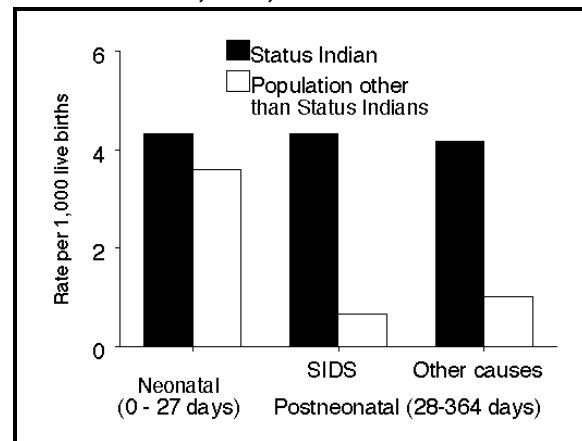
Figure 65 Infant Mortality Rates, Status Indian and Population other than Status Indians, B.C., 1951-1996



Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

For Status Indian babies, mortality in the first month of life is now approaching the low rate experienced by the total population. A gap remains in postneonatal deaths, those that occur between one month and one year of age. The major contributors to higher death rates among Status Indian infants are Sudden Infant Death Syndrome (Figure 66), pneumonia, and influenza.

Figure 66 Infant Mortality Rates, Status Indian and Population other than Status Indians, B.C., 1991-1996

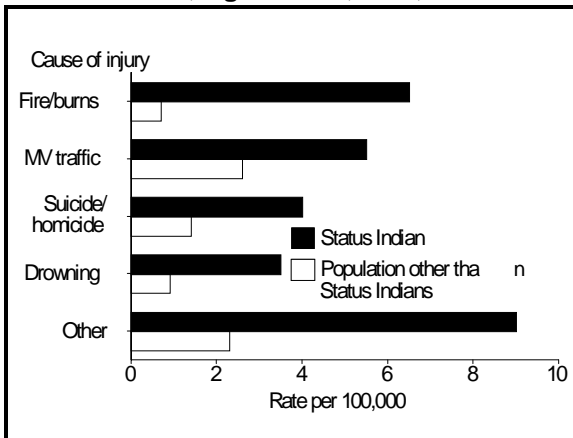


Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

The generally poor health outcomes among Status Indian infants are caused by a combination of factors, including poor nutrition and health of pregnant women, higher rates of alcohol and drug abuse, and higher rates of poverty. The decline in neonatal mortality may indicate improvement in mothers' health, but to a large extent reflects better nursing and medical care before, during, and immediately after birth (Health Canada, 1995). The high death rate for infants between one month and one year of age shows that improvements are needed, if Status Indian babies are to survive the first year of life at rates equal to the total population.

After infancy, Status Indian children continue to die at higher rates from all causes of death, particularly accidents and violence (Figure 67). As with infant deaths, high childhood death rates reflect a combination of lifestyle and environmental factors. Substandard housing and lack of fire protection services may contribute to house fire deaths; attitudes about alcohol and seatbelt usage contribute to high rates of motor vehicle injuries; children in fishing communities may have greater exposure to water-related accidents, and so on.

Figure 67 Injury Death Rates by Cause, Status Indians and Population other than Status Indians, Age 0 to 14, B.C., 1991-1996

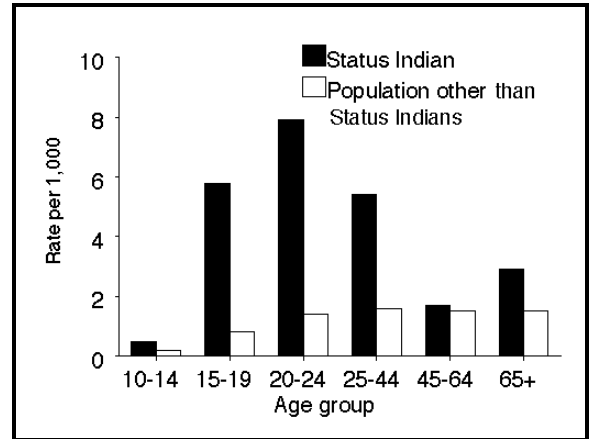


Deaths due to external causes (ICD9 E800-E999), per 100,000 population age 0 to 14. Source: B.C. Vital Statistics Agency. (1997). Analysis of Status Indians in British Columbia: Updated Report, 1991-1996, Table 14 and Appendix 1.

Status Indian suicide rates are very high, especially among youth and young adults - more than six times the rate of the non-Native population (Figure 68). These gaps apply to both males and females.

A high rate of suicide is generally regarded as a reaction to suffering and despair. Youth suicide is an outcome that reflects society's inability to help children develop coping skills, a sense of identity, and self-esteem.

Figure 68 Suicide Death Rates by Age Group, Status Indian and Population other than Status Indians, B.C., 1991-1996

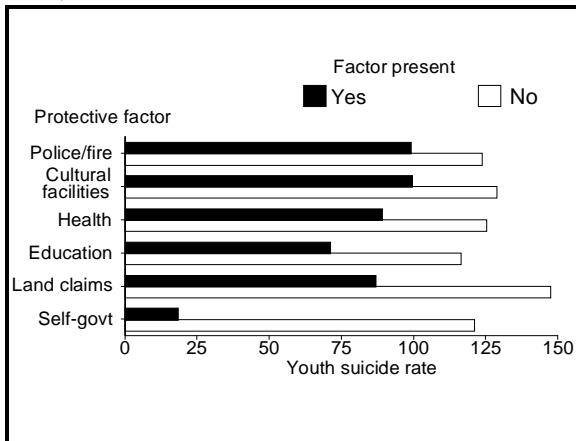


Source: B.C. Vital Statistics Agency, Ministry of Health. Unpublished tables.

Aboriginal communities are not identical, and not all Aboriginal communities experience high youth suicide rates. A study is in progress to determine what factors influence suicide rates and what factors help to protect youth from taking their own lives.

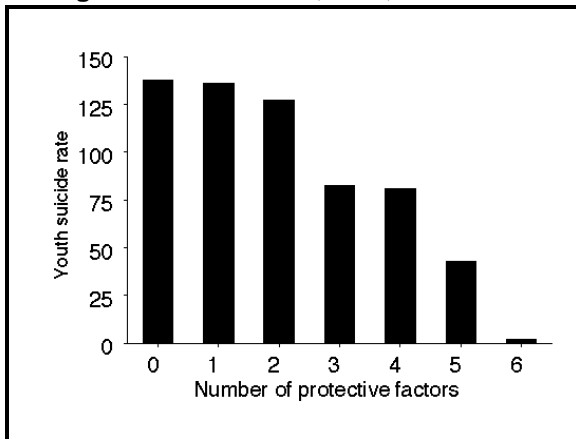
Preliminary results suggest that youth suicide rates are lower for communities that have achieved self-governance, are engaged in land claims negotiations, have cultural facilities, and have control over local health and social services such as health care, education, police, and fire (Figure 69) (Chandler & Lalonde, 1998). When all six of these "cultural reconstruction" factors were present in a community, the youth suicide rate fell to zero in the study period (Figure 70). This fits with what we know about the factors that influence health - individuals and communities are healthier when they are empowered and have a sense of control over their lives and their destinies.

Figure 69 Youth Suicide Rates by Cultural Continuity Factors, Aboriginal Communities, B.C., 1987-1992



Source: Chandler, M.J., & Lalonde, C.E. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry*, 35(2), 193-221.

Figure 70 Youth Suicide Rates by Number of Cultural Continuity Factors, Aboriginal Communities, B.C., 1987-1992



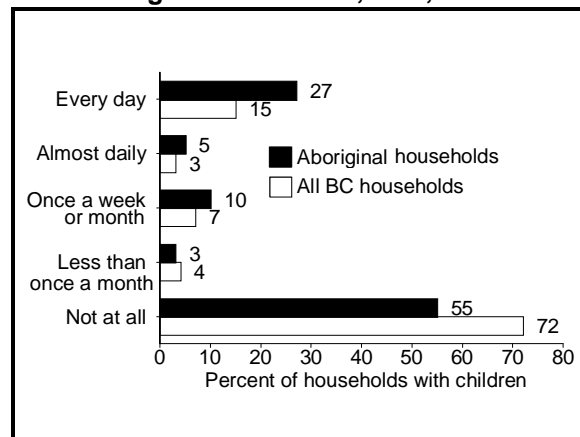
The six cultural factors measured in this study include self-governance, land claims negotiation, cultural facilities (as defined by the band), and local control over education, health services, and police/fire services. Source: Chandler, M.J., & Lalonde, C.E. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry*, 35(2), 193-221.

Smoking

Exposure to tobacco smoke threatens a child's health in several ways. Babies born to mothers who smoked during pregnancy have lower birthweights and a greater risk of Sudden Infant Death Syndrome than those whose mothers did not smoke. Children exposed to second hand smoke have higher rates of colds, coughs, asthma, and other respiratory infections. Children who see their parents and other role models smoking are more likely to take up smoking themselves, putting themselves at risk of lung cancer and other health problems later in life.

Aboriginal children are more likely to be exposed to smoke in the home than are other children. In one-third (32%) of Aboriginal households with children, there is daily or nearly daily exposure to secondhand smoke (Figure 71).

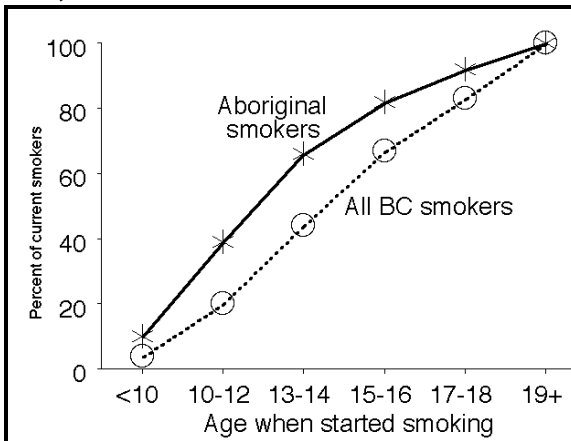
Figure 71 Exposure to Environmental Tobacco Smoke (ETS), Households with Children Age 11 and Under, B.C., 1997



Source: Heart and Stroke Foundation of B.C. and Yukon. *Tobacco Use in BC 1997*.

Aboriginal people begin smoking at a younger age: almost 40% of Aboriginal smokers began smoking before the age of 13, compared to 20% of all smokers in the province (Figure 72).

Figure 72 Age When Started Smoking, Current Smokers Age 12 and Older, B.C., 1997



Source: Heart and Stroke Foundation of B.C. and Yukon. *Tobacco Use in BC 1997*.

Major efforts are under way to reduce the use of tobacco in British Columbia. Education programs, cessation services, and community awareness activities aimed at Aboriginal youth will assist Aboriginal communities to bring down their high rates of smoking.

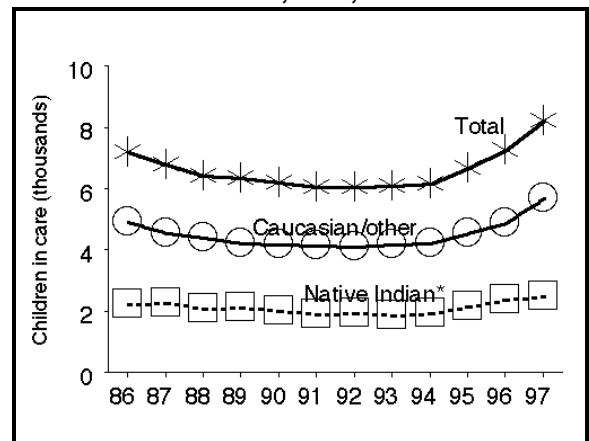
Note: Information about Aboriginal children is provided in several sections of this report, for example, under Sudden Infant Death Syndrome (pages 125-127) and Dental Health (pages 163-166). Additional page references are listed under "Aboriginal health" in the Index at the back of the report.

Aboriginal Children-in-Care

In 1997, there were approximately 2,500 Aboriginal children-in-care. About one-third of these children lived on reserve, and two-thirds lived off-reserve.

About one-third of all children-in-care are Aboriginal, a pattern that has remained consistent over the past decade (Figure 73).

Figure 73 Children-in-Care, Native Indian and Caucasian/Other, B.C., 1986-1997



* Mother or father Native Indian, as recorded in the Ministry of Social Services database (1986-1996). In 1997, terms and definitions were changed from "Native Indian" to "Aboriginal". "Caucasian/other" includes unspecified. Figures are as of March 31 each year. Source: B.C. Ministry for Children and Families.

This high rate of children-in-care reflects the historical disadvantages experienced by Aboriginal communities. Poverty, unemployment, lack of education, inadequate housing, and substance abuse all contribute to family disruption. Residential schools led to generations growing up without opportunities to develop parenting skills. As a result, a significant number of families are unable to care for their children.

In recent years, the importance of preserving cultural identity and involving Aboriginal communities in the child welfare process has been recognized. Aboriginal communities are assuming more responsibility and legal authority for children. Currently, ten First Nations agencies have been delegated to deliver child protection services in British Columbia. Two additional agencies will receive delegated authority early in 1998. These twelve agencies represent about one-third of the Status Indians on reserve in British Columbia. Of the 197 Bands, about two-thirds have assumed responsibility for child protection services or are in the planning or pre-planning stages.

Further Improvements in Child Health

If we aim to have Aboriginal children achieve equality on all measures of health and well-being, action must be taken to improve the living and working conditions of Aboriginal communities, so that they are able to provide a safe and healthy environment for children before and after birth. This will involve supporting Aboriginal people to achieve self-determination and a collective sense of control over their futures.

Recommended Actions:

- *Promote efforts to reduce poverty and improve living conditions in Aboriginal communities.*
- *Support efforts by Aboriginal people to achieve self-governance.*
- *Support programs and services that focus on the development of self-esteem, coping skills, and healthy behaviours.*

Disease and Injury Prevention

8

We have the knowledge to prevent – or reduce the impact of – many of the diseases and health problems that children experience. Helping mothers to have healthy pregnancies, creating smoke-free and injury-free environments, and ensuring that children receive immunizations are actions that would greatly reduce the level of illness.

Many diseases and health problems can be prevented, at least to some extent.

This chapter deals with some of the specific diseases and conditions that children experience and for which effective prevention or early intervention strategies are available.

Included in this chapter are:

- The major causes of death among children, which include birth defects and injuries.
- Serious diseases and conditions that can have a major impact on children's lives, such as fetal alcohol syndrome and cancer.
- Diseases and conditions that are very common among children, such as respiratory infections, allergies, and dental caries.
- Infectious diseases, many of which are preventable through the use of vaccines or other protective measures.

Congenital Anomalies

Congenital anomalies are physical defects of various types that exist at the time of birth. Folic acid – one of the B vitamins – reduces the risk of neural tube and certain other birth defects. Increasing the consumption of folic acid – through adequate diet, vitamin supplements, and fortification of food supplies – would be a major step towards preventing neural tube defects and other congenital anomalies.

Congenital anomalies are physical defects that exist at the time of birth. Congenital anomalies – also called birth defects, malformations, or structural anomalies – may be inherited or may be caused during gestation.

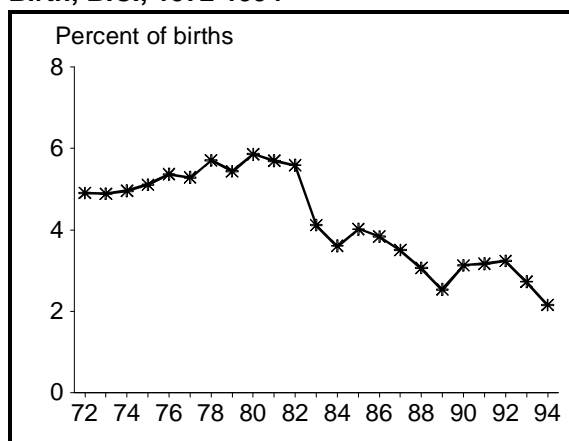
In developed countries, an estimated 3% of babies have congenital anomalies that are evident at birth. This rate doubles in the first year of life to 6%, as anomalies not previously diagnosed become apparent (Van Allen, 1997).

Congenital anomalies include defects of many different types and levels of severity. Some examples are congenital heart defects, congenital dislocated hip, cleft palate, chromosomal anomalies such as Down syndrome, or conditions such as Fetal Alcohol Syndrome. As a group, congenital anomalies are a major cause of infant death, accounting for about one-third of infant deaths (70) and one out of eight stillbirths (37) in 1996. Anomalies are also responsible for about 10% of admissions to neonatal intensive care units.

Health Status Registry

In British Columbia, the Health Status Registry contains information about the number and type of congenital anomalies in the population. Based on cases reported to the Registry since 1972, about 4% of infants have congenital anomalies (Figure 74). Registry data are known to be incomplete, due to the nature of congenital anomalies and the methods used to collect data.

Figure 74 Congenital Anomalies by Year of Birth, B.C., 1972-1994



Congenital anomalies (cases) as a percent of total births (live births plus stillbirths). Source: Congenital anomalies from Health Status Registry: Congenital Anomalies, Genetic Defects, Selected Disabilities, British Columbia to 1994, Division of Vital Statistics, May 1996.

Until 1992, the Registry relied on voluntary reporting. Information about anomalies that are very severe or easily detected at birth is the most complete. Less evident anomalies may not have been registered unless the infant or child had contact with one of the Registry's reporting sources, such as Children's Hospital or a local health unit.

Although a 1992 amendment to the *Health Act* now provides for mandatory reporting, counts for recent years may be low, because some anomalies may not yet have been recognized in children who were born in recent years. In addition, with the advent of ultrasound and other prenatal testing techniques, many types of anomalies can be detected early in pregnancy, and the mother may choose to abort the fetus. Pregnancies terminated prior to 20 weeks gestation or 500 grams weight are not included in Registry statistics.

At this time, improvements are being made to the Health Status Registry. Efforts are being made to increase the number of reporting sources, to renew inactive sources, and to check for any duplications in cases reported. A new computer system is also being developed, which will provide for more flexible reporting. This will result in more complete and consistent data about congenital anomalies in British Columbia. Reports are expected to be available from the revised information system some time in 1998.

Neural Tube Defects (NTDs)

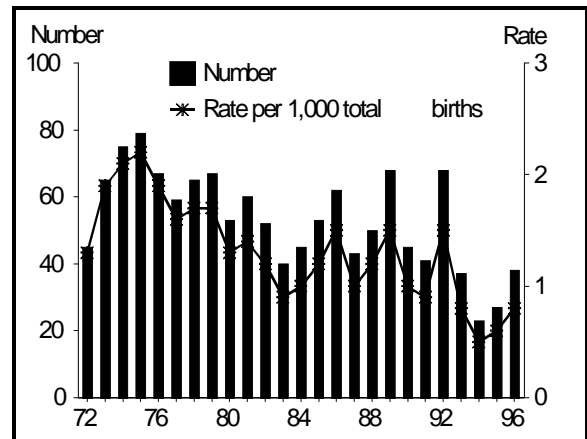
Neural tube defects (NTDs) are serious birth defects caused by failure in development of the tissues that form and envelop the brain and spinal column. The critical time for this development is the third and fourth week after conception.

The rate of neural tube defects is an indicator of the health of a population. During periods of famine, war, economic depression, and limited access to prenatal care, the rate of NTDs goes up. Conversely, during periods of prosperity, the rate of NTDs goes down.

Women at high risk for NTDs include those who have had a previous NTD (or a relative with an NTD), who have a low dietary intake of folate (one of the B vitamins), and who have been chronically undernourished. Certain ethnic groups, such as Sikh and Aboriginal women, are much more likely to have NTDs than other groups. However, NTDs occur among all groups of pregnant women.

Approximately one in every 1,000 births is affected with an NTD. In British Columbia, the rate of NTDs has been declining, based on cases reported to the Health Status Registry (Figure 75). However, Registry data underestimate the actual rate, due to some of the limitations noted above.

Figure 75 Neural Tube Defects, B.C., 1972-1996



Number of neural tube defect anomalies reported to the Health Status Registry, per 1,000 total births (live births plus stillbirths). The rate fluctuates from year to year, in part due to the small number of anomalies. Since 1972, the annual number of neural tube defects has ranged from a low of 23 (in 1994) to a high of 79 (in 1975). Source: Health Status Registry, B.C. Vital Statistics Agency. Unpublished tables.

Prevention

Until very recently, congenital anomalies were viewed by the medical profession and the public as a fact of life, about which nothing could be done. While not all birth defects can be prevented, scientific research is improving our understanding of the causes of birth defects and actions that can be taken to minimize risk.

Recent studies have clearly demonstrated that the risk of certain congenital anomalies can be greatly reduced if women take sufficient amounts of folic acid around the time of conception and during critical periods of the baby's development.

In the early 1990s, studies showed that folic acid helps to prevent neural tube defects. More recently, evidence is beginning to emerge showing that folic acid can also reduce the occurrence of other congenital anomalies, including certain heart defects, abnormalities of the urinary tract and limbs, and cleft lip and palate. Other beneficial effects of folic acid supplementation may include reducing the rate of premature and low birthweight births, increasing the likelihood of survival for twin pregnancies, and possibly improving fertility. Folic acid may also reduce the risk of heart disease, stroke, and cancer later in life (Hall & Solehdin, in press).

To be effective, folic acid must be taken a month before conception and during the early weeks of pregnancy. During this time period, women may not plan to become pregnant or may not know or suspect that they are pregnant.

In British Columbia, there has been a concerted effort to inform the medical profession and the public about the benefits and timing of taking folic acid (Seymour, Van Allen, and the B.C. Folic Acid Task Force, 1997).

A study done in the B.C Provincial Medical Genetics clinics showed that British Columbia women appear to be more informed about folic acid than elsewhere (Van Allen, Karuah, & Scott, unpublished). However, in this study, only half (56%) of women who were planning a pregnancy were taking folic acid. After pregnancy was diagnosed, almost all women (98%) were taking prenatal or multi-vitamins, indicating that women who know they are pregnant are motivated to take folic acid.

Based on these data, it appears that the message about increasing folic acid intake prior to conception has not yet reached and been acted on by all women.

Actions to Increase Folic Acid Consumption

Although more research is needed to understand the exact mechanism by which folic acid works, it is clear that folic acid is important for normal fetal growth and development. It could also have a major impact on public health in reducing deaths due to heart disease, stroke, and certain cancers (Rimm et al., 1998).

Folic acid consumption can be increased in at least three ways (Hall & Solehdin, in press):

- *Diet.* Individuals can be encouraged to increase their consumption of foods that contain folic acid in its natural form. To accomplish this, people need information, sufficient income, and access to foods such as green leafy vegetables, fresh fruits, and dried beans.
- *Supplementation.* Taking folic acid supplements is another way to increase folic acid levels. To be effective, physicians and the public need to be aware of the need for supplementation. Supplements need to be affordable and consumed prior to conception.

- *Fortification.* Folic acid can be added to foods during processing. Enriching the flour supply and other grain products is the most cost-effective means of reaching the entire population, including all socio-economic and ethnic groups. Health Canada has proposed a requirement that flour (and grain products labelled as "enriched") be fortified with 150 micrograms of folic acid per 100 grams of flour. This will raise folic acid levels, but not to levels needed to fully prevent congenital anomalies. Further amendments are scheduled, which will raise the level of fortification that manufacturers may add to their products on a voluntary basis.

Folic Acid

Folic acid, called folate or folacin in its natural form, is one of the B vitamins. The name folic comes from the Latin word *folium*, which means leaf.

Fortified breakfast cereals are a good source of folic acid. Other good sources are fresh green vegetables, some fresh fruits, dried beans, and flour and pasta enriched with folic acid. Folic acid is also available in tablet form and is contained in most multivitamin supplements.

A combined program of general public education, programs focusing on high risk groups, and food fortification is the recommended approach. In addition, further enhancements to the Health Status Registry would improve the ability to track the occurrence of NTDs and other congenital anomalies in the population.

Recommended Actions:

- *Cooperate with federal authorities to ensure that the grain supply is enriched with folic acid to a level that will provide health benefits.*
- *Continue to follow scientific developments, such as the pilot study currently under way in Newfoundland. Press for a higher level of fortification of the grain chain, if evidence indicates that this is effective in preventing neural tube and other birth defects and is safe for the general population.*
- *Develop a professional and public education campaign to prevent neural tube defects. Encourage folic acid as a daily supplement for all women who may become pregnant (0.5 mg for most women, 4 mg for women who have had a child with a neural tube defect).*
- *Ensure that all women who may become pregnant have information and sufficient income to provide for an adequate diet and vitamin/mineral supplements, where appropriate.*
- *Include congenital anomalies from medically terminated pregnancies in provincial and national birth defects registries, to provide more complete information about the occurrence of congenital anomalies in the population.*

Fetal Alcohol Syndrome

Fetal alcohol syndrome is one of the most common known causes of birth defects, mental retardation, and developmental delays. FAS and related conditions can be prevented, by helping women to reduce the amount of alcohol they consume during pregnancy.

The health of a newborn baby depends, in part, on whether the mother smoked and the amount of alcohol and/or other drugs consumed during pregnancy. Researchers do not know exactly how much alcohol it takes to damage a growing fetus. However, there are many problems known to be related to alcohol use during pregnancy.

Fetal alcohol syndrome (FAS) is a set of physical and behavioural characteristics that include growth restriction, neurological damage, and certain facial features. FAS characteristics often result in physical handicaps, mental retardation, disabilities, or secondary problems such as trouble with the law or other adaptive problems (Streissguth, 1996).

Children may also be born with "partial FAS"; such children may have significant behavioural problems or learning disabilities. Other problems associated with alcohol use during pregnancy include low birthweight, death within the first month of life, and alcohol withdrawal in the newborn.

Extent of the Problem

Because they involve a complex set of abnormalities, FAS and related disorders can be difficult to diagnose. When cases are identified, they are not always reported to the Health Status Registry (see pages 114-115), nor is FAS recognized in routinely-produced Registry statistics.

For these reasons, it is not easy to obtain an accurate estimate of the number of children born with these conditions. At present, there are no Canadian data on the frequency of FAS.

Estimates are that for every thousand babies born, one or two have the full features of FAS (Stratton, Howe, & Battaglia, 1996; Scott, 1996; Canadian Task Force on the Periodic Health Exam, 1994), while an additional four or five children may have significant long-term disabilities related to partial FAS (Health Canada, 1996; B.C. Ministry of Health, 1993).

For British Columbia, these estimates mean that between 200 and 300 infants may be born affected by alcohol each year. Rates reported to the B.C. Health Status Registry are much lower, however. For the period 1953-1982, the Health Status Registry (then the Health Surveillance Registry) reported an incidence of 0.37 per 1,000 live births for the total population and 0.66 for Status Indian births (Wong, 1983).

The problems of FAS and related conditions are particularly serious in some urban areas and in some remote or Aboriginal communities. A study in one Aboriginal community found that one in every five or six children (3 to 18 years of age) had the features of FAS or partial FAS. Two-thirds of the children in the study were mentally retarded (Robinson, Conry, & Conry, 1987).

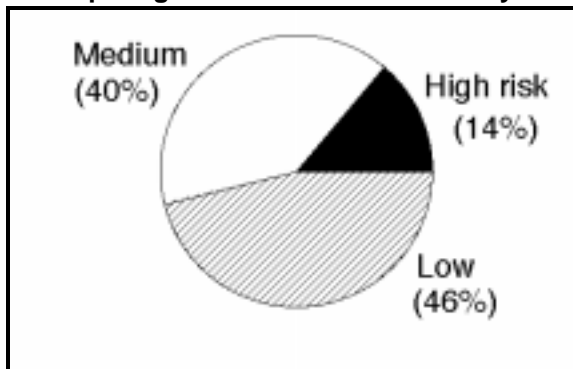
Alcohol Use during Pregnancy

Most (84%) British Columbia mothers do not drink at all during pregnancy. One mother in six (16%), however, reported having consumed alcohol for part or all of their pregnancy, based on the National Longitudinal Survey of Children and Youth.

Other studies have looked at alcohol use during pregnancy in specific areas of the province. A review of public health records in two districts of Vancouver found that one out of every three newborns had been exposed to alcohol and/or drugs (Loock, Kinnis, Selwood, Robinson, Segal, Blatherwick, & Armstrong, 1993).

Another study, on Vancouver Island, was based on all women who were pregnant during a one-year period. Physicians were asked to use a screening tool to identify women who were at risk for excessive alcohol consumption during pregnancy. Of the 1,721 women screened, 14% were at significant risk for excessive drinking (Armstrong, Loock, & Robinson, 1994) (Figure 76).

Figure 76 Risk for Excessive Alcohol Consumption during Pregnancy, Women Participating in Vancouver Island Study



Source: Armstrong, Loock, & Robinson, 1994. Identification by primary care physicians of "at-risk" drinking during pregnancy: A population-based study. Preliminary report of analyses and results. Unpublished.

In the Vancouver Island study, alcohol use was much higher among Aboriginal women – more than half (54%) were at significant risk. It is important to note that women at risk for excessive drinking came from all social and economic groups. Among disadvantaged women (those with the lowest income and educational levels), Aboriginal women were at no greater risk than the rest of the population.

What We Are Doing about FAS

Fetal alcohol syndrome has been recognized as an important problem for a number of years, and several initiatives have been undertaken to address the problem. Some of these initiatives include:

- *A strategic plan.* In 1993 and 1994, an inter-ministry and community forum developed a strategic plan for the province. In 1995, coordination offices were established to support province-wide prevention and early intervention initiatives for women and children. This work is carried out under the auspices of the Children's and Women's Health Centre of British Columbia.
- *Advocacy groups.* Advocacy organizations, such as the B.C. FAS Resource Society and the FAS/E Support Network of B.C., have been developed.
- *Services for women at risk.* A variety of services targeted to women at high risk have been established. These include Pregnancy Outreach Programs around the province and Sheway in Vancouver (for more information about prenatal outreach programs, see pages 88-89).

- *Education campaigns.* A wide range of education and awareness initiatives have been undertaken. These have been targeted to various groups and settings, including the public, individuals at high risk, students, and a variety of professionals, including health, education, social services, and justice.
- *Pilot projects.* As part of its Building Blocks strategy, the Ministry for Children and Families is sponsoring several community-based pilot projects. Some communities (Port Hardy, Burns Lake) are focusing on the prevention of fetal alcohol syndrome.

Where Do We Need to Go?

Because it is directly related to alcohol consumption during pregnancy, fetal alcohol syndrome is entirely preventable. Yet, despite the introduction of some excellent services, we are still failing to reach the majority of the women at risk at a time early enough to influence the outcome, preferably prior to conception, but certainly early in pregnancy.

Basic solutions to this problem rest with many of the broader determinants of health defined in earlier sections of this report. The understanding of these determinants will help to frame services in a way that supports and empowers families and women in particular, rather than creating an environment of blame.

There is evidence that counselling is effective in helping women to decrease the amount of drinking during pregnancy (Canadian Task Force on the Periodic Health Exam, 1994). The study on Vancouver Island showed that of the 5,166 women delivering babies, fewer than half (47%) were screened for alcohol use by their physician at any time during their pregnancy, despite an intensive effort to ensure that each physician and each pregnant woman participated in the screening program (Armstrong, Loock, & Robinson, 1994).

Pregnancy Outreach Programs are also effective in helping women reduce alcohol intake. While these programs provide support to a significant number of women at risk, only about 60% of the 1,767, women identified as potentially needing their services actually access and complete the program, based on 1995/96 program statistics for the province.

Attention must be paid to the early identification of children affected by exposure to alcohol during pregnancy and to improved methods for treating the children and supporting their families. This support needs to be provided throughout the life cycle of the affected individuals, since there are unique challenges and needs with each age.

Many FAS and drug-affected babies end up in foster care. Their needs at birth can be very demanding. Hospital discharge planning protocols should be in place in all regions to ensure that caregivers are adequately prepared for this task.

Continued research and evaluation needs to occur in this field. We have inadequate methods for monitoring the extent of the problem and whether we are having an impact over time. At the same time, we need to develop more effective prevention, promotion, and treatment programs prior to pregnancy, during pregnancy, and for the children exposed. The effectiveness of these services must be demonstrated through proper evaluation. Sweden has been successful in decreasing FAS rates (Olegard, 1988); successful prevention programs in Sweden and other jurisdictions should be explored.

Recommended Actions:

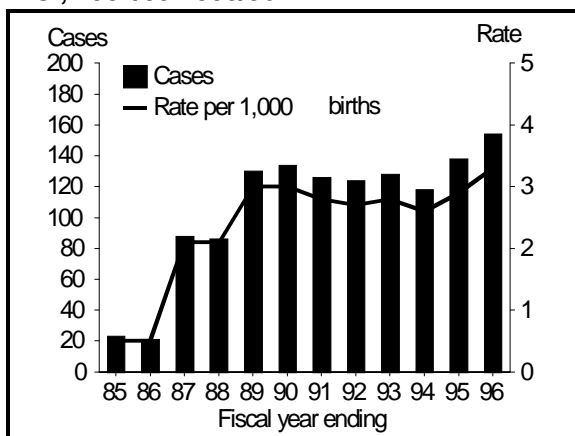
- *Develop better methods for diagnosing and tracking the occurrence of fetal alcohol syndrome, among the total population and among groups at higher risk. The Health Status Registry and reporting sources should work together to improve provincial information on this condition.*
- *Develop substance abuse education and prevention programs, for students at all levels and the general public.*
- *Ensure that prenatal outreach programs are available and accessible to women at risk.*
- *Improve the ability of nurses, physicians, teachers, social workers, and other professionals to accurately identify drinking patterns and drinking problems.*
- *Develop, monitor, and report on physician performance in identifying and counselling for alcohol use in pregnancy.*
- *Develop hospital discharge planning protocols for FAS and drug-affected babies.*

Drug-Affected Babies

Some babies are born with problems caused by their mother's use of drugs, usually cocaine or heroin. Drug-affected babies and their families require special care and support. As a society, we need to tackle the issue of preventing substance abuse.

Everyone is concerned when babies are born impaired by exposure to drugs. Based on hospital records, about 150 drug-affected babies were born in 1995/96 - a six-fold increase over the past decade. Most of the increase occurred in the late 1980s (Figure 77).

Figure 77 Drug-Affected Babies, B.C., 1984/85-1995/96



Source: Morbidity Database, Information and Analysis Branch, B.C. Ministry of Health.

Many of these babies face a lifetime of social, physical, and psychological disability. They have high rates of congenital anomalies and Sudden Infant Death Syndrome. As young children they may be developmentally delayed, in school they may suffer from learning disabilities and behavioural problems, and as adults they may live with unemployment and poor social skills.

Drug-Affected Babies

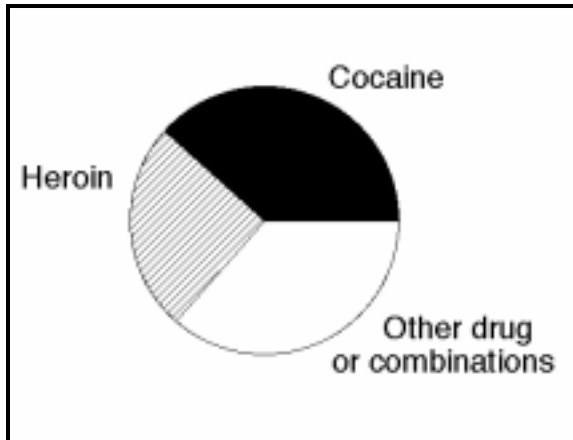
Figures 77 and 78 and Table 25 are based on data from the Morbidity Database, which contains information about cases admitted to Canadian hospitals.

In this analysis, "drug-affected babies" refers to newborns with diagnostic codes ICD9 760.7 (noxious influences affecting fetus) or 779.5 (drug withdrawal syndrome in newborn). "Mothers of drug-affected babies" refers to women admitted for maternity services who also had diagnostic code ICD9 648.3 (drug dependence complicating pregnancy or childbirth) or 655.5 (suspected damage to the fetus from drugs).

Who are the mothers of these drug-affected babies? Addicted women are likely to be single, living in deprived circumstances, or living with men who are also drug users. Commonly, they survive with violence and sexual abuse. Many are from families of inter-generational drug use or from dysfunctional families with a history of sexual and physical abuse. They typically suffer from social and emotional problems including hopelessness, depression, and anxiety. For women who abuse drugs, the drug itself is only one aspect of a much larger set of complex and interwoven issues.

Rates of drug-affected babies are about four times higher in Status Indian mothers than in the rest of the British Columbia population. Most mothers of drug-affected babies are under age 30. The drugs involved are primarily cocaine (38%) and heroin (25%) (Figure 78).

Figure 78 Type of Drug Involved, Mothers of Drug-Affected Babies, 1994/95 and 1995/96



Source: Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health.

Geographically, illicit drug deaths and other problems associated with injection drug use are concentrated in the city of Vancouver. As a result, Vancouver has the highest rate of drug-affected babies, and has about one-third of the cases in the province. Other regions with high rates are Thompson, Northern Interior, and Burnaby (Table 25).

Table 25 Drug-Affected Babies by Health Region, Five-Year Average 1991/92-1995/96

Health Region	Annual Average	
	Cases	Rate per 1,000
East Kootenay	1	0.7
West Kootenay	<1	0.5
North Okanagan	1	1.1
South Okanagan	3	1.2
Thompson	8	5.2
Fraser Valley	6	1.9
South Fraser Valley	22	2.9
Simon Fraser	9	2.2
Coast Garibaldi	<1	0.4
Central Vanc Island	5	2.0
Upper Island	1	1.0
Cariboo	1	1.3
North West	2	1.2
Peace Liard	1	1.1
Northern Interior	7	3.6
Vancouver	45	8.0
Burnaby	7	3.4
North Shore	3	1.4
Richmond	2	1.3
Capital	6	1.7
Unspecified	1	
British Columbia	131	2.8
Highest region	45	8.0
Lowest region	<1	0.4

Rate is per 1,000 births in the specified region.

Source: Morbidity Database, Information and Analysis Branch, B.C. Ministry of Health.

Clearly, drug-affected babies are a public health issue with broad significance (British Columbia Task Force into Illicit Narcotic Overdose Deaths in British Columbia, 1994). The financial cost of health care alone is substantial. On average, this condition was associated with 8 days of hospital stay for newborns and 20 days for those hospitalized after the newborn period, including a high amount of intensive care.

Reasons for using drugs are as varied as the women themselves, but ultimately come down to one thing: the women believe the substance will make them feel better. They do not start to abuse drugs when they become pregnant. Rather, they already have a history of using drugs when they become pregnant.

Although many people struggle with their own inner anger, judgement, and hostility towards these mothers, it is now generally agreed that chemical dependency is an illness, not a defect in morals or willpower (Villarreal, McKinney, & Quackenbush, 1991; Sparks, 1993). Addicted persons require treatment, not punishment.

Treatment is tremendously challenging, since these babies may come into life lacking the normal abilities for responding to their caregivers. They may give a message with their body language that they want to be left alone. The parents may also lack the ability to build reciprocal relationships, reflecting the parenting models they themselves experienced as children. The parents may be conscious only of their own needs and may show little sensitivity to their infant's attempts to communicate.

Yet it is important to avoid making broad generalizations, since each family and each child has its own individual strengths and weaknesses. Drug-affected children and their families should be offered opportunities to build self-esteem and self-worth, to develop feelings of competence and self-efficacy, and to establish a sense of cultural pride.

While good treatment is necessary, it is not enough. As a society, we need to work on preventing the tragedy of drug-affected babies. This will mean building communities that provide stability and support for pregnant women, dealing with poverty and under-education, and providing life-sustaining jobs.

Recommended Actions:

- ***Encourage community-wide solutions to the problems of alcohol and drug abuse.***
- ***Provide special treatment and recovery programs for women dealing with drug abuse.***
- ***Provide integrated care for drug-affected babies and their families.***

**Provincial Health Officer's Report
on Injection Drug Use**

For the past decade, British Columbia has had an epidemic of deaths and disease related to injection drug use.

A special report on injection drug use is currently being prepared, and will be available at a later date.

Sudden Infant Death Syndrome (SIDS)

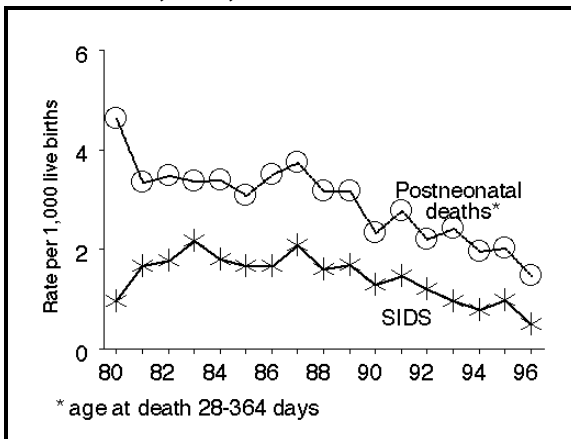
About one in every 1,000 babies dies from Sudden Infant Death Syndrome (SIDS). The cause of SIDS is not known precisely, but risk can be reduced by having babies sleep on their backs, not smoking during pregnancy or around babies, and breastfeeding.

When a baby less than one year old dies suddenly, and no other reason for the death can be found, the cause of death is classified as Sudden Infant Death Syndrome (SIDS).

SIDS is most likely to occur to babies between 2 and 4 months of age (Amershi, 1995). Between 1991 and 1995, there were about 50 SIDS deaths in British Columbia each year, making SIDS the leading cause of death for babies in the postneonatal period (between one month and one year of age).

Over the past decade, SIDS rates have been declining, as have rates for other causes of death in this age group. SIDS occurs to about one in every 1,000 babies and accounts for almost half of postneonatal deaths (Figure 79).

Figure 79 SIDS and Postneonatal Death Rates, B.C., 1980-1996



Source: B.C. Vital Statistics Agency, Ministry of Health. SIDS deaths from unpublished tables. Postneonatal death rate (all causes of death) from Vital Statistics Annual Report 1996, Table 4.

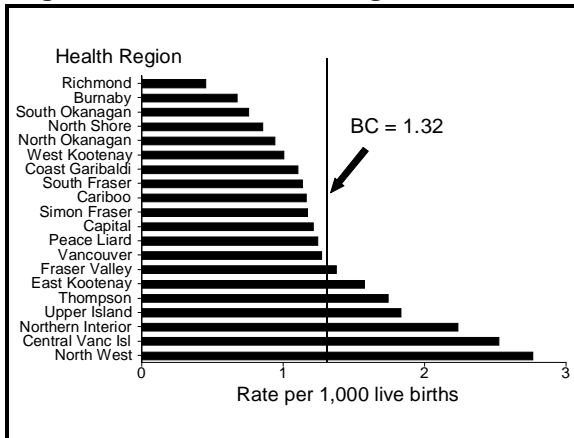
Causes of SIDS

The exact cause of SIDS is not known. However, SIDS occurs more often among babies with certain characteristics and under certain conditions. Based on data from British Columbia and other jurisdictions, babies at higher risk include:

- Babies put to sleep on their stomach or sides, particularly when these sleeping positions are combined with other risk factors such as low birthweight (Oyen et al., 1997).
- Babies exposed to tobacco smoke during pregnancy or after birth.
- Babies born prematurely and with low birthweight.
- Babies with infections, such as mild respiratory tract infections.
- Babies who have been overheated as a result of excessive wrapping.
- Babies born to families who have experienced a previous SIDS death.
- Babies born to young or single mothers, or mothers with a lower level of education and income.

Within British Columbia, there is a six-fold difference in SIDS rates, with the North West, Northern Interior, and Vancouver Island regions having the highest rates (Figure 80). In general, regions with high SIDS rates are those with many Aboriginal births and with lower rankings on social and economic indicators (see Regional Differences, pages 13-14).

Figure 80 SIDS Death Rates, Health Regions, B.C., Annual Average, 1985-1996

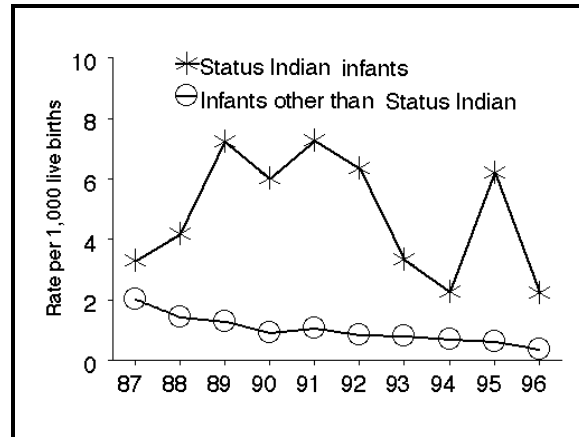


Source: B.C. Vital Statistics Agency, B.C. Ministry of Health. SIDS deaths (under age 1) from unpublished tables, November 1997. Live births from Division of Vital Statistics Annual Reports.

The SIDS rate among Status Indian babies is about five times the rate of the total population (Figure 81). Although Status Indians account for fewer than 7% of births in British Columbia, about one-third of SIDS deaths are to Status Indian babies.

Note: In Figures 79-81, the number of SIDS deaths may be under-counted, for 1996 in particular. Some deaths, which were under investigation when these statistics were prepared, may later be coded as SIDS.

Figure 81 SIDS Death Rates, Status Indian Infants and Other BC Infants, BC, 1987-1996



Note: For Status Indian infants in particular, SIDS rates fluctuate from year to year due to the small number of events; between 1991 and 1996, an average of 14 SIDS deaths occurred to Status Indians each year. Source: B.C. Vital Statistics Agency, B.C. Ministry of Health. Unpublished tables. Prepared by Non-Communicable Disease Epidemiology, B.C. Ministry of Health.

Reducing the Risk of SIDS

Actions to reduce the risk of SIDS include:

- Putting babies to sleep on their backs. In the early 1990s, several countries (Norway, Sweden, Denmark, Australia, New Zealand, U.S.A.) made recommendations regarding sleeping position for babies and introduced public education campaigns. After these initiatives, rates of prone sleeping (sleeping on the stomach) and SIDS were reduced (Guntheroth, 1995; Oyen et al., 1997).
- Not smoking during pregnancy or around babies.
- Breastfeeding, if possible.

As well as helping to reduce the risk of SIDS, smoke-free environments and breastfeeding will reduce babies' risk of other illnesses, such as respiratory infections.

- Adequate nutrition and prenatal care to achieve term pregnancy and normal birthweight.
- Keeping babies at a comfortable temperature – not too hot or too cold.
- Providing a firm sleeping surface.

To reduce SIDS rates, it will also be important to improve the lives of mothers and children in general. This will require tackling the underlying causes such as poverty, low education, unintended pregnancy, and skills to make healthy choices about smoking and substance abuse.

Support

There is still much to be learned about the causes and prevention of SIDS. Even when every known action is taken to reduce risk, a SIDS death may still occur. When a death happens, parents, families, and caregivers require support in dealing with this loss. While it is necessary for the appropriate authorities to investigate sudden unexpected deaths, it is important for the investigation staff to be sensitive to the grieving families' feelings at this time.

Recommended Actions:

- ***Increase awareness among parents, caregivers, and professionals of actions that are known to reduce the risk of SIDS, including having a healthy baby sleep on its back, not smoking during pregnancy or around a baby, and breastfeeding.***
- ***Target SIDS awareness efforts to parents and caregivers of babies in high risk groups, Aboriginal babies in particular.***
- ***Continue to follow SIDS trends, scientific research, and prevention programs in this and other jurisdictions.***
- ***Provide follow-up and support to families experiencing a SIDS death.***

Respiratory Disease

Respiratory disease, which includes the common cold, bronchiolitis, asthma, pneumonia, and croup, are the most common illnesses for which children receive medical care. Eliminating exposure to tobacco smoke is a key preventive activity.

The term *respiratory disease* encompasses a number of diseases and conditions. Some respiratory diseases are of short duration ("acute"), while others are longer term ("chronic").

Almost every child in British Columbia will experience one or two minor respiratory tract infections over the course of a year. Among children, respiratory diseases are a frequent cause of school absences, visits to emergency rooms and doctors' offices, and admissions to hospital. In severe cases, croup, bronchiolitis, or pneumonia can cause death, particularly in children with underlying health problems.

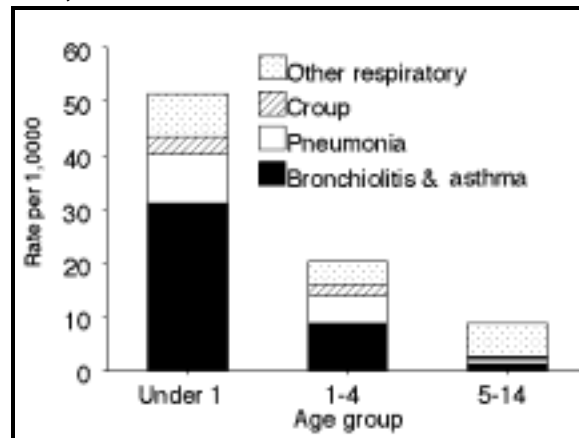
Acute Respiratory Infections

Acute respiratory infections are the most common illnesses suffered by children. The common cold, croup, bronchiolitis, and pneumonia are examples.

- *Common cold.* Colds are infections of the upper respiratory tract, which includes the nose, sinuses, and throat. Colds are very common in the younger age groups, with home and school being important transmission sites. Because colds are caused by many types of viruses, developing a single vaccine is not feasible. No method has yet been found to eliminate or cure the common cold.

- *Croup.* Croup, a less common infection of the larynx and large airways, is a childhood disease characterized by a barking cough and difficult breathing. Several viruses may cause croup, and antibiotics are of no proven benefit in treating this disease.
- *Bronchiolitis.* Bronchiolitis, a viral infection of the small airways, has symptoms that are similar to asthma. Bronchiolitis is common in infants (Figure 82) and is the commonest single cause of hospital admission for infants throughout the developed world.

Figure 82 Respiratory Disease Hospitalizations, Children Age 0 to 14, B.C., 1996/97



Hospital cases, acute and rehabilitation care, for croup (Case Mix Group 116), pneumonia (CMGs 137, 138), bronchitis and asthma (CMGs 146, 147), and all other diseases of the respiratory system. Source: Hospital Comparative Reports, version 1.3, Information and Analysis Branch, B.C. Ministry of Health.

Unfortunately, only supportive care is available for bronchiolitis. Two vaccines are currently in the late stage of testing, but are not yet available. The death rate from bronchiolitis can be as high as 5% in children who have underlying problems, particularly prematurity or congenital heart disease.

- *Pneumonia*. Pneumonia is an infection of the lungs caused by many different types of bacteria, viruses, and chemical irritants. In children, most cases of pneumonia are caused by viruses.

While most respiratory infections are attributed to viruses, very little is known about the exact organisms that infect children. Rhinoviruses are most closely associated with colds, parainfluenza viruses with croup, respiratory syncytial (RS) virus with bronchiolitis, and various viruses, including RS virus and parainfluenza viruses, with pneumonia (Coultas & Samat, 1992).

In most cases, however, it is not possible to identify the specific cause of a child's infection without a laboratory test. Investigations are usually more detailed in children admitted to hospital, but even then cultures are frequently negative. Thus, treatment must be guided by a best guess approach (for more information about treatment of respiratory infections, see the Health Services chapter, pages 96-99).

Table 26 shows the organisms identified in the laboratory of B.C. Children's Hospital. Some infections such as mycoplasma and pertussis are found all year round, while others, particularly respiratory syncytial virus, parainfluenza, and influenza are largely confined to the winter months. Common viruses often show a three to five-year cycle, as the immunity level of the population varies. For instance, there were no cases of influenza B in 1995, but there were 40 in the first six months of 1997.

Table 26 Major Organisms Isolated from Children with Pneumonia, B.C. Children's Hospital, 1995-1997

Agent	1995	1996	1997*
RSV**	177	211	189
Parainfluenza 1	11	12	1
Parainfluenza 3	24	44	44
Influenza A	5	23	9
Influenza B	0	6	40
Adenovirus	5	23	20
Mycoplasma	11	15	9
Pertussis	32	162	36
Tuberculosis	1	1	2

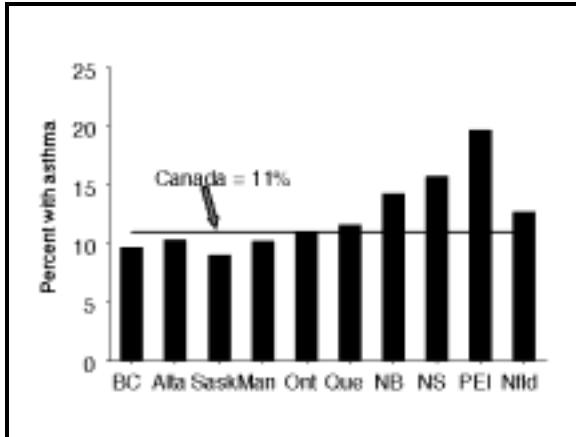
* January to July only. ** Respiratory syncytial virus. Source: Microbiology Laboratory, B.C. Children's Hospital.

Asthma

Children with asthma have inflamed airways that are very sensitive to things that do not bother other people. Some of the things that can "trigger" asthma include respiratory infections (such as a cold or the flu), cigarette smoke, wood smoke or other air pollution, dust mites, pet dander, cockroach allergen, home dampness and moulds, grasses, and pollen. Because many of these substances are inhaled from the air, asthma rates provide a measure of the health of the environment in which children spend most of their time.

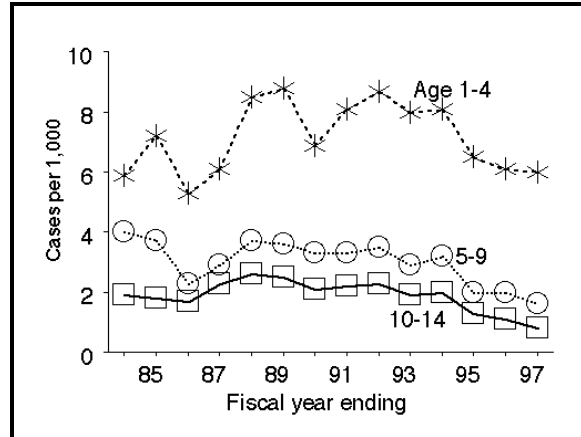
Asthma is a common condition and, depending on the definition used, affects between 5% and 10% of children in the developed world. According to their parents, about 10% of B.C. children aged 0 to 11 suffer from asthma (Figure 83). Of children who have asthma, about half will show improvement or be free of asthma symptoms by adolescence or early adulthood.

Figure 83 Prevalence of Asthma among Children Age 0 to 11, by Province, 1994



Source: Prepared by the Centre for International Statistics at the Canadian Council on Social Development using Statistics Canada's National Longitudinal Survey of Children and Youth, 1994. In *Canadian Council on Social Development. K. Scott, Project Director/Writer (1997). The Progress of Canada's Children 1997 (p. 37). Ottawa, ON: Canadian Council on Social Development.*

Figure 84 Hospitalization Rates for Asthma, Children Age 0 to 14, B.C., 1983/84-1996/97



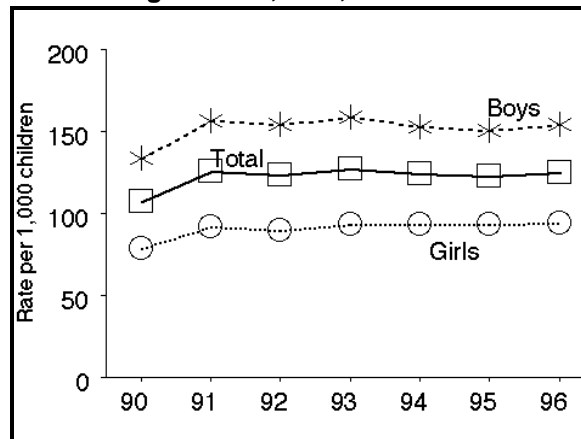
Source: Information and Analysis Branch, B.C. Ministry of Health. Data for 1983/84-1990/91 acquired from the Health Planning Database. Data for other years from Age Standardized Utilization Rates, version 2.2.

Is Childhood Asthma Increasing?

Recent attention has been paid to claims that the occurrence and severity of asthma are both increasing. However, time trends in childhood asthma rates are difficult to interpret due to changes in diagnostic practices and lack of standard methods for collecting data (Magnus & Jaakkola, 1997).

In British Columbia, although asthma is certainly a major cause of hospital admission in children, hospitalization rates are actually falling in all age groups (Figure 84). The average number of days in hospital has also fallen over this time period, as better outpatient treatments have been developed. Further, Medical Services Plan data shows no increase in physicians' billings for childhood asthma over the past seven years (Figure 85), and asthma deaths have continued to be rare among children age 0 to 14 – a total of 11 deaths since 1985. Hence, by all measures available, there is no evidence of an increasing asthma problem in British Columbia at this time.

Figure 85 MSP Services for Asthma, Children Age 0 to 14, B.C., 1990-1996



Medical claims to Medical Services Plan for services provided in an office or emergency room setting, with diagnosis recorded as asthma (ICD9 493). Excludes laboratory or diagnostic services. "Total" includes males, females, and gender not stated. Source: Medical Services Plan. Prepared by Information and Analysis, Information Management Group.

Across the province, there is a three-fold range in asthma hospitalization rates, with Vancouver, Thompson, and South Okanagan having the highest rates (Table 27). Asthma is also more common among boys and among Aboriginal children. The reasons for these geographic, gender, and ethnic differences are not entirely clear, but are likely related to variations in smoking rates, air quality, the accuracy of diagnosis and reporting, availability of medical care, and in physician practise.

At present, there is no known cure for asthma. However, asthma episodes can be prevented or minimized. Education of children with asthma and their parents is an important component of managing this condition (see Allergies, pages 160-162). Although the B.C. Lung Association has a school education program, they are only able to reach a small portion of the affected population. At present, there is no organized province-wide asthma education plan in place.

Cystic Fibrosis

The most common chronic respiratory disease affecting children in British Columbia is cystic fibrosis, a genetic disease that occurs in about one in 2,900 births (Canadian Task Force on the Periodic Health Exam, 1994). Approximately 150 children are registered at the clinic in B.C. Children's Hospital. Over the last twenty years, improvements in care have meant the current survival age is 30 to 32 years. Cystic fibrosis has now become as much an adult as a pediatric disease.

With cystic fibrosis, the lungs' ability to function deteriorates over time, and patients require increasing amounts of medical attention. By the time they are teenagers, cystic fibrosis patients use more hospital bed-days than teens with asthma, even though the affected population is much, much smaller.

Table 27 Hospitalizations for Asthma, Children Age 1 to 14, Health Regions, B.C., 1996/97

Health Region	Cases [1]	Rate per 1,000 [2]
East Kootenay	46	3.2
West Kootenay	51	3.5
North Okanagan	28	1.3
South Okanagan	130	3.6
Thompson	94	3.8
Fraser Valley	112	2.2
South Fraser Valley	219	2.0
Simon Fraser	127	2.1
Coast Garibaldi	35	2.4
Central Vanc Island	115	2.7
Upper Island	38	1.6
Cariboo	24	1.6
North West	43	1.9
Peace Liard	37	2.4
Northern Interior	92	3.2
Vancouver	267	3.9
Burnaby	42	1.6
North Shore	58	2.1
Richmond	46	1.8
Capital	164	3.2
Unspecified	7	
British Columbia	1,775	2.6
Highest region		3.9
Lowest region		1.3

Number of hospital cases with diagnosis of asthma (ICD9 493), acute and rehabilitation care and age standardized rate per 1,000 population age 1 to 14. Source: Morbidity Database. Data acquired from Age Standardized Utilization Rates, version 2.2, Information and Analysis Branch, B.C. Ministry of Health.

Other Respiratory Diseases of Childhood

Bronchopulmonary dysplasia (BPD) is the term used to describe serious lung injury suffered by children who receive respiratory support because they were born prematurely. The occurrence and severity of BPD has fallen over the last decade, in large part due to improvements in the medical care of premature babies.

Children with BPD require increased amounts of care during their first year of life, especially during the winter months. However, BPD is not a significant problem after infancy.

A small group of children around the province require special techniques to support their respiratory function. Currently, 8 children have a tracheostomy, while 14 more use some form of home ventilator. Individual children vary widely in their underlying conditions, but typical examples of respiratory problems are congenital abnormalities of the airway and neuromuscular diseases such as Duchenne's Muscular Dystrophy. Care for these children is organized by the B.C. Children's Hospital.

Prevention of Respiratory Disease

In terms of hospital bed use, emergency room visits, and school days missed, respiratory diseases have a major impact on the lives and health of British Columbia's children.

Fortunately, the death rate from respiratory disease is very low among children (nine deaths age 0 to 14 in 1996). It is unlikely that the current death rate can be significantly reduced, especially when it is considered that most of the children who die from respiratory disease have other significant, underlying medical problems.

Not all respiratory disease can be prevented. However, there are several actions that can be taken to reduce risk (Table 28).

Recommendations for actions in this area are aimed at reducing the burden of illness and cutting health care costs through effective care.

Eliminating exposure to tobacco smoke is perhaps the most important preventive activity. Children whose parents smoke have increased rates of pneumonia, asthma, and other respiratory infections. Yet, one in five B.C. households with young children have at least one adult who smokes in the home (see *Indoor Air*, pages 67-70).

Efforts should be made to inform parents about the importance of smoke-free environments for their children, as well as supporting smoking parents in their efforts at quitting. Health workers can assist by obtaining a history of tobacco smoke exposure during well-child exams as well as when they are treating a child with a respiratory illness. Breastfeeding also reduces the risk of respiratory infections. And, in some cases, asthma attacks can be minimized by eliminating exposure to pets, household dust, or other irritants.

Where prevention is not possible, efforts should be focused on education and management of respiratory disease to reduce the severity and economic burden of illness. Appropriate treatment of asthma can lessen the impact on daily lives, resulting in fewer school absences or hospital admissions. At-home care for children with chronic respiratory diseases can allow children to remain with their families, while reducing hospital costs.

Recommended Actions:

- ***Set goals to increase the proportion of children who are raised in non-smoking environments.***
- ***Develop ways to educate parents about prevention and treatment of common childhood illnesses, such as the connection between smoking and childhood respiratory disease.***
- ***Develop a coordinated childhood asthma management plan to help standardize care around the province.***
- ***Make greater use of at-home intravenous antibiotic programmes for selected cases of pneumonia and cystic fibrosis.***

Table 28 Successes and Further Actions to Reduce Respiratory Disease in Children

Disease	Status	Challenges/Actions
Common Cold	<ul style="list-style-type: none">• Very common in children. Multiple viral causes. Vaccines are not feasible, and antibiotics are not effective.	<ul style="list-style-type: none">• Educate parents about how to comfort and care for their child.
Croup	<ul style="list-style-type: none">• Caused by several viruses. Like the common cold, antibiotics are not effective.	<ul style="list-style-type: none">• Educate parents about how to comfort and care for their child.
Bronchiolitis	<ul style="list-style-type: none">• Viral infection. Common cause of hospitalization in infants. Deaths rates have been reduced significantly.	<ul style="list-style-type: none">• Provide care according to treatment guidelines.• Vaccines are under development.
Pneumonia	<ul style="list-style-type: none">• Caused by different types of viruses, bacteria, and chemical irritants.	
Asthma	<ul style="list-style-type: none">• Hospitalization rates have been declining, due in part to greater understanding of the problem and improvements in outpatient care.	<ul style="list-style-type: none">• Reduce exposure to environmental tobacco smoke (one in five households with young children have at least one adult who smokes in the home).• Control house dust mites, home dampness, and moulds.• Reduce exposure to pet dander.• Provide standardized care.• Educate children and their parents.
Cystic fibrosis	<ul style="list-style-type: none">• Survival rates have improved greatly, due to antibiotic therapy and nutritional support.• Screening and counselling are available to those at risk of carrying the cystic fibrosis gene.	<ul style="list-style-type: none">• Use at-home treatment where appropriate.
Bronchopulmonary dysplasia	<ul style="list-style-type: none">• Occurrence and severity has decreased, due to improvements in medical care of premature infants.	<ul style="list-style-type: none">• Prevent pre-term births, which involves addressing underlying problems such as poverty.

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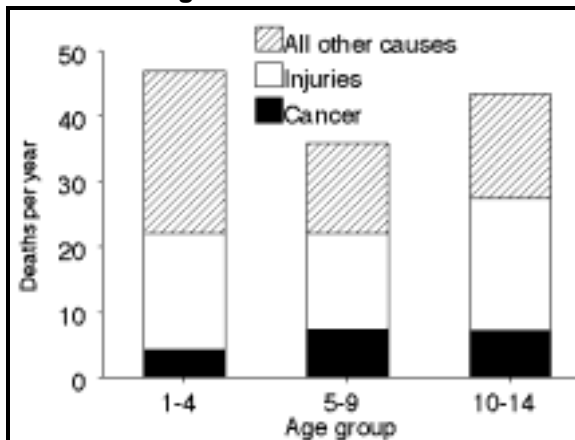
Cancer

About 107 British Columbia children age 0 to 14 get cancer and about 15 die from it each year. Due to improvements in diagnosis, treatment, and care, children with cancer have a much better chance of recovery than they did 20 or 30 years ago; about 78% are alive five years after diagnosis. The causes of childhood cancer are not well understood. There are, however, actions that can be taken during childhood to prevent the occurrence of cancer later in life.

Cancer is rare among children, with an incidence rate in British Columbia of approximately 150 cases per million children age 0 to 14, and a mortality rate of approximately 20 cancer deaths per million children in that age group. On average, about 107 children age 0 to 14 get cancer and about 15 die from it each year in British Columbia.

Although childhood cancer is not common, it is second to injuries as a cause of death in the 1 to 14 age group, a time when children are generally healthy (Figure 86).

Figure 86 Deaths due to Cancer and Other Causes, Children Age 1 to 14, B.C., Annual Average for the Period 1992-1996



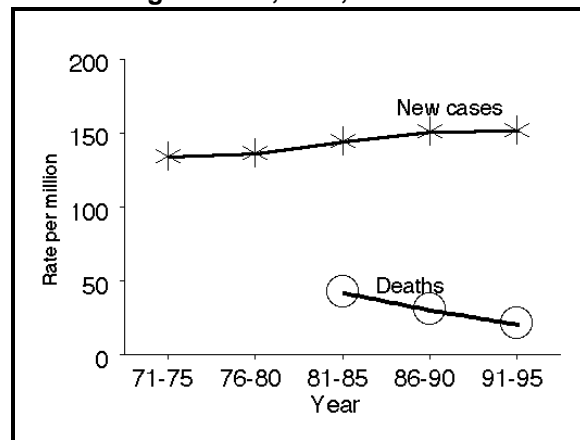
Deaths due to cancer (malignant neoplasms, ICD9 140-208), external causes (accidents and violence, ICD9 E800-E999), and all other causes. Source: B.C. Vital Statistics Agency. Unpublished tables.

Trends

The rate at which children develop cancer in British Columbia has been increasing in the last three decades (Figure 87). This is due to increasing rates of leukemia and brain tumours among children. The reasons for these increases are not well understood, but are probably due, at least in part, to improvements in reporting of these conditions.

In contrast, mortality from childhood cancer, particularly leukemia, has improved substantially, as treatment regimens have improved survival significantly during this period.

Figure 87 Cancer Rates, Children Age 0 to 14, B.C., 1971-1995

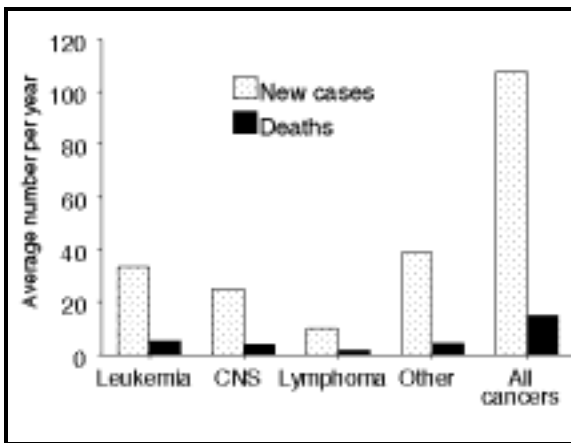


Source: British Columbia Cancer Registry, at the B.C. Cancer Agency. Unpublished data.

Types of Cancer

The types of cancer seen among children (Figure 88) are very different from those seen in adults. Among children, leukemia (cancer of the blood-forming cells) is the most common cancer, accounting for about one-third (31%) of new cases and one-third (33%) of cancer deaths. Cancer of the central nervous system (brain and spinal cord) is the next most frequent types, representing about 23% of new diagnoses and 27% of cancer deaths. Lymphomas (cancer of the lymph tissues) rank third in frequency, with 10% of new cases and 11% of cancer deaths in this age group.

Figure 88 Cancer Incidence and Mortality, Children Age 0 to 14, B.C., Annual Average for 5-Year Period 1991-1995



*CNS: Central nervous system (brain and spinal cord).
Source: British Columbia Cancer Registry, at the BC Cancer Agency. Unpublished data.*

Causes of Childhood Cancer

The causes of childhood cancer are not well understood and are difficult to study. A few causes are known. However, known causes account for a very small proportion of all cases.

One known cause is ionizing radiation, with the most common type of exposure being mothers' exposure to X-rays during pregnancy.

Genetics has a clear role in some rare childhood cancers such as retinoblastoma (a tumour of the retina, at the back of the eye) and Wilm's tumour (a tumour of the kidney).

There has been considerable study of the possible effects of agents such as chemicals in the diet or in the environment, infectious agents, and low-frequency electromagnetic fields. However, at this time, there is no conclusive evidence for the effect of these environmental agents.

Prevention

Until causes and risks factors for childhood cancers are better understood, there are few preventive actions to recommend.

There are, however, actions that can be taken during childhood to prevent the occurrence of cancer in later life. These include:

- Preventing children from starting to smoke, thus reducing risk of cancer of the lung and other smoking-related cancers.
- Reducing exposure of children to environmental tobacco smoke.
- Promoting a healthy diet and regular physical activity, which helps to prevent a number of common cancers.
- Reducing exposure to the sun, which helps to prevent skin cancer.
- Encouraging young people to adopt safe sexual practices, to prevent cancer of the cervix and other reproductive cancers.
- Screening for hepatitis B infection and early immunization, to prevent development of liver cancer.

Childhood Cancer Survival

There is a higher success rate in treating children with cancer than adults, due to successful treatment plans for the types of cancer that children develop.

Several of the childhood cancers now have a much better chance of recovery than they did 20 or 30 years ago. This is due to a combination of better diagnosis, better treatments, and improved supportive care. A very high proportion of children with cancer in British Columbia are treated according to international clinical treatment plans, and so receive excellent care.

In British Columbia, the one-year survival from childhood cancer is approaching 90%, and about 78% of children diagnosed with cancer are alive five years after diagnosis (Table 29). The chance of survival depends on the type of cancer and stage of its development when it is diagnosed.

Table 29 One, Three, and Five-Year Survival Rates for B.C. Children Age 0 to 14 Diagnosed with Cancer

	Survival Rate (Percent)		
	One-year	Three-year	Five-year
Leukemia			
1981-85	87.1	73.4	70.2
1986-90	90.3	86.9	80.7
1991-95	91.9	-	-
Lymphoma			
1981-85	90.7	87.0	81.5
1986-90	96.4	94.5	92.7
1991-95	*	-	-
CNS**			
1981-85	81.1	74.6	70.5
1986-90	80.0	77.1	73.3
1991-95	80.0	-	-
Other cancers			
1981-85	88.7	75.9	73.0
1986-90	87.0	79.1	74.6
1991-95	91.9	-	-
All cancers			
1981-85	86.5	76.3	72.6
1986-90	87.6	82.8	78.2
1991-95	89.2	-	-

* Numbers too small for reliable calculation.

** Central nervous system (brain and spinal cord).

Source: British Columbia Cancer Registry, at the BC Cancer Agency. Unpublished data.

Unintentional Injuries

Children are vulnerable to unintentional injuries of many types, including falls, burns and scalds, drowning, accidental poisoning, and traffic-related injuries. British Columbia's first Injury Prevention Plan, along with a newly-established Research Unit, are providing a focal point for prevention activities.

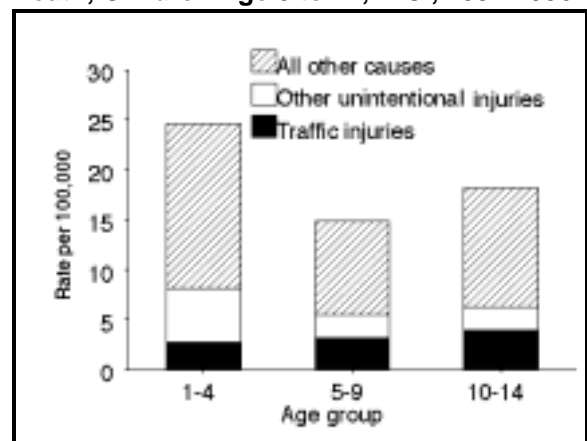
After the first year of life, more children die from unintentional injuries than from any other cause. Almost all of these injuries can be prevented, by understanding the circumstances that occur prior to an injury and developing effective ways to prevent them.

Injury patterns are closely related to the ages and stages of children's development:

- Infants learn to crawl, stand, and walk. As they gain mobility, strength, and coordination, they need protection from injuries caused by falls from furniture or nursery equipment, suffocation (usually from inhalation of food or formula), and accidental poisoning.
- Preschool children gain more independence. Their curiosity and mobility makes them vulnerable to many types of injuries, including pedestrian injuries, poisoning, fire and hot substances, and drowning.
- School-age children experience fewer injury deaths than do younger children and teens. Motor vehicle accidents pose the major threat in this age group. Non-fatal injuries are often caused by sports and other physical activities.

Although injury, death, and hospitalization rates have declined in recent years, the major causes and patterns by age and sex have remained fairly consistent. Traffic injuries are the leading cause of serious and fatal injuries in children of all ages (Figure 89).

Figure 89 Deaths due to Traffic Injuries, Other Injuries, and All Other Causes of Death, Children Age 0 to 14, B.C., 1992-1996



Source: B.C. Vital Statistics Agency. Unpublished tables. Acquired from the Office for Injury Prevention, B.C. Ministry of Health.

Injuries

Injuries can be classified into two major categories:

Unintentional injuries, such as injuries due to motor vehicle collisions, falls, drownings, burns, and poisoning.

Intentional injuries, which includes injuries due to abuse or neglect, family violence, suicide, and homicide.

While traffic injuries are the leading cause of injury death, falls are the most common type of injury for which children are admitted to hospital (Table 30).

Table 30 Leading Causes of Injuries (based on cases admitted to hospitals), Children Age 0 to 14, B.C., Annual Average for 5-Year Period 1992/93-1996/97

Age and Cause	Cases per year	Rate per 10,000
Age under 1		
Falls	95	20.1
Suffocation	34	2.7
Hot substances	27	5.7
Poisoning	20	4.2
Foreign body	13	2.8
Other injuries	44	9.3
Total	233	49.4
Age 1-4 years		
Falls	487	25.5
Poisoning	186	9.7
Hot substances	77	4.0
Struck by object	75	3.9
Foreign body	60	3.1
Other injuries	338	17.6
Total	1,221	64.0
Age 5-9		
Falls	835	34.5
Non-MV-bicycle	137	5.7
Struck by object	108	4.5
MV-occupant	69	2.8
MV-pedestrian	50	2.1
Other injuries	328	13.5
Total	1,527	63.0
Age 10-14		
Falls	707	29.4
Struck by object	209	8.7
Non MV-bicycle	155	6.5
MV-occupant	95	4.0
Off-road vehicle	59	2.5
Other injuries	512	21.3
Total	1,737	72.3

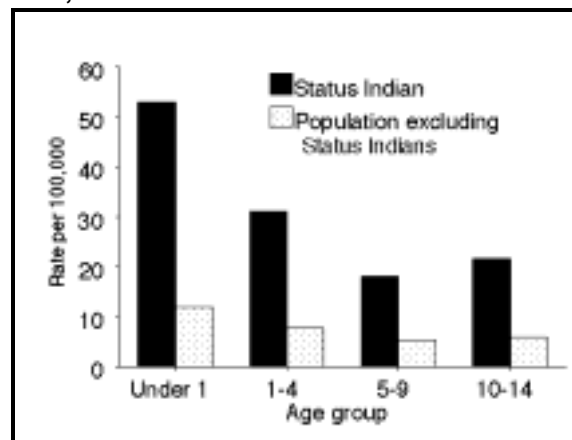
Source: Information and Analysis Branch, B.C. Ministry of Health. Data acquired from the Office for Injury Prevention, B.C. Ministry of Health.

For infants and preschool children, other important causes of injuries are burns and hot substances (usually scalds from hot tap water or beverages), suffocation/choking (either from choking on foods or aspiration of small objects such as earrings or other jewellery), and poisoning. Drowning and water-related injuries are few in number, eight deaths in the 0 to 14 age group in 1996, but many of these immersion injuries result in long-term disability.

Among school children (age 5 to 14), bicycle accidents and "struck by object" are important injury categories.

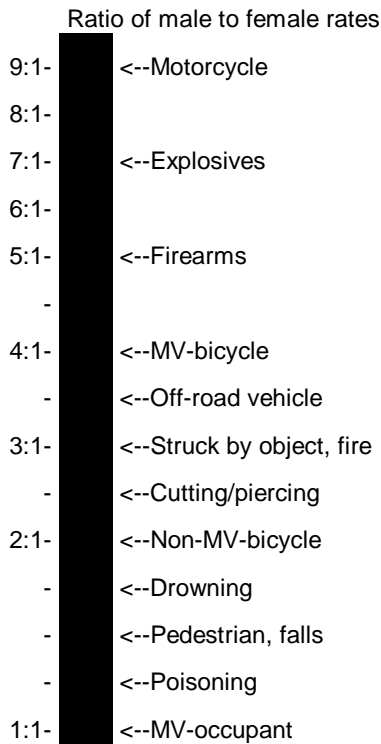
Boys are more likely to be injured than girls, in all age groups and for almost all types of injuries, particularly those caused by motorcycles, firearms and explosives, off-road vehicles, and the "struck by object" category (Table 31). Aboriginal children (Figure 90) and children who live in northern areas of the province are at greater risk of fatal injuries than are children in other groups and regions.

Figure 90 Deaths Due to Unintentional Injuries, Children Age 0 to 14, B.C., 1991-1996



Deaths due to external causes (E800-E999), excluding suicide and homicide. Source: B.C. Vital Statistics Agency. Unpublished tables. Data acquired from the Office for Injury Prevention, B.C. Ministry of Health.

Table 31 Male-Female Ratios, Injury Hospitalization Rates, Children Age 0 to 14, B.C., 1992/93-1996/97



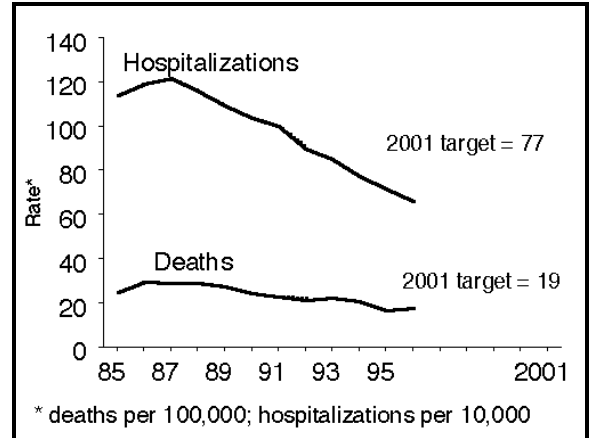
Source: LAN Accident Reporting System, version 2.34. Information and Analysis Branch, B.C. Ministry of Health. Obtained from Office for Injury Prevention.

Injury Prevention

In 1997, *BC - Injury Free*, an injury prevention plan for children and youth, was produced by the Minister's Injury Prevention Advisory Committee (1997). The Advisory Committee is made up of representatives from all sectors who may be able to make a difference in injury reduction. *BC - Injury Free* sets out goals, objectives, targets, and strategies for children and youth age 0 to 24.

Targets were developed on the basis of past trends and what was thought to be achievable. Since the baseline years (1990-1994), injury deaths and hospitalizations have continued to decline, and the year 2001 targets have already been met (Figure 91).

Figure 91 Death and Hospitalization Rates due to Unintentional Injuries, Age 0 to 24, B.C., 1985-1996



Sources: Information and Analysis Branch, B.C. Ministry of Health (hospitalizations). B.C. Vital Statistics Agency (deaths).

Note: Copies of *BC - Injury Free - A Framework for Action - the Provincial Injury Prevention Plan for Children and Youth (Ages Birth to 24)* are available from the Office for Injury Prevention, telephone (250) 952-1580. A useful world wide web site for injury prevention is the Injury Control Resource Information Network at <http://www.injurycontrol.com/icrin>

One of the strategies recommended in the Plan was the establishment of an expert injury prevention research group. As a result of that recommendation, an Injury Surveillance, Prevention, and Research Unit was established in 1997. Operating under the auspices of the Centre for Community Child Health Research within the B.C. Research Institute for Child and Family Health, the new Research Unit will conduct research on the most effective ways to prevent injuries. Another task will be to develop a common set of injury data that can be collected and used throughout the province.

The *Injury Prevention Plan* identified the following types of injuries as priorities for action:

- Traffic
- Fire and burns
- Drowning and water related injuries
- Workplace injuries
- Home and residential injuries
- Sports and recreation

Previous editions of the *Provincial Health Officer's Annual Report* have provided information on traffic injuries, particularly motor vehicle injuries and bicycles. Playground injuries are discussed in Chapter 5 of this year's report (page 76-77). The following section presents information on poisoning, one of the most common childhood injuries in the "home and residential" category.

Poisonings

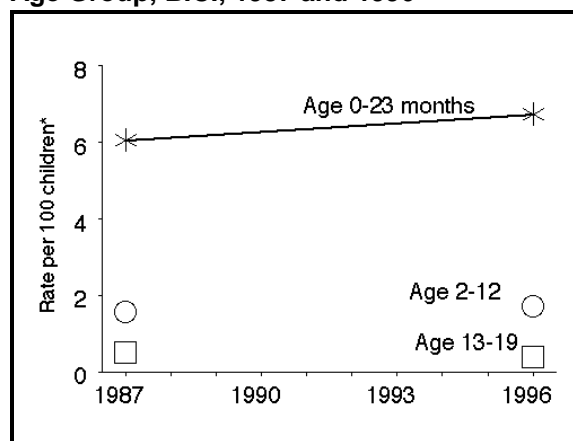
Childhood deaths due to poisoning are rare, but poisonings continue to be a major cause of emergency care and hospitalization, for young children in particular.

Emergency information and advice for poisonings are available to health professionals and the public throughout British Columbia, 24 hours a day. This service is provided by the B.C. Drug and Poison Information Centre (DPIC).

All poisonings reported to the Poison Control Centre are recorded, and statistics are compiled.

In 1996, there were 6,489 reported poisonings among children age 0 to 23 months – almost 7 poisonings for every 100 children this age (Figure 92). Children age 0 to 23 months accounted for one-quarter (25%) of all reported poisonings, while the 2 to 12 year-olds accounted for more than one-third (36%).

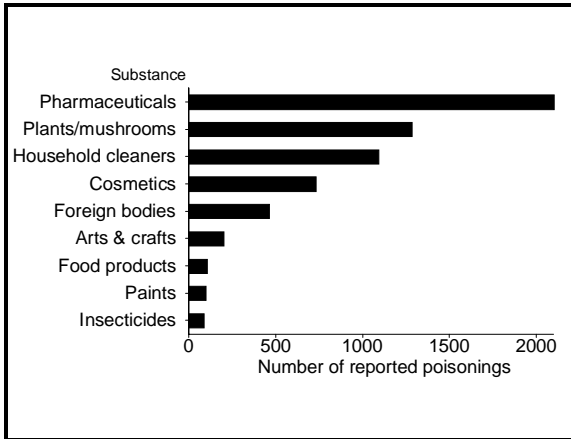
Figure 92 Reported Poisonings by Age Group, B.C., 1987 and 1996



* Number of calls to the Drug and Poison Information Centre, as a rate per 100 B.C. population in each age group. Source: B.C. Drug and Poison Information Centre.

Most poisonings to young children occur in the home. Substances most commonly ingested include pharmaceuticals, non-edible plants and mushrooms, household cleaning products, and cosmetics (Figure 93). Of the pharmaceuticals, the most commonly ingested were analgesics, vitamins, antihistamines, and antibiotics.

Figure 93 Reported Poisonings by Substance Ingested, Children Age 0 to 23 Months, B.C., 1996



"Household cleaners" includes hydrocarbons. Source: B.C. Drug and Poison Information Centre.

To reduce childhood poisonings, actions identified in the *Injury Plan* include:

- Promoting proper storage and disposal of medications and household products.
- Introducing proper labelling of household plants at point-of-sale so that identification of potential toxicity is assured and/or required information is given to persons purchasing household plants.
- Providing increased access to poisoning statistics by age, gender, health region, and substance involved. Table 32, which shows the rate of reported poisonings age 0 to 23 months by health region, is one example of the type of information that can be generated from DPIC data.

Table 32 Reported Poisonings, Children Age 0 to 23 Months, Health Regions, B.C., 1996

Health Region	Number of Calls	Rate per 100 children
East Kootenay	135	7.6
West Kootenay	115	6.8
North Okanagan	166	6.7
South Okanagan	276	5.7
Thompson	233	7.3
Fraser Valley	438	6.3
South Fraser Valley	1,084	6.8
Simon Fraser	633	7.5
Coast Garibaldi	110	5.7
Central Vanc Island	380	7.0
Upper Island	236	7.9
Cariboo	114	5.6
North West	155	5.3
Peace Liard	134	6.3
Northern Interior	236	6.3
Vancouver	727	6.1
Burnaby	213	5.1
North Shore	294	7.8
Richmond	165	4.5
Capital	578	8.6
Unspecified	67	
British Columbia	6,489	6.7
Highest region		8.6
Lowest region		4.5

Number of poisonings reported to the Drug and Poison Information Centre and rate per 100 population age 0 to 23 months. Source: B.C. Drug and Poison Information Centre.

Recommended Actions:

- *Continue to work on strategies identified in the provincial injury prevention plan.*
- *Develop injury prevention plans at the community level.*
- *Increase research activities through the Injury Surveillance, Prevention, and Research Unit, with input from regions throughout the province.*

Violence and Abuse

The number of children who experience violence, abuse, neglect, or maltreatment is not known precisely. Regrettably, child abuse and neglect do occur, with 4,620 confirmed cases in 1997/98. Youth crime rates have dropped in recent years. However, statistics on weapon-carrying and physical fighting show that violent behaviour is not uncommon among children and youth. Violence and abuse can be prevented by providing children with a good start in life and by helping children who live in environments that place them at risk of these outcomes.

Measuring Violence

The *Convention on the Rights of the Child* requires that all children be protected from violence, abuse, neglect, maltreatment, and exploitation. The rates at which these events occur provide an indication of the health of families and the environments they are able to provide for their children.

Many experts believe that children raised in violent and abusive homes are much more likely to grow up to be violent and abusive themselves, or to end up in situations that involve living on the street, prostitution, substance abuse, or criminal activity. Thus, violence, crime, and "crimogenic" situations among children, youth, and adults reflect the results of the home and community environments we have provided for young children in the past.

There are several ways in which abuse and violence can be monitored. These include rates of child abuse, homicide or other crimes, rates of youth involvement as sex trade workers or in other activities of street life, reports of violence in schools, and occasional surveys that detect violence in families and other settings.

Child Abuse and Neglect

Abuse or neglect by a parent or other caregiver presents a serious threat to a child's health. In the short term, child abuse or neglect can result in physical harm or even death. Abuse can also lead to developmental or behavioural problems, such as lack of self-esteem, or delinquent behaviour. And, sadly, abuse can lead to the mistreatment of the child's own children in later life.

Child abuse can take many different forms: physical and emotional abuse, sexual abuse and sexual exploitation, neglect, and abandonment.

It is difficult to obtain a reliable estimate of the number of children who are abused. There are no national statistics on the occurrence of child abuse. Each province or territory compiles its own statistics, using its own definitions, and results cannot be compared. And, although there is a requirement to report cases of suspected abuse, many cases are not reported. Figures 94 and 95 show the rate of confirmed cases of child abuse in British Columbia – 4.8 cases per thousand children in 1997/98.

The lack of common definition and comparable national statistics make it hard to gauge the severity of this problem. Health Canada has launched a national study to examine the incidence of child abuse and neglect. It is hoped that these research results will assist in efforts to protect children.

Figure 94 Confirmed Cases of Child Abuse and Neglect, Children Age 0 to 18, B.C., 1993/94-1997/98

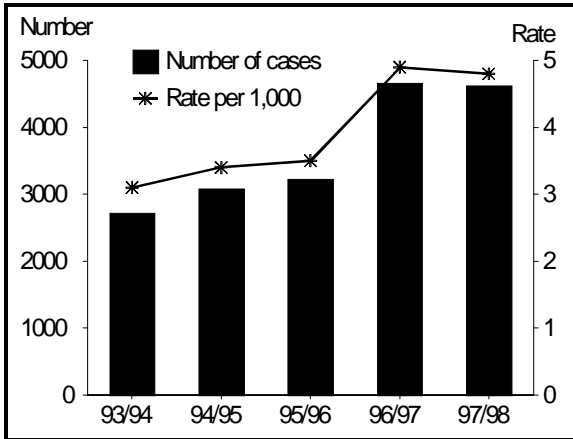
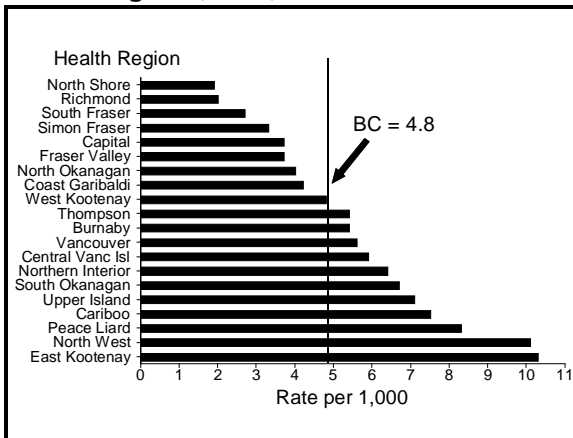


Figure 95 Confirmed Cases of Child Abuse and Neglect, Children Age 0 to 18, Health Regions, B.C., 1997/98



Figures 94 and 95: Number of confirmed reports of child abuse and neglect (child protection complaints that result in a finding that the child is in need of protection) per 1,000 population age 0 to 18. Source: B.C. Ministry for Children and Families, May 1998. See Appendix pages F-16 and F-17 for additional data and definitions.

Prevention

Child abuse and neglect can be prevented, particularly when efforts are focused on early childhood. Prevention efforts include activities such as education, awareness raising, and ensuring children's safety in settings inside and outside the home.

Some families are at higher risk of child abuse due to poverty, substance abuse, or problems with family relationships. For these families, providing additional support can help to reduce the likelihood that abuse and neglect will occur. Effective interventions include home visiting (Ciliska et al., 1996; Olds et al., 1997; American Academy of Pediatrics, 1998) and parenting programs such as Nobody's Perfect (VanderPlaat, 1989).

When abuse does occur, there are policies and services that lessen the harm to children and families. A handbook, updated in 1998, describes the responses to child abuse and neglect in British Columbia – from prevention to intervention. Copies of the handbook, *The B.C. Handbook for Action on Child Abuse and Neglect*, are available from Crown Publications in Victoria.

Recommended Action:

- *Support development of effective programs to prevent child abuse and neglect, particularly those that focus on early childhood, such as home visiting programs and Nobody's Perfect (a parenting program).*

Sexually Exploited Children and Youth

The number of children and youth who are involved in sex trade work or other forms of sexually exploitation is not known precisely. Most sex trade workers and social services professionals believe that the average age of entry is about 14, with some cases of children as young as 8 or 9 years old being sexually procured (Federal-Provincial-Territorial Working Group on Prostitution, 1995; B.C. Ministry of Attorney General, 1996).

Sexually exploited children and youth* are victimized in many ways. As well as being commercially exploited, they are at risk due to their sexual practices and are exposed to drugs and violence while on the street.

What causes children to end up in situations where they are so vulnerable and marginalized? Cross-Canada interviews with children and youth having direct experience as sex trade workers (*Out from the Shadows*, 1998), as well as studies in other jurisdictions, have identified the following patterns among those involved in street-level prostitution:

- Severely disturbed patterns of social development, punctuated by physical, emotional, or sexual abuse at home and breakdown in family relationships.
- A history of being physically, emotionally, and/or sexually abused at home or in care.

* *The commercial sexual exploitation of children and youth (as sex trade workers) is a form of child abuse. Youth delegates at the 1998 conference "Out from the Shadows – An International Summit of Sexually Exploited Youth" declared that "the term child or youth prostitute can no longer be used. These children and youth are sexually exploited and any language or reference to them must reflect this belief".*

- A severe trauma or violent event, such as a rape.
- Running away from home, usually in response to abuse or other problems at home or in care.
- Experiences of rejection on the basis of race, appearance, or sexual orientation.
- Exposure to poverty, financial pressures, substance abuse, crime, or family distress, often beginning early in life.

Prevention

Research into the sexual exploitation of children and youth – and its connection to childhood abuse, poverty, and breakdowns in family relationships – is just beginning to emerge.

The recent conference, titled *Out from the Shadows – An International Summit of Sexually Exploited Youth*, resulted in a declaration and agenda for action that was developed by children and youth themselves who have been sexually exploited. This agenda includes specific recommendations for prevention programs, harm reduction services, supports for children and youth in crisis situations, healing of sexually exploited children, and changing of public attitudes (Declaration and Agenda, 1998).

Recommended Action:

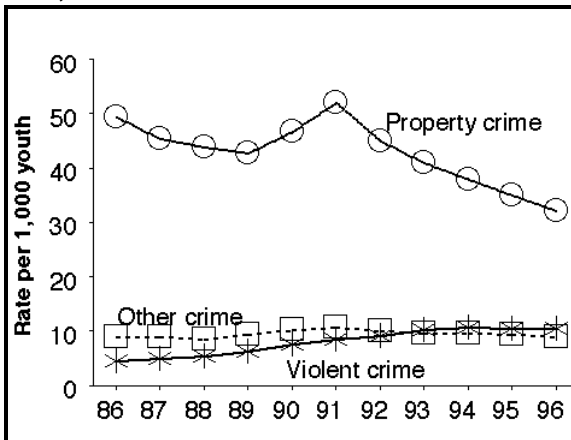
- ***Health and social service agencies and community leaders should review the Declaration and Agenda for Sexually Exploited Children and Youth, as a basis for the development of actions to prevent the sexual exploitation of children in the future and in planning for appropriate services.***

Youth Crime

There is a perception that youth crime is on the increase. Based on crimes reported to or by the police, the number of youths age 12 to 17 involved in property crimes (shoplifting, break and enter, theft) has been dropping in British Columbia in recent years. Youths charged with violent offences (primarily assault) more than doubled between 1986 and 1994, but the rate now appears to have levelled off (Figure 96).

Based on crime statistics, it is difficult to determine the actual extent of youth involvement in crime. Trends in the crime rate may reflect real differences in the number of crimes occurring, changes in the law, differences in victims' willingness to report, or changes in police charging practices. 15,551 youths were charged in 1996 – 3,170 for violent crimes, indicating that violence and unlawful activity are a concern.

Figure 96 Youth Crime Rate, B.C., 1986-1996



Youth crime rate: Number of youth (age 12-17) charged with Criminal Code offences, per 1,000 population age 12-17. Sources: Number of youths charged in 1986-1995 from Police Services, B.C. Ministry of Attorney General. *Summary Statistics: Police - Crime, 1986-1995*, Appendix C-5. Youths charged in 1996 from Statistics Canada, *Canadian Centre for Justice Statistics*. Data distributed by BC STATS.

Other indicators show that violence is not uncommon among children. In the B.C. Adolescent Health Survey, 27% of boys and 5% of girls said they had carried a weapon in the past month. About half (52%) of grade 7 boys and one-quarter (23%) of girls reported having one or more physical fights in the past year. For boys, most fights were with friends or strangers. Girls were more likely to have fights with a family member (McCreary Centre Society, 1993).

Prevention

Youth violence is a major public concern, and there has been considerable public demand for a response in the form of toughening the *Young Offenders Act* and similar measures aimed at controlling youth crime. However, as pointed out by the National Crime Prevention Council, relying on the criminal justice system alone is no longer sustainable, socially or financially. Attention needs to be shifted to effective prevention strategies:

We need to begin investing in healthy children and strong communities, rather than continuing to rely upon and spend on the criminal justice system. We need to begin addressing the underlying factors that lead children, young people, and adults toward criminality. Social development works to prevent crime by building a more equitable and more healthy society, and by addressing not only the symptoms but the very root causes of crime in our society (National Crime Prevention Council, 1996, p. 29).

What does this mean in terms of practical measures? Effective strategies for preventing violence include:

- Addressing the underlying factors that put children at risk of turning to crime and violence, including: poverty, inadequate housing, inequality, racism, dysfunctional families, child abuse and neglect, school failure, and high rates of youth unemployment.
- Encouraging a climate of zero tolerance for violence in all areas of society. Section 43 of the federal *Criminal Code* allows parents to use physical force (punishment) to correct a child.
- Helping young children to develop self-esteem and respect for others.
- Helping young children learn to control violent and aggressive behaviours.

Preventing violence will require efforts on many fronts. In addition to actions from federal and provincial governments, there is a need for efforts at the regional and municipal levels. It is apparent that children need not only a good start in their families, but also in their neighbourhoods and schools.

Initiatives that promote healthy communities and healthy schools should be encouraged, along with interventions that target children with behaviour problems or who live in at-risk families. For example, studies have shown that intervening with disruptive kindergarten students can greatly reduce the occurrence of delinquent behaviour later in life (Tremblay, Pagani-Kurtz, Masse, Vitaro, & Pihl, 1995).

Recommended Actions:

- ***Support community-level initiatives that address the underlying causes of violence.***
- ***Develop programs to help parents recognize and control violent and aggressive behaviours in young children.***
- ***Work with parents and families to help them understand how their behaviours may influence violent and aggressive behaviour in young children.***

Vaccine-Preventable Diseases

British Columbia has been highly successful in protecting children from vaccine-preventable diseases. However, there are areas of the province where immunization levels are a cause for concern, and some jurisdictions are not able to track immunization coverage. To adequately track immunizations and communicable diseases, a province-wide registry is urgently needed.

The childhood immunization program in British Columbia has been highly successful in controlling the nine diseases presently targeted: measles, mumps, rubella (German measles), diphtheria, pertussis (whooping cough), tetanus, polio, Haemophilus influenza, and hepatitis B. There have been several noteworthy achievements in the provincial program in the last few years, including:

- Implementation of a school-based immunization program for hepatitis B.
- Change to a safer (inactivated) polio vaccine.
- Introduction of a two-dose measles immunization schedule.
- Change to a safer and more effective acellular pertussis vaccine.
- Virtual elimination of meningitis infections caused by Haemophilus influenzae type b (Hib), through the introduction of Hib vaccine.
- Provision of hepatitis A vaccine for hepatitis C carriers and injection drug users.

In each case, British Columbia was among the first provinces to make these improvements.

Immunization Coverage

In general, parents in British Columbia respond well to advice to have their children immunized. In 1997, at the age of 24 months, most children (81%) had been adequately protected against diphtheria, tetanus, pertussis, and Hib, while 77% were protected against measles, mumps, and rubella.

However, there are a number of reasons to be concerned about immunization coverage in British Columbia, as follows:

For preschool children in particular, we are not even close to achieving national and provincial targets for immunization coverage.

The Ministry for Children and Families has now established benchmarks for immunization coverage in British Columbia. These are consistent with the national immunization goals (National Goals, 1995) and the targets proposed by the Provincial Health Officer in last year's *Annual Report*.

For the province overall, we are quite close to achieving the immunization targets for school-age children. However, for two-year-olds we remain far below the targets set for 1997 (Table 33).

Table 33 Childhood Immunization Rates, B.C., 1997 and National Targets

Age Group and Vaccine	Percent Immunized	
	1997	National and B.C. Target
Two-Year-Olds		
Diphtheria/Tetanus	81%	97% by 1997
Pertussis	81%	95% by 1997
Polio	81%	97% by 1997
Hib	81%	97% by 1997
MMR	77%	97% by 1997
School Entry		
Diphtheria/Tetanus	92%	99% by 1997
Pertussis	N/A	95% by 1997
Polio	93%	99% by 1997
MMR	94%	99% by 2000
Grade Six		
Hepatitis B	93%	95% by 1997

Hib: Haemophilus influenzae type b.
MMR: Measles/Mumps/Rubella.
Pertussis: Immunization coverage is not tracked separately for school entry children.

Not all jurisdictions are achieving an adequate level of coverage.

There are some jurisdictions where immunization coverage for two-year-old children is below 70%. This allows a large pool of susceptible children to accumulate and presents an ongoing potential for epidemics of many vaccine-preventable illnesses.

In 1997, only Richmond achieved any of the national and provincial immunization targets for two-year-olds (Figures 97-100).

Figure 97 Immunization Rates for Children 24 Months of Age, Diphtheria, Tetanus, Polio (DTP, 4 doses), B.C., 1997

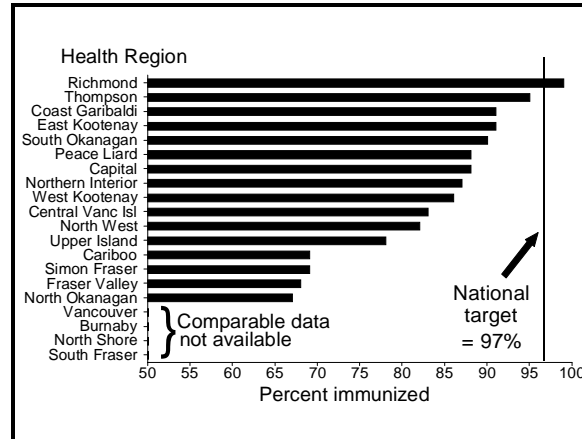
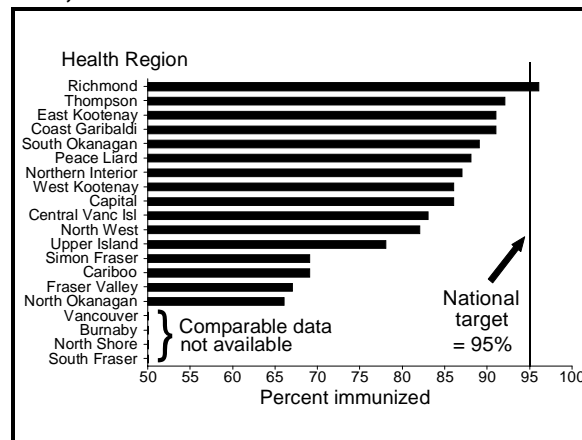
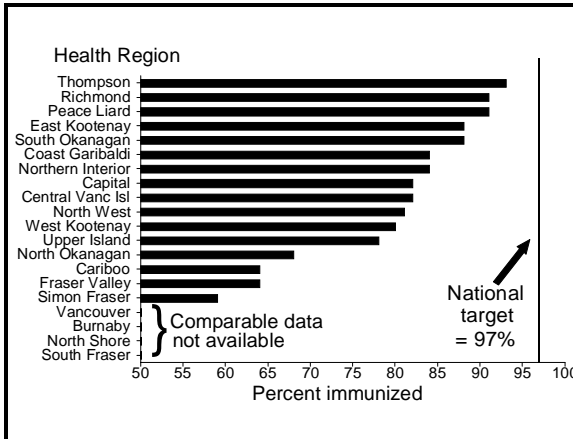


Figure 98 Immunization Rates for Children 24 Months of Age, Pertussis (4 doses), B.C., 1997



Source: *Immunization Status of Children Age 2. B.C. Ministry of Health Administrative Circular No. 97:012.*
 Note: Data are based on a one-month sample of children who were two years old in April 1997 and for whom Child Health Records were available.

Figure 99 Immunization Rates for Children 24 Months of Age, Measles, Mumps, Rubella (MMR/MR, 2 doses), B.C., 1997



Some jurisdictions are unable to monitor immunization coverage.

Some jurisdictions – Vancouver, Burnaby, North Shore, and South Fraser Valley – are unable to routinely measure immunization rates for preschool children. When it is considered that immunization is one of the most cost-effective health care interventions provided in our system and that if immunization levels fall there is a risk of outbreaks of preventable illness, it is a concern that these jurisdictions are not able to monitor performance. These same jurisdictions provide services for one-third of the children in British Columbia, so it is of critical importance that this situation be remedied.

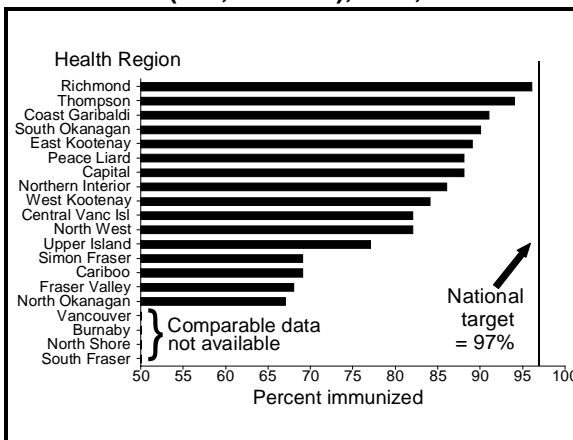
Two factors in particular contribute to the difficulties in monitoring immunization coverage:

- *Dual system for providing immunization.*

About half of British Columbia's children receive their immunizations at public health clinics through immunization programs provided by regional health boards, community health services societies, Health Canada, or independent Indian bands. In some parts of the province, the lower mainland in particular, much of the childhood immunization is provided through family physicians and pediatricians, who order vaccines from local public health units.

Having multiple providers makes it more difficult to track immunization statistics. In theory, those who provide vaccinations are required to report their results to public health departments. In practice, because the reporting system is cumbersome, immunization data from physicians' offices are often missing from provincial statistics.

Figure 100 Immunization Rates for Children 24 Months of Age, Haemophilus influenzae b (Hib, 4 doses), B.C., 1997



Source: *Immunization Status of Children Age 2. B.C. Ministry of Health Administrative Circular No. 97:012. Data are based on a one-month sample of children who were two years old in April 1997 and for whom Child Health Records were available.*

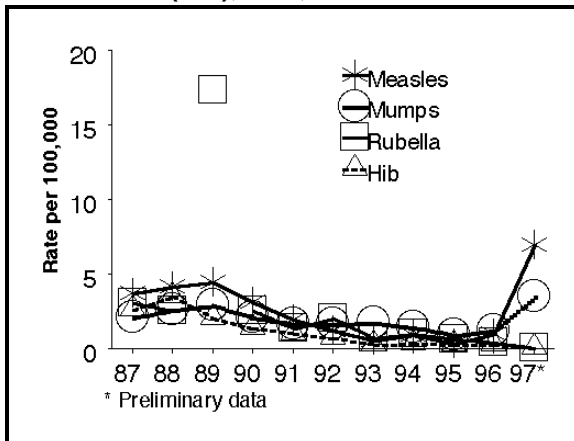
- *Lack of a standard, electronic system for immunization tracking and communicable disease reporting.*

An electronic registry is the most effective way to track the immunization status of individuals and of the population. At this time, British Columbia lacks the ability to report either immunization or communicable diseases electronically in a standardized way.

Without an electronic system, immunization statistics must be tallied by hand. Because locating and auditing each child's immunization record would be a very time-consuming process, rates for two-year-olds (Figures 97-100) are based on a one-month sample of child health records. This does not provide a complete picture of immunization in this age group.

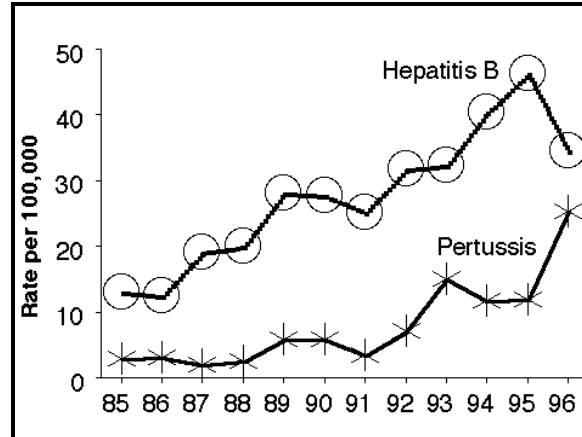
Despite these shortcomings, the rates of vaccine-preventable disease have generally dropped to very low levels (Figure 101), although occasional outbreaks do occur. Two diseases – pertussis and hepatitis B – have shown increasing rates (Figure 102).

Figure 101 Reported Rates of Measles, Mumps, Rubella, and Haemophilus influenzae b (Hib), B.C., 1987-1997



Source: *Epidemiology Services, B.C. Centre for Disease Control Society. Data for 1987-1996 acquired from the Health Planning Database.*

Figure 102 Reported Rates of Pertussis and Hepatitis B, B.C., 1985-1996



Source: *Epidemiology Services, B.C. Centre for Disease Control Society. Data for 1987-1996 acquired from the Health Planning Database, B.C. Ministry of Health. Hepatitis B includes acute cases (persons recently infected) and undetermined cases (persons in whom it could not be determined on the basis of bloodwork at hand whether they were acute or chronically infected; some of these undetermined cases may ultimately be classified as chronic).*

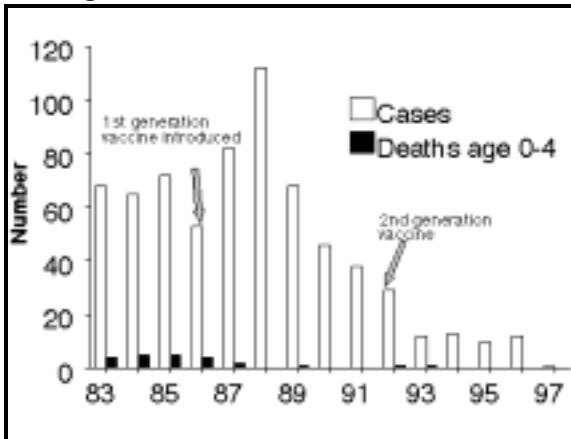
As rates of vaccine-preventable diseases decline, there is less familiarity with the potential for severe illness with these infections, and both complacency and resistance begin to increase. A significant proportion of both the public and alternative health practitioners are openly sceptical about or antagonistic to immunization. This is a potentially dangerous development, which could lead to lower immunization rates and increased occurrence of preventable disease and death.

Disease Control Highlights

Haemophilus influenzae type b (Hib)

Haemophilus influenzae type b (Hib) was once the leading cause of bacterial meningitis, an infection of the lining of the brain and spinal cord, in young children. Hib infections, which can result in deafness, neurological handicap, or even death, have been virtually eliminated by immunization. A special province-wide surveillance system detected one pediatric case in 1997, when over 80 cases occurred annually a decade ago (Figure 103). The reduced caseload has permitted permanent closure of a bed at British Columbia's Children Hospital and has spared much suffering among parents and children.

Figure 103 Haemophilus influenzae b (Hib) Meningitis, B.C., 1983-1997



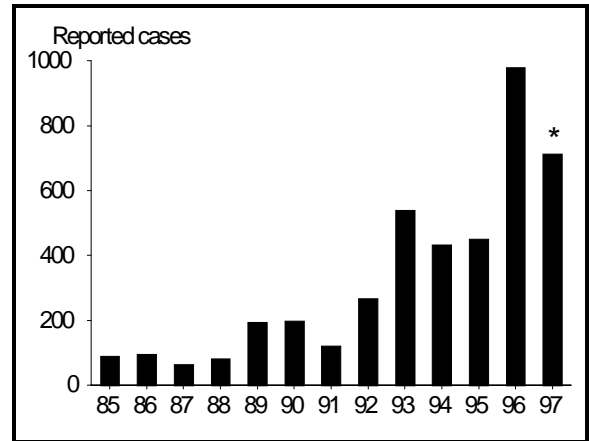
Source: Epidemiology Services, B.C. Centre for Disease Control Society (cases). B.C. Vital Statistics Agency (deaths). 1997 data are provisional.

Pertussis (Whooping Cough)

While pertussis is much less frequent now than prior to routine immunization, this disease has been more difficult to control than Hib. In 1997, 712 cases were reported (based on preliminary data) (Figure 104).

On average, five children are admitted to intensive care units for pertussis annually (Table 34). One or two infants die from pertussis each year in British Columbia, and some children suffer severe complications including seizures and permanent brain damage.

Figure 104 Pertussis Cases, B.C., 1985-1997



* 1997 data are provisional. Source: Epidemiology Services, B.C. Centre for Disease Control Society.

The standard whole cell vaccine used since 1945 caused minor side-effects in about 50% of recipients and provoked considerable anxiety among parents. The change to a new acellular vaccine in 1997 is a major advance, as the new vaccine is much safer and more effective. The milder and less frequent side effects of the new vaccine will help to alleviate parents' concern about vaccine safety. Looking ahead, it may soon be possible to boost protection in adolescents and young adults using the new vaccine – an option not feasible with the old one – to block the spread of infection more effectively in the general population.

Table 34 Pertussis-Related Admissions to Intensive Care Units, B.C., 1987/88-1996/97

Fiscal year	Admissions to ICU		
	Cases	Days	ALOS
87/88	3	28	9.3
88/89	7	34	4.9
89/90	6	36	6.0
90/91	4	15	3.8
91/92	3	24	8.0
92/93	4	17	4.3
93/94	9	44	4.9
94/95	6	15	2.5
95/96	7	25	3.6
96/97	2	19	9.5
10-year total	51	257	5.0

Cases admitted to intensive care units for pertussis (ICD9 033) and days of stay associated with those cases. ALOS: average days of stay in hospital per case. Source: Information and Analysis Branch, B.C. Ministry of Health. Unpublished tables.

Measles

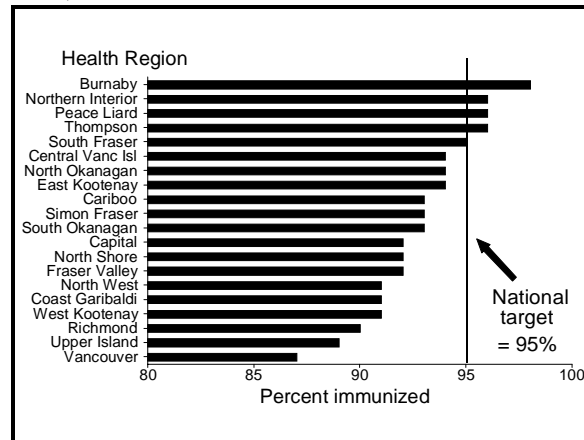
The province implemented a two-dose measles program for all children in 1996, offering a second dose to those aged 18 months to 18 years (grade 12). Additional catch-up immunization was offered to students at post-secondary institutions in 1997 following an outbreak at Simon Fraser University. With these measures completed, it should no longer be possible for large outbreaks to occur, provided that new entrants to the education system are appropriately immunized as well.

With continued efforts, it should be possible to achieve the national goal of eliminating indigenous measles by the year 2005. ("Indigenous" means cases that originate locally, rather than having been acquired elsewhere – through migration or travel to an infected area, for example).

Hepatitis B

The grade six program continues to be well accepted by parents and students, with rates exceeding 90% in almost all areas of the province (Figure 105). In 1997, a special effort was made to extend coverage to grade 12 students, ensuring that all students from grade 6 through 12 have been offered vaccine. As this group moves into adulthood in the coming decade, a progressive decline in the rate of new hepatitis B infections can be anticipated.

Figure 105 Hepatitis B Immunization Rates, Grade 6 Students, Health Regions, B.C., 1997



Source: Public Health Nursing, Preventive Health Branch, B.C. Ministry of Health.

The program to detect hepatitis B-infected women during pregnancy and protect their babies from infection continues to work well. Testing for hepatitis B is available to all pregnant women, usually at the time of their first prenatal visit.

In 1996, 471 mothers with hepatitis B were identified. Although immunization statistics for these infants are not tracked separately, it is believed that almost all of the at-risk babies received the appropriate protective measures: a first dose of vaccine given in hospital, and subsequent doses given through their local health department or family physician.

As a measure of success, only 2 infant cases of hepatitis B have been reported in the past 5 years (one case in 1993 and one in 1995).

There have been recommendations to implement a universal hepatitis B immunization program for all newborn children. At this time, as children at risk are provided with appropriate immunization and as there is some question as to the cost-effectiveness of a universal program, there is no plan to implement a province-wide program in the near future. This would not preclude a particular region from initiating a program if there were a particularly high number of newborns at risk for hepatitis B infection and a compelling cost-effectiveness analysis supporting the replacement of the existing program. In the future, there may be a vaccine product that will incorporate hepatitis B vaccine along with all the other newborn vaccines as one shot. This may make a universal neonatal program cost-effective.

Polio

The entire western hemisphere has been free of wild polio infection since 1991, and prospects exist for global eradication early in the new century. In the meantime, high immunization rates must be maintained to keep British Columbia polio-free. The change to inactivated vaccine in 1992 ensures that ongoing immunization is completed with minimal risk to recipients.

Influenza

Annual influenza immunization is recommended only for children with underlying illnesses that place them at increased risk of complications during influenza infection. Such conditions include cystic fibrosis, troublesome asthma, and bronchopulmonary dysplasia in infants born prematurely.

While British Columbia makes vaccine available for such children, uptake rates are not known. However, a national survey recently estimated that only 20% to 40% of children and adults with medical conditions actually receive influenza vaccine as recommended (National Advisory Committee on Immunization, July 1997). Those who care for such children should make a special effort to ensure that vaccine is being used appropriately, and regions should be able to report on immunization coverage by age group.

Hepatitis A

Hepatitis A is a viral infection of the liver. A vaccine is available, but is not routinely given to children at this time. The vaccine is currently recommended for high risk groups and in outbreak situations.

When hepatitis A vaccine was first licensed in Canada several years ago, it was recommended for certain risk groups, including people planning to live, work, or travel in developing countries, residents and staff of institutions for the developmentally challenged, patients with haemophilia, homosexual males with multiple sex partners, those who use oral or intravenous illicit drugs, and veterinarians, zoo-keepers, and others who handle non-human primates.

Hepatitis A vaccine can also be used to control community-wide disease outbreaks. In British Columbia, hepatitis A vaccine was administered to control a 1996 outbreak in the Central Vancouver Island area – the first such use of the vaccine in Canada. In 1997, an outbreak in the gay population in Vancouver was managed with hepatitis A vaccine. Provincial health authorities now recommend that the vaccine be used routinely for the control of hepatitis A outbreaks.

In February 1998, the provincial immunization program was expanded to make hepatitis A vaccine available to those who have tested positive for hepatitis C and injection drugs users. Immunization of at-risk communities, such as those in remote areas with inadequate water and sewage disposal systems and crowded housing, is currently under consideration. A cost-effectiveness assessment of routine immunization against hepatitis A is now needed to determine the need for such a program in British Columbia and across Canada.

Congenital Rubella Syndrome

The success of the Measles/Mumps/Rubella immunization program is shown by the fact there has been only one case of congenital rubella syndrome reported in the past ten years.

Pneumococcal Vaccine

Streptococcus pneumoniae (pneumococcus) is a bacteria that commonly causes infections in both children and adults. Many of these infections, such as ear and sinus infections, are mild and easily treated with antibiotics. Some infections are more serious and potentially life-threatening. Life-threatening infections include pneumonia and meningitis, which are a particular concern for the elderly and those whose immune systems are weakened.

There is a vaccine that prevents serious pneumococcal disease in certain vulnerable groups. Currently, the vaccine is not routinely given to children unless they are at increased risk for pneumococcal disease or its complications. This includes children who do not have a spleen, or whose spleen is not working properly, or who have received a bone marrow transplant.

The issue of preventing pneumococcal disease is under discussion nationally, with a view to developing recommendations for improved surveillance and control of this disease.

Infrastructure Considerations

To improve immunization programs in British Columbia so that the provincial goals can be achieved will require the following:

- The selection of effective vaccine products.
- Skilled and available providers.
- Well-informed consumers.
- Evaluation of performance, including vaccine effectiveness, adverse effects, storage and handling of vaccines (the "cold chain"), accurate tracking of vaccine coverage, and accurate and timely communicable disease reporting.

The task of routine immunization is becoming ever more complex as new vaccines become available and are introduced into the provincial program. To assist providers in keeping pace with the development of knowledge in immunization, the National Advisory Community on Immunization recently published guidelines that illuminate the many dimensions of the task (Table 35). All who administer vaccines should examine these guidelines closely and comply with them. Where it does not appear possible to follow the guidelines for some areas in the province, alternative means of delivery should be considered.

The development of a province-wide immunization registry is a key requirement to track performance region by region throughout the province, to keep up with a mobile population, to manage an increasingly complex records set, and to facilitate vaccine delivery through use of audits and reminders to parents. This can only be done through the development of a computerized system, based on common reporting definitions.

At present, communicable disease reporting is achieved electronically through the Communicable Disease Surveillance System (CDSS). This system has been in place for some time, and is not yet Year 2000 compatible. There is, therefore, a need to develop an electronic registry that will enable the reporting of communicable disease, immunization rates, and adverse reactions in the coming years.

British Columbia's health regions and community health services societies have in place several different health information systems supported by different vendors. A health information standard is required for the reporting of immunizations given, population covered by immunization, and communicable disease. This would enable electronic reporting to the B.C. Centre for Disease Control Society. Ways and means to make a standardized reporting system accessible from physicians' offices should also be explored.

Recommended Actions:

- ***All who administer vaccines should closely examine the Guidelines for Immunization Practices (Table 35) and comply with them to the extent possible.***
 - ***The pneumococcal vaccine program should be expanded to protect the vulnerable of all age groups.***
 - ***Systems need to be developed to better report influenza vaccine coverage throughout the province.***
 - ***The Ministry of Health should examine the effectiveness and efficiency of the current mixed delivery system of immunization in British Columbia.***
-
- ***All regions should develop immunization goals and targets and plans as to how to achieve them.***
 - ***Health information standards should be developed for immunization and communicable disease reporting, so all health authorities within the province are able to report in a consistent and comparable way.***
 - ***An electronic registry for reporting communicable diseases, immunization rates, and adverse reactions should be an urgent priority. This will require cooperation between the Ministry of Health and local health authorities. Ways and means to enable reporting from physicians' offices should also be explored with the Medical Services Plan and the Professional Advisory Committee of the B.C. Medical Association.***

Table 35 Guidelines for Childhood Immunization Practices

- | | | | |
|---|---|----|--|
| 1 | Immunization services should be readily available. | 10 | Providers should maintain easily retrievable summaries of vaccination records to facilitate age-appropriate vaccination. |
| 2 | There should be no barriers or unnecessary prerequisites to the receipt of vaccines. | 11 | Providers should report clinically significant adverse events following vaccination – promptly, accurately, and completely. |
| 3 | Routine childhood immunization services should be publicly funded. | 12 | Providers should report all cases of vaccine-preventable diseases as required under provincial and territorial legislation. |
| 4 | Providers should use all clinical encounters to screen for needed vaccines and, when indicated, vaccinate children. | 13 | Providers should adhere to appropriate procedures for vaccine management. |
| 5 | Providers should educate parents in general terms about immunization. | 14 | Providers should maintain up-to-date, easily retrievable protocols at all locations where vaccines are administered. |
| 6 | Providers should inform parents in specific terms about the risks and benefits of vaccines their child is to receive. | 15 | Providers should be properly trained and maintain ongoing education regarding current immunization recommendations. |
| 7 | Providers should recommend deferral or withholding of vaccines for true contraindications only. | 16 | Providers should operate a tracking system to generate reminders of upcoming vaccinations and recalls for children who are overdue for their vaccinations. |
| 8 | Providers should administer all vaccine doses for which a child is eligible at the time of each visit. | 17 | Audits should be conducted in all immunization clinics to assess the quality of immunization records and assess immunization coverage levels. |
| 9 | Providers should ensure that all vaccinations are accurately and completely recorded. | | |

Source: National Advisory Committee on Immunization. Guidelines for Childhood Immunization Practices. Canada Communicable Disease Report. Volume 23(ACS-6), December 1, 1997.

HIV/AIDS in Children

Although the number of children with HIV/AIDS is relatively small, these children require special care and support. Prenatal testing and drug therapy are helping to reduce the number of children born with HIV, but further improvements are possible, through actions to improve testing, treatment, care, and support for children infected and affected by HIV.

The number of children with HIV/AIDS is relatively small compared to older people. Over the past five years, 26 children have been identified as HIV-infected (Table 36), of the total 3,743 new HIV cases recorded in British Columbia during this time period. Some children have been exposed to HIV through blood products or other means. However, for most of the children with HIV/AIDS, the HIV virus was transmitted from the mother while she was pregnant.

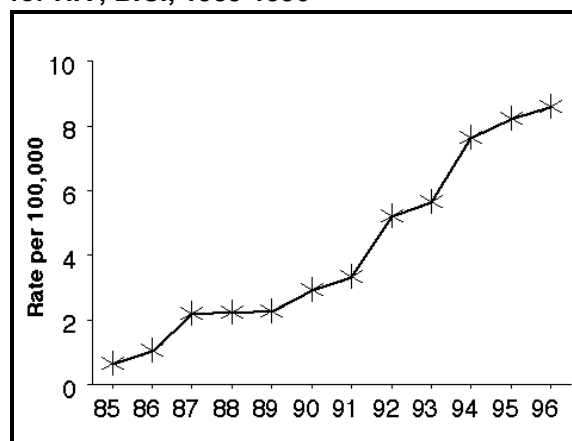
Table 36 Children Age 0 to 14 Testing Newly Positive for HIV, B.C., 1992-1996

Year	HIV Antibody Reactive	HIV Infected
1992	10	5
1993	11	2
1994	18	8
1995	27	7
1996	19	4
Total 1992-96	85	26

These data are based on children attending Oak Tree Clinic. "HIV antibody reactive" includes children who have antibodies transmitted from their mothers during pregnancy; not all of these children become HIV-infected. Source: Oak Tree Clinic, B.C. Children's and Women's Health Centre.

The number of British Columbians with HIV infection is increasing, especially among injection drug users and women (Figure 106). In 1996, almost one-quarter (23%) of new positive HIV tests were women. As more women become infected, more children are born to HIV-positive mothers. These children and their mothers require special care during and after pregnancy.

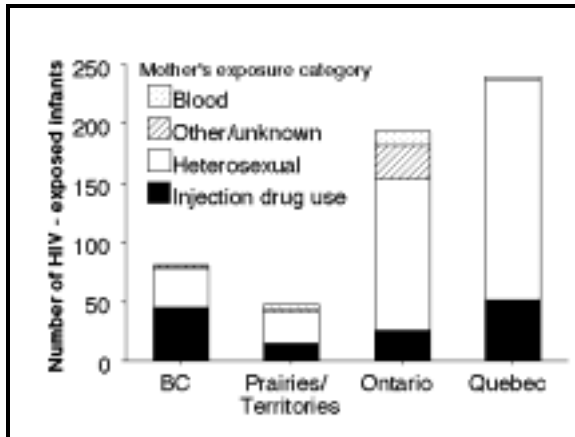
Figure 106 Women Testing Newly Positive for HIV, B.C., 1985-1996



Source: STD/AIDS Control, B.C. Centre for Disease Control Society. AIDS Update: First Quarter 1997, page 17.

In British Columbia, over half (56%) of HIV-positive mothers were exposed to HIV through injection drug use, compared to 13% in Ontario and 21% in Quebec (Figure 107). Other ways in which women are exposed to HIV are through heterosexual contact or through sex trade work.

Figure 107 Infants Exposed to HIV by Mother's Risk Factors, Canada, 1981-1995



Source: Health Canada. (1996). *HIV in Canada: Surveillance report for the period 1985-1995*, p. 14. Ottawa, ON: Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS, Laboratory Centre for Disease Control.

Prenatal Testing

About five of every 10,000 pregnant women in British Columbia are HIV-positive. Many of these women may be unaware that they have been at risk for HIV or are infected.

In the fall of 1994, the B.C. Ministry of Health recommended that all pregnant women be offered testing for HIV. This recommendation was based on evidence showing that two-thirds of cases of mother-to-child transmission can be prevented, if HIV-positive women take AZT during pregnancy and during the birthing process.

Since prenatal testing was recommended, the number of pregnant women tested for HIV has increased rapidly. In 1995, over one-third (37%) of pregnant women were tested. In 1996, 23,111 women – about half of all pregnant women – had HIV testing as part of their prenatal assessment, and eleven women tested positive for HIV. In Vancouver, which has the highest rate of HIV infection, about three-quarters of pregnant women were tested (Table 37).

Table 37 Percent of Pregnant Women Tested for HIV, Health Regions, B.C., 1996

Health Region	Number tested [1]	Percent tested [2]
East Kootenay	284	36%
West Kootenay	334	45%
North Okanagan	497	42%
South Okanagan	1,035	47%
Thompson	659	44%
Fraser Valley	1,648	51%
South Fraser	2,395	32%
Simon Fraser	2,132	52%
Coast Garibaldi	431	50%
Central Vanc Isl	1,328	53%
Upper Island	690	50%
Cariboo	430	44%
North West	723	51%
Peace Liard	657	66%
Northern Interior	716	41%
Vancouver	4,557	75%
Burnaby	980	47%
North Shore	807	43%
Richmond	774	45%
Capital	1,644	53%
Unspecified/other	395	
British Columbia	23,116	50%
Highest region		75%
Lowest region		32%

[1] Number of HIV test requisitions indicating that the test was being done as part of a prenatal assessment. [2] Number of HIV tests as a percent of live births in a given region. Source: Number of HIV tests from Provincial Laboratory, B.C. Centre for Disease Control Society. Live births from B.C. Vital Statistics Agency, *Vital Statistics Annual Report 1996*.

Since 1993, the Oak Tree Clinic has offered HIV therapy to 65 HIV-infected pregnant women and their babies. Without treatment, babies born to HIV-positive mothers have about a 20% chance of being HIV-positive. With treatment, the infection transmission rate has decreased to 11% in those receiving some or all of the recommended therapy, and to less than 5% for the mothers and infants who received full therapy.

Care for Children with HIV/AIDS

HIV/AIDS care is provided to women, children, and their families through the Oak Tree Clinic. Established in 1994, the Clinic functions under the auspices of the B.C. Children's and Women's Health Centre. Medical care and support services are provided by a staff that includes physicians, a nurse, social worker, dietician, pharmacist, and outreach worker.

HIV drugs and other treatments are available without charge to those who need them. This government-sponsored drug program is provided by the B.C. Centre for Excellence in HIV/AIDS.

Concerns and Needs for HIV Care

Although effective testing and treatment services have been established in British Columbia, there are a number of concerns and needs with respect to care for children with HIV. Concerns include the following:

- Increasing numbers of HIV-infected women and numbers of children born to HIV-positive mothers.
 - Increasing number of infected children diagnosed after age 12 months. This delay in diagnosis means that treatment is less effective.
 - Increasing number of children from disadvantaged communities such as families in poverty, Aboriginal, injection drug users, with some of the following problems: poor access to medical care, poor nutrition, poor compliance for HIV drug therapy, high rate of children-in-care (36% of infected children at Oak Tree Clinic are in foster care), high degree of isolation and discrimination.
- Since 1993, 17 families referred to Oak Tree Clinic are from African and Asian communities, where isolation and discrimination may hamper access to medical care and support.
 - 40% of infected children have mothers who have died from AIDS.
 - One-quarter of the children attending Oak Tree Clinic have been from areas outside the lower mainland.

Addressing these concerns will require actions to improve HIV testing, drug treatment, medical care, and support services to children infected and affected by HIV. As well, there is a need to improve understanding of HIV disease within the community.

Recommended Actions:

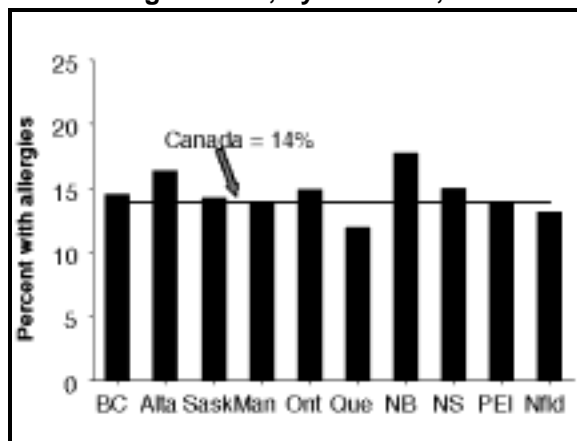
- *Offer HIV testing to all pregnant women, with counselling and informed consent.*
- *Provide optimal HIV drug treatment to HIV-infected pregnant mothers and their children.*
- *Improve HIV care for disadvantaged children and families.*
- *Improve understanding of HIV disease in schools, health and social agencies, and in the community.*
- *Increase support of children whose parents have died from AIDS.*

Allergies

Food allergies, hay fever, asthma, and eczema are the most common allergies that children experience. Most allergies can be managed by avoiding substances that trigger allergy symptoms. An estimated 1% of children have life-threatening allergies to insect stings, foods, or drugs; such cases require prompt emergency care.

There are many forms of allergy that children may experience. According to their parents, about one child in seven (14%) has an allergy of some type (Figure 108).

Figure 108 Prevalence of Allergies among Children Age 0 to 11, by Province, 1994



Source: Prepared by the Centre for International Statistics at the Canadian Council on Social Development using Statistics Canada's National Longitudinal Survey of Children and Youth, 1994. In Canadian Council on Social Development. K. Scott, Project Director/Writer (1997). The Progress of Canada's Children 1997 (p. 37). Ottawa, ON: Canadian Council on Social Development.

Allergies often begin to develop in childhood, although they can show up at any age. Among infants, the most common allergies are food allergy and eczema (patches of dry skin). In older children, hay fever is more common.

Allergies range greatly in severity. Hay fever, for example, has mild symptoms that resemble the common cold. In some children, certain foods or insect bites can lead to life-threatening allergic reactions.

Food Allergies

According to a national survey, about 6% of Canadian children age 12 to 14 have food allergies (Advisory Committee on Population Health, 1996). Some children have true food allergies, most commonly to legumes, nuts, shellfish, eggs, wheat, or milk. Others experience adverse reactions to foods due to food intolerances, reactions to food additives, or food poisoning.

Children who are breastfed develop fewer food allergies. By age 6, children often outgrow food allergies, except for those that are life-threatening.

Asthma and Other Respiratory Conditions

Asthma is an allergic condition affecting the airways that carry air into and out of the lungs. It is estimated that between 5% and 10% of children have asthma. Asthma and other respiratory conditions are among the most common health problems that children experience.

Understanding the role of allergy in upper respiratory symptoms is an important development in appropriate care.

Inflammation (swelling, discharge, malaise) is the body's immune response to foreign substances. Inflammation may be caused by infection or the reaction to a substance in the environment. The upper respiratory tract and lungs are constantly exposed to the outside world, and the immune system's role is to identify potential hazards and respond.

Increasingly, it is being realized that many unhappy children with runny noses are reacting to an inhaled irritant such as tobacco smoke or an allergen such as pollen or dust mites. This underscores the importance of educating parents not to routinely expect an antibiotic for their child. For allergic children, antihistamines and other anti-allergic therapy are the most effective and appropriate solutions.

Asthma is discussed in more detail under Respiratory Diseases (pages 128-133).

Allergy Treatment

An important aspect of treating allergies is identifying – and avoiding as much as possible – the substances that trigger allergy symptoms. For some types of allergies, medications such as antihistamines, decongestants, or corticosteroids may relieve symptoms. Immunotherapy (allergy shots) can be effective for children with life-threatening reactions to insect stings.

Educating children and their parents is an important component of managing asthma and other allergies. Children, families, and caregivers who are able to recognize the early warning signs are often able to avoid worsening symptoms that lead to the need for emergency care or hospitalization.

One example of a program for children with asthma, allergies, and/or eczema is a Closer to Home initiative that began in the Capital Health Region in 1995. Health care professionals from hospital and community services have been working with children and their families to provide education and consultation services.

An evaluation of the program showed that there were fewer than expected hospital admissions for asthma in 1995, compared to rates before the program started (this may have been due to improved medication and changes in physician practices, which also took place over this time period). For those families involved with the program, in general they stated that their children's conditions had less impact on family daily life, and that they were better able to develop an effective plan for symptom management after their involvement in the program (Closer to Home Programs Evaluation, 1996).

Life-threatening Allergic Reactions

A few children have severe allergies to insect stings or certain foods or drugs, especially penicillin. For these children, the allergic reaction is sudden and severe, and may cause difficulty breathing and a drop in blood pressure (anaphylactic shock). If emergency treatment is not given immediately, children with anaphylaxis can die within minutes. It is critical that parents of children with such conditions make schools and care providers aware of these severe allergies.

One issue to be resolved in British Columbia is the prevention of life-threatening allergic reactions in schools. Guidelines for the protection of children in schools have been produced by the Canadian School Boards Association and Health Canada. Unfortunately, in British Columbia these guidelines are not uniformly implemented, and the ability to provide emergency care for children depends on local arrangements worked out school by school between families, principals, teachers, and health workers. Because children's lives are at risk, effective policies and procedures need to be in place in all schools.

Recommended Actions:

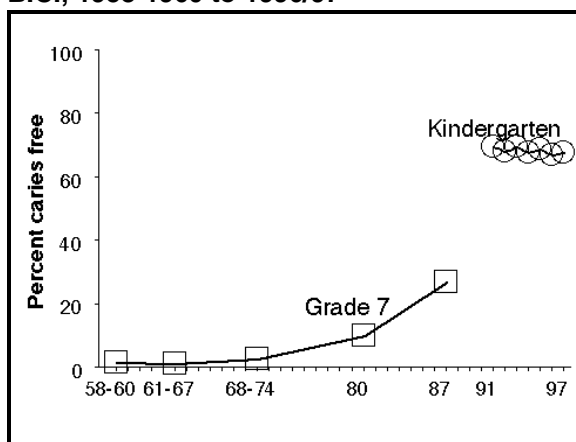
- ***Identify innovative approaches to the management of asthma and other allergies that could be generalized to other areas of the province.***
- ***Ensure that all school districts and schools have policies and procedures in place to ensure that the estimated 1% of British Columbia's children with life-threatening allergies are protected while they are at school and in child care settings.***

Dental Health

Over the past three or four decades, the dental health status of British Columbia's children has improved significantly, and most children are receiving the care they need. Further improvements will require reaching high risk groups, particularly Aboriginal and immigrant children, as well as efforts to prevent nursing bottle tooth decay and early childhood tooth decay.

In the 1950s, more than 80% of grade one children had never visited a dentist, and tooth decay and extractions were a common occurrence (Robinson & Elliot, 1993). Since that time, significant improvements in children's dental health have occurred. Today, most children – an estimated 90% – attend their family dentist on a regular basis, and two-thirds of kindergarten children are caries-free (Figure 109).

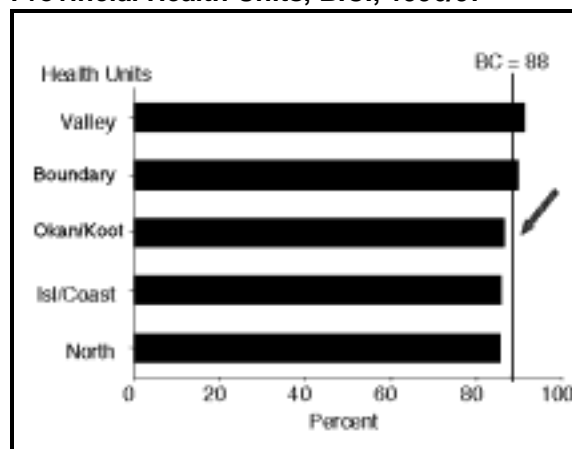
Figure 109 Percent of School Children "Caries-Free", Provincial Health Units, B.C., 1958-1960 to 1996/97



Since the 1990/91 school year, school dental health surveys have focused on kindergarten children. Data for earlier years are based on grade 7 students. Sources: Kindergarten data from school screening statistics, Preventive Health Branch, B.C. Ministry of Health. Grade 7 data from *A Comprehensive Review of Dental Caries Experience in the Provincial Health Units of British Columbia 1987*, Table III. Prepared by A.S. Gray and D.M. Gunther, Dental Health Branch, Ministry of Health.

Furthermore, this relatively high level of dental health is seen in all regions of the province. Children in the lower mainland are more likely to be free of dental problems than those in the northern and rural areas of the province (Figure 110), but regional differences are less pronounced than with many other health status indicators.

Figure 110 Percent of Kindergarten Students with No Dental Problems, Provincial Health Units, B.C., 1996/97



"No dental problems" (88% of B.C.'s kindergarten enrolment) includes children who are caries free and those who may have had some decay in the past. The remaining 12% require some treatment to control decay, and about 3% of this group require urgent treatment to control pain, swelling, and/or extensive dental decay. Source: School screening statistics, Preventive Health Branch, B.C. Ministry of Health.

Successes in Prevention

Dental caries (tooth decay) is among the most common diseases known. Yet, most dental disease is preventable. How was the vast improvement in children's dental health accomplished? Several factors contributed to this success, including the following:

- *Education.* Education programs have provided school children, parents, and the public with information about oral health. This has contributed to adoption of healthy behaviours such as tooth brushing, flossing, use of fluorides, limiting the use of caries-promoting food, and taking children for regular dental care. These health behaviours decrease the chances that children will develop caries.
- *Screening.* School screening programs have helped to identify children who are in need of dental care, but whose parents are unable to obtain dental care for financial or other reasons.

In the past, screening was carried out in various grades, including kindergarten, grade 1, and grade 7. In recent years, screening has focused on kindergarten children, as children at this age are at an important stage of dental development. They have their primary teeth, and their permanent first molars and incisors are just beginning to erupt.

Optimal oral health for these school children is critical, not only to their current functioning, but also for their long-term health. Counselling has become an important component of school screening programs; families in need are provided with information and skills to help prevent dental problems in the kindergarten child and his/her siblings.

- *Dental insurance.* Dental insurance plans have helped to increase access to regular dental care. At the present time, it is estimated that at least 80% of children are registered with dental plans, either private or government-subsidized.
- *Free dental check-ups.* Many dentists offer a first free dental check-up to children under age 3. A First Dental Visit invitation is attached to the Health Passport, a booklet that provides a record of children's immunizations. The First Visit program, a joint initiative of the College of Dental Surgeons and the Ministry of Health, provides an opportunity for identifying any dental problems and establishing a pattern of regular visits.
- *Monitoring of dental health status.* Along with screening and education programs, a system was developed to monitor the dental health of children through surveys of students in various grades. Gradually, the rates of tooth decay and the number of extractions declined, showing that most children were receiving the care they needed. Statistics from school surveys helped to document this success and to identify regions and groups of children at particular risk for dental health problems.
- *Fluoride.* Exposure to fluorides through dental products or drinking water has contributed greatly to declines in dental caries. Fluoride is available in various forms – topical fluoride, toothpaste, fluoride mouth rinses, tablets or drops, and water supplies – all of which can help to prevent initial decay. Fluoride is added to almost every brand of toothpaste and is found naturally in some water supplies. A few communities add a small amount of fluoride to water supplies to raise the natural level to between 0.7 and 1 part per million, the level recommended by Canadian Dental Association and the College of Dental Surgeons of B.C.

Today, with water fluoridation and the almost universal use of fluoride toothpaste, most children under age 3 no longer need additional fluoride supplements.

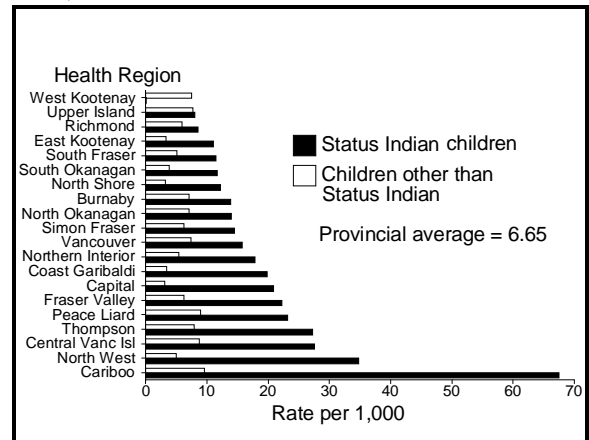
Areas for Improvement

Although dental health status has been improving, especially in children, there remain opportunities for improvement. Because early diagnosis and prompt treatment can halt tooth destruction, a low prevalence of untreated caries should be attainable. Two areas requiring particular attention are (1) reaching at-risk groups and (2) prevention of nursing bottle and early childhood tooth decay.

- *Reaching at-risk groups.* It has been said that "20% of children experience 80% of the decay" (Henry, 1997). Financial, cultural, psychological, social, and geographic barriers contribute to lack of treatment.

Many Aboriginal children experience dental health problems. A national survey found that most (91%) Aboriginal children have teeth affected by decay (Health and Welfare Canada, 1992). Within British Columbia, Status Indian children have high rates of tooth extractions and other restorative dental work done in hospitals, compared to those who are not Status Indian (Figure 111). Other at-risk groups include immigrant children and children from socially or economically disadvantaged families.

Figure 111 Age Standardized Hospitalization Rates, Dental Procedures, Children Age 0 to 14, Health Regions, B.C., 1996/97



Age standardized rates for tooth extraction, surgical removal of tooth, and other operations on teeth (Surgical Short List codes 041-043), inpatient and day surgery, ages 0 to 14. For East Kootenay, West Kootenay, and Richmond, the rates for Status Indian children are based on a small number (less than five) cases. Source: PURRFECT 2.23 and Status Indian Health Utilization Database. Information and Analysis Branch, B.C. Ministry of Health. Unpublished tables.

- *Nursing bottle tooth decay.* Nursing bottle tooth decay is a severe form of dental caries in toddlers that can lead to destruction of primary teeth. Bottle tooth decay is caused by frequent or prolonged use of nursing bottles or sweetened pacifiers. Breast milk, cow's milk, sugared water, fruit juice, or other sugary beverages all contain sugars that can cause tooth decay if left in contact with the teeth for lengthy periods of time, such as when bottles are used during rest or sleep or when "comfort bottles" are used throughout the day.

The prevalence of baby bottle tooth decay has been estimated at 1% to 11% among children in the United States (U.S. Department of Health and Human Services, 1991; Henry, 1997). In Canada, some estimates are that more than half of Aboriginal children may be affected (Health and Welfare Canada, 1990).

Within British Columbia, community surveys have found high rates (50%-60% of preschool children) of nursing bottle tooth decay in Aboriginal communities (Harrison & White, 1997) and among immigrant children in Vancouver (Harrison, Wong, Ewan, Contreras, & Phung, 1997). A method to collect province-wide data on nursing bottle tooth decay is currently being developed. This information will be collected in conjunction with regular well-baby visits.

Recommended Actions:

- ***Improve access to dental health education and dental care among at-risk groups (Aboriginal children, immigrant children, children in disadvantaged families).***
- ***Increase awareness of early childhood tooth decay and nursing bottle tooth decay as dental health problems.***
- ***Promote dentally-healthy child feeding and comforting practices.***
- ***Support fluoridation of community water supplies to levels recommended by the Canadian Dental Association and the College of Dental Surgeons of B.C.***

Are We Meeting Our Commitments to Children?

9

We have made progress in many areas of child health. However, there is still some distance to go, if we are to meet our commitments to ensuring that all young children receive the best possible start in life. The Convention on the Rights of the Child and British Columbia's health goals provide yardsticks for assessing progress.

British Columbia has signified its intention to promote and protect the health of children through initiatives such as *Health Goals for British Columbia, Measuring Our Success*, and the United Nations *Convention on the Rights of the Child*. These three instruments, which have been drawn upon in preparing this report, contain a number of specific goals and commitments with regard to children's health.

Health Goals for British Columbia

Health Goals for British Columbia were announced by the Minister of Health in March 1998. These goals, approved by Cabinet, include a number of objectives that specifically address child and family health issues, as well as many that address the broader socioeconomic, environmental, and health care issues that are important to child health (Appendix E).

An advisory committee has been appointed to provide leadership, direction, and collaborative action to help realize the goals. The committee represents different sectors of society that influence health including government, business, labour, non-profit organizations, and academia.

In its first meeting, the advisory committee identified early child development as one of its priority areas for action. In the coming months, the committee will undertake activities to promote, monitor, and report on progress with respect to child health and development.

Measuring Our Success

In 1997, the Ministry for Children and Families published *Measuring Our Success*, which sets out its goals for child and family well-being (Appendix D), along with indicators and benchmarks. The document identifies specific outcomes the Ministry aims to achieve in the area of child health.

Measuring Our Success will be updated on a regular basis. The next edition is scheduled to be published in the summer of 1998.

Convention on the Rights of the Child

The *Convention on the Rights of the Child* is an international human rights treaty that has been adopted by the United Nations General Assembly. It has been signed and ratified by many countries, including Canada. British Columbia has expressed its support for the *Convention*.

The *Convention* aims to protect children's civil, political, social, economic, and cultural rights. Its 54 articles deal with issues such as the health and welfare of children, education, cultural rights, and children in conflict with the law.

Canada and other nations that have signed the *Convention* are required to make periodic reports to the United Nations regarding progress on children's rights. Canada's next report, covering the period 1994-1998, is due to be made in January 1999. Each province will contribute to the preparation of Canada's report.

Are We Meeting Our Commitments?

Overall, the children of British Columbia are among the healthiest in the world. However, the evidence presented in this report shows that we still have some distance to go, if we are to meet our obligations to children.

Table 38 summarizes some of the information presented in this report as it relates to the *Convention on the Rights of the Child*. This table is not intended to be critical of government or other sectors. Rather, it is designed to be helpful in thinking about areas for improvement, and to identify measures that could be used to monitor progress.

Improving the health of British Columbia's children, and some practical means to achieve this, are discussed in the following chapters.

Table 38
Convention Articles Discussed in the
Provincial Health Officer's Annual Report

Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<p><i>Protection from discrimination</i> Article 2(1)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • Aboriginal children have made significant health gains in recent years. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • A system of haves and have-nots exists. Aboriginal children, children in low-income families, and those living in the north and in parts of Vancouver do not enjoy the same good health as those in other groups and regions of the province.
<p><i>Standards for child care and protection</i> Article 3(3)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • Standards are in place for child care facilities that are licensed under the <i>Community Care Facility Act</i> and the Child Care Regulation. Standards cover administration and health and safety (e.g., fire safety, hygiene, space requirements, staff qualifications). <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Better methods are needed to assess the quality and outcomes of care provided. • Most (79%) children in non-parental care are in unregulated (unlicensed and unmonitored) care arrangements.
<p><i>Implementation</i> Article 4</p>	<p>Progress:</p> <ul style="list-style-type: none"> • The importance of child health has been recognized and some concrete actions taken. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Problems such as child poverty and inequities in health status are well-known and long-standing. Child poverty rates have shown no improvement over the past 20 years.
<p><i>Children's right to survival and development</i> Article 6(2)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • Infant and child death rates have declined and are now at a low rate. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Some children do not survive, grow, and develop to their full potential. • Preventable deaths, illnesses, and injuries occur. • Mental and emotional health is an area of particular concern.

Table 38
Convention Articles Discussed in the
Provincial Health Officer's Annual Report

Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<p><i>Support for child care services</i> Articles 18(2) and 18(3)</p>	<p>Progress:</p> <ul style="list-style-type: none"> ● Provincial government funding for child care has increased substantially in recent years; much (60%) of the government's child care funding is used to subsidize the child care costs of low-income families. ● Programs have been established to provide training, support, and referrals to parents and caregivers. ● Efforts are under way to improve accountability for results and to make better use of existing dollars. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Government funding covers only 15% of the total cost of child care services. ● Nearly one-third (31%) of parents report child-care barriers such as cost or difficulty finding care they feel comfortable with. ● More work is needed to identify and monitor the outcomes we aim to achieve from child care programs and services.
<p><i>Protection from violence and abuse</i> Articles 19(1) and 19(2)</p>	<p>Progress:</p> <ul style="list-style-type: none"> ● There are policies and services in place to respond to identified cases of child abuse. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● The number of children who experience violence, abuse, or maltreatment is not known precisely. Available data, such as confirmed cases of child abuse and neglect, show that violence and abuse are not uncommon. ● Section 43 of the federal <i>Criminal Code</i> allows parents to use physical force (punishment) to correct a child.
<p><i>Quality of life for disabled children</i> Article 23(1)</p>	<p>Progress:</p> <ul style="list-style-type: none"> ● Statistics Canada's Health and Activity Limitation Survey (in 1986) provided data on the ability of children with disabilities to participate in activities of daily living (school attendance, availability of public transportation). <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● We lack ongoing, comprehensive data to assess quality of life for disabled children.

Table 38
Convention Articles Discussed in the
Provincial Health Officer's Annual Report

Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<p><i>Access to health services</i> Article 24(1)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • Under the terms of the <i>Canada Health Act</i>, all children have access to essential medical services that are comprehensive and accessible without financial barriers. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Levels of antibiotic prescribing and regional variations in services such as Ritalin prescribing, myringotomy, and tonsillectomy suggest that some children may be receiving unnecessary treatments.
<p><i>Primary health care</i> Article 24(2)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • Most children are receiving immunization, screening for specific diseases and health problems, and other effective population programs designed to maintain health. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Improvements are possible on various indicators, such as rates of infant mortality, low birthweight, breastfeeding, obesity, exposure to environmental tobacco smoke, intestinal illnesses, unintentional injuries, uptake of preventive health services, and availability prenatal outreach services.
<p><i>Right to an adequate standard of living</i> Article 27(1)</p>	<p>Areas for improvement:</p> <ul style="list-style-type: none"> • One child in five lives in a low-income family, and the trend is not improving. Not all children living in poverty have poor outcomes, but a stable and adequate family income provides greater opportunities for children to achieve health.
<p><i>Material assistance and support</i> Article 27(2) and 27(3)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • The provincial government provides a range of supports such as income assistance and social housing. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • The income assistance support allowance (to cover food, transportation, clothing, recreation, and toiletries) is less than the cost of nutritious food, and one-third of renter households are unable to afford suitable, adequate, and affordable housing.

Table 38
Convention Articles Discussed in the
Provincial Health Officer's Annual Report

Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<p><i>Education</i> Article 29(1)</p>	<p>Progress:</p> <ul style="list-style-type: none"> • Most children enter school "school-ready", have positive attitudes about school, and achieve reading, math, and science skills that are comparable to children in other industrialized countries. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Some children are unable to take full advantage of educational opportunities, because the effects of poverty or other experiences in early childhood compromise productive learning.
<p><i>Access to cultural and recreational activity</i> Article 31(1) and 31(2)</p>	<p>Areas for improvement:</p> <ul style="list-style-type: none"> • We lack data to measure children's access to cultural, artistic, and recreational activity. • Two-thirds of Canadian children are not active enough to enjoy the health benefits of physical activity.
<p><i>Protection from illicit drug use</i> Article 33</p>	<p>Areas for improvement:</p> <ul style="list-style-type: none"> • Based on hospital records, about 150 babies each year are born affected by their mothers' use of drugs during pregnancy. The drugs involved are primarily cocaine and heroin.
<p><i>Protection from sexual abuse and exploitation</i> Article 34</p>	<p>Progress:</p> <ul style="list-style-type: none"> • A recent conference resulted in a declaration and agenda for action that was developed by children and youth themselves who have been sexually exploited. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • The number of children and youth who are sexually abused or sexually exploited is not known precisely. Interviews with children and youth involved in sex trade work show that sexual exploitation does occur.

Convention on the Rights of the Child. Adopted by the General Assembly of the United Nations on November 20, 1989. The Convention articles listed above may be found in Appendix C.

Investing in Child Health and Development

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Helping all children to achieve good health is a wise investment – from an economic standpoint, as well as from the perspective of improving population health. Investment in child health and development needs to be increased; governments, the corporate sector, and communities all have a role to play in meeting this challenge.

Because resources are finite and limited, it is essential that we invest wisely, so as to make the best possible contribution to improving the health of British Columbians.

Why Invest In Child Health?

Investing in early childhood development is worthwhile. In a review of lessons learned from programs and projects in both developed and developing countries, a World Bank discussion paper (Young, 1995) found that investments in early childhood development can:

- *Increase the efficiency of primary and secondary education.* Children who arrive at school "ready to learn" are more able to take full advantage of educational opportunities. Learning difficulties are minimized, and monies devoted to the education system are more productively spent.
- *Contribute to future productivity and income.* Children who are given a healthy start are more likely to be employed and to have higher earnings – factors that contribute to their personal health. The work force becomes more productive and competitive, which contributes to the health of the economy.

- *Reduce costs of health and other public services.* Optimal physical growth and development reduces the occurrence of disease, injuries, and other health and social problems, thereby avoiding expensive treatments and services.

Investing in child development also attacks some of the underlying causes of poverty and inequities in health. By providing children with a more equitable start, we can achieve a fairer distribution of wealth and of the good things in life, among all population groups and regions.

Current Spending

When considering how tax dollars are spent, taxpayers are interested in knowing what they are getting for their money.

The total provincial budget is about 21 billion dollars. Of every dollar the provincial government spends, approximately 36 cents goes to health services, 29 cents to education, and 14 cents to social services. Spending patterns fluctuate from year to year, reflecting changes in policy. Over the past decade, the proportion spent on health, education, social services, protection of persons and property, and debt servicing have increased, with decreases in natural resources, economic development, and transportation (Table 39).

Table 38 Provincial Government Expenditure by Function, B.C., 1990/91 and 1998/99

Function	Percent	
	90/91	98/99
Health	32.1	36.1
Social services	10.5	14.4
Education	27.1	29.0
Protection of persons and property	4.6	5.0
Transportation	8.0	3.8
Natural resources and economic development	7.5	4.2
Other	5.3	2.0
General government	1.8	1.2
Debt servicing	3.2	4.3
Total	100.0	100.0

Government's estimated expenditures, as presented to the Legislative Assembly for approval each fiscal year. Source: B.C. Ministry of Finance and Corporate Relations. Estimates, fiscal year ending March 31.

It is not possible in our present budgetary system to determine how much is spent specifically on children and what the outcomes relative to these expenditures may be. Considerable amounts are spent on programs and services for children by the ministries of Health, Education, Children and Families, and Finance.

Despite the accounting obstacles, it is possible to consider how investment in children could be increased, by re-allocating funds between and within various government enterprises.

What Do We Need To Do To Improve Children's Health?

Providing the means whereby all children can enjoy good health requires a planned approach, along with political commitment and adequate funding for needed policies, services, and other actions. Some actions that can be taken to improve the health of British Columbia's children include:

- A provincial policy that all families with children should have access to quality child care services, without a financial barrier. This should be coupled with tax incentives to allow parents who wish to provide care for their children at home to do so.
- A province-wide program to identify children at risk of abuse or neglect and to offer such families an array of support services.
- Provision of cost-effective health services, as they become established through evidence.
- A policy of reducing both the number of families living in poverty and the depth and duration of poverty.
- A commitment to integrate specific questions on child health into ongoing decision-making.

The development of the budgetary implications of these suggestions is beyond the scope of this report. However, there can be little doubt that they will be expensive. They must be thought of as a cost-effective investment.

There are several approaches that can be taken to fund these initiatives. Since there will be savings in the health care, criminal justice, and social services sectors, proportional amounts could be re-allocated from each of these service areas. Since savings will be realized over as long as 10 to 20 years, as with any investment, the funds should be considered for amortization over a 20-year period.

Unlike accounting systems in some private sector enterprises, government accounts are characterized by an inability to identify savings realized from introducing cost-effective interventions. In health care over the last few decades, several diseases have been eliminated (smallpox and polio) or greatly diminished (measles and haemophilus meningitis) through the introduction of a series of highly cost-effective immunization programs. The savings from these measures accrue from reduced hospital utilization, reduced physician and diagnostic services, and reduced drug costs. However, in our present system, these savings are not tracked and therefore they are simply diverted into other health care services without any specific planning or awareness.

If we are to properly fund the healthy development of our children, we should consider changing our accounting systems to track outcomes of services provided and to make more deliberate and rational reallocation of savings accruing from the introduction of cost-effective and cost-saving programs.

The corporate sector can also contribute to the better care of British Columbia's children. How could they do this?

- By encouraging organizations to assess the impact they have on children and families ("social auditing").
- By enacting family-friendly workplace policies such as on-site child care, parental leave, shorter work hours, and more equitable wage structures.
- By publicizing examples of corporations that have family-friendly policies.
- By participating financially in funding cost-effective programs for children, as well as measures that create local social capital, for example, support for locally-based clubs and associations, community gatherings, and volunteer activities.

Many other groups and sectors have an important role to play in improving the health of British Columbia's children. These include non-government organizations, community groups, and the citizens they represent. Individuals and community organizations can contribute to child health and well-being in many ways. Some examples are:

- By reading and keeping informed about child health issues.
- By adopting healthy policies at home, such as providing opportunities for children to participate in family decision-making.
- By asking government representatives and decision makers about child poverty, tax policies, child care and social housing programs, opportunities for recreation and sport, and other policies and services that affect children.
- By doing volunteer work with children and families.

How do we bring all these sectors together to develop a comprehensive provincial approach to this critical endeavour? One way would be to develop a provincial children's agenda, with input from all of the above stakeholders.

Recommended Actions:

- ***Develop a provincial children's agenda to provide a comprehensive approach to child health and development.***
- ***Integrate specific questions on child health into impact assessments and other policy and planning decisions.***
- ***Publicize examples of corporations and other organizations that have family-friendly policies.***

This chapter lists the actions recommended in this year's report. These recommendations are intended to stimulate discussion and action by the many groups and individuals with an interest in child health.

As in previous annual reports, this year's report has identified a number of recommended actions. These are based on analysis from this office and are intended to provide guidance to those involved in taking actions to improve health, at provincial, regional, and community levels.

Specific actions recommended in this year's report are listed below.

Chapter 2: Health Status of British Columbia's Children

- Encourage research into the causes and prevention of pre-term and low birthweight births.
- Improve the collection and analysis of provincial information about the non-life-threatening illnesses and health problems that children experience.
- Develop strategies to address the factors underlying the inequities in children's health status: inequalities in income, social status, housing, and other aspects of daily life.
- In addition, address the special needs of at-risk groups, in particular, Aboriginal children, children in low-income families, and children-in-care.

- Continue to improve provincial information about Aboriginal children, children in low-income families, children-in-care, and other vulnerable groups of children. Data definitions and categories should be compatible with other systems designed to track health and disease in the total child population.
- The Ministry for Children and Families should develop data and information systems to track health outcomes, including hospitalizations and deaths, for all children who are or have been in-care.

Chapter 3: Growing Up in British Columbia

Healthy Home Environment

- Evaluation and wider implementation of the at-risk approach to early child development should be expeditiously completed and adequately funded.

Economic Security

- Recognize the right of every child to an adequate standard of living, as set out in the United Nations *Convention on the Rights of the Child*. As a society, we have a responsibility to ensure that basic needs such as food and shelter are met.
- Reduce the number of children living in poverty and reduce the depth and duration of poverty. Policies to reduce child poverty should include an access component (for example, access to public transport, grocery stores with fresh fruits and vegetables, libraries, and opportunities for recreation and sports).
- Provide the public with the facts about the important effect of income distribution on the health of all.
- Develop better information systems so that up-to-date, accurate data on earned and disposable income and the major population health indicators such as infant mortality rate, life expectancy, and low birthweight are available in a timely way.
- Ensure that senior policy makers at all levels of government are aware of the negative health consequences associated with growing inequities resulting from regressive taxation and the erosion of social programs, and that a balance with the need for fiscal responsibility must be struck.
- Encourage the corporate sector to adopt more equitable wage structures.

Quality Care in Early Childhood

- Adopt the principle (modelled on the principles of Medicare) that all children in British Columbia should have access to quality care that optimizes their growth and development.
- Where parents or guardians elect to provide care for their children at home, they should be supported in their child-rearing efforts through tax credits or other incentives, opportunities to develop parenting skills, and other supports.

- Where parents elect to place their children in non-parental child care arrangements, all children in British Columbia should have access to quality child care without financial barriers. The implementation of this policy could be pursued as a partnership with the federal government, local health authorities, and the corporate sector.
- Encourage family-friendly workplace policies such as on-site child care, parental leave, and policies that allow employees to retain skills and contacts during extended leaves.
- Develop standards for quality in child care settings that can be used as guidelines for parents and providers in informal settings and as a means for appraisal in licensed child care facilities.
- Develop a system for identifying all at-risk children and proactively offering good quality child care as part of a comprehensive program to assist at-risk families.
- Encourage further research into the outcomes associated with good quality child care compared to home-only care.
- Routinely assess all children for school readiness and provide these data on a regional basis, so that parents are aware of progress in the provision of good care in early childhood.

Healthy Neighbourhoods and Communities

- Develop a provincial or national program to create "healthy neighbourhood" or "child-friendly" scores for each community.
- Encourage "social auditing" scores for corporations.
- Support community-level policies and projects that build "social capital", e.g., participation in voluntary activities, community gatherings, opportunities for recreational, cultural, and social interaction.

Chapter 4: Child Growth and Development

Healthy Physical Growth and Nutrition

- Ensure that all women at risk of low birthweight have access to prenatal care and supports that combat the effects of poverty and other risk factors.
- Ensure that all children have access to enough nutritious food for healthy growth and development.
- Ensure that the cost of nutritious food is within the Income Assistance support allowance, for each region of the province.
- Introduce an effective program to identify pregnant women who smoke and to provide smoking cessation services.
- Local health authorities should encourage all maternity hospitals to promote and protect breastfeeding by following the International Code of Marketing of Breast Milk Substitutes and the Ten Steps to Successful Breastfeeding from the World Health Organization and UNICEF. Performance against these standards should be reported to the public and media through published reports or other means.
- Promote breastfeeding-friendly environments in work places and public places. Inform women of their maternity benefits and policies regarding reasonable accommodation for employees who are breastfeeding, such as flexible schedules, job sharing, and breastfeeding rooms.
- Implement a coordinated, comprehensive strategy to encourage healthy eating, physical activity, and healthy body image, along with a method to evaluate effectiveness.

Learning Opportunities

- Ensure early identification and prompt intervention for developmental problems for all children.
- Extend effective school readiness, school meal, and other equity programs to all children who are or should be eligible.

- Continue to monitor student outcomes and performance, among students overall, disadvantaged students, and students who participate in targeted programs.

Mental and Emotional Health

- Continue to gather and analyze data to determine how children's mental and emotional health is progressing and the degree to which mental health services are meeting the needs of children with mental and behavioural problems.

Making Healthy Choices

- The B.C. Minister of Health and every local health authority chair should recommend to the federal minister that there be no exceptions to the ban on tobacco sponsorship.
- School-based smoking prevention programs should be intensified.
- All schools should adopt smoke-free policies, indoors and out.
- The provincial government, the medical profession, and other health care providers should work together to ensure that smoking cessation services are offered to all smokers. Financial incentives and performance monitoring should be implemented to ensure that an effective smoking cessation program is in place.
- The provincial government, cooperatively with local health authorities, should monitor smoking prevalence and the outcomes of tobacco reduction activities on a regular basis.
- Develop strategies that encourage children to adopt a physically active lifestyle, starting at a very young age.
- Encourage adults to be physically active, as good role models for children.
- Improve children's access to places where they can be physically active, by reducing barriers such as cost and lack of transportation.

- Require daily physical education in each school grade; school-based programs should include education about the health benefits of physical activity and participation in moderate-to-vigorous physical activity, with an emphasis on physical activities that can be enjoyed throughout life.

Chapter 5: Physical Environment

Clean Air

- Set a goal of increasing the proportion of children who are brought up in non-smoking environments.
- Improve coordination of health and safety efforts in schools.
- Require an evaluative component when corrective measures are taken to reduce environmental risks (e.g., asbestos removal).
- Continue efforts to reduce exposure to airborne particles from industrial sources and domestic woodburning.
- Consider increased controls on motor vehicle emissions, particularly diesels.
- Promote public and alternate transportation systems.

Safe Food, Water, and Soil

- Take into account the characteristics of children when doing risk assessments and setting standards for protection of food and water supplies.
- Improve surveillance of children's exposure to lead.

Safe and Well-Designed Environments

- Encourage local efforts to track the number and type of injuries that children experience, as a basis for targeted injury reduction measures.

A Sustainable Environment

- Encourage scientific research and public discussion about environmental risks and the options for managing them.
- In developing policies, standards, and other decisions about the physical environment, give explicit scientific consideration to children's characteristics and behaviour.
- Take measures to protect children from exposure to the sun. Ensure that sufficient shade is incorporated into plans for schools, playgrounds, sports grounds, and other public areas, and organize children's activities to take place away from the sun.

Chapter 6: Health Services for Children

Prevention, Screening, and Early Support

- Continue to provide immunization, screening for developmental risk factors, and other population programs designed to maintain children's health.
- Ensure that prenatal outreach programs are available and accessible to all women at risk of poor pregnancy outcomes due to factors such as poverty, substance abuse, or inadequate nutrition.
- Health authorities and service providers should continue efforts to improve coordination of all facets of reproductive health care.
- Health authorities should continue to develop information to monitor the outcomes of population health services provided to children and youth.

Treatment Services

- Assess costs and effectiveness of medical and non-medical treatment for Attention Deficit Hyperactivity Disorder (ADHD).

- When guidelines for ADHD are available (currently being developed by the Canadian Pediatric Society), assist clinicians to use the published guidelines and establish methods for monitoring adherence to guidelines.
- Educate parents and other caregivers about appropriate treatment of common childhood diseases such as upper respiratory infections, otitis media, and allergies. This could be done through the use of tools such as self-care handbooks and the provision of telephone advice.
- To prevent the spread of antibiotic resistance, community education campaigns involving citizens, prescribers, and pharmaceutical advertisers should be undertaken to increase local awareness, change expectations, and improve prescribing practices.
- Continue to develop practice guidelines and encourage less reliance on surgery to treat common childhood illnesses.
- Provide parents and caregivers with information about child growth and development, common childhood diseases, when and how to access the health services system, and what to expect.
- Improve information systems to provide better information about utilization, quality, and outcomes of health services for children.
- Set targets for the proportion of health resources allocated to evaluation and quality improvement.

Chapter 7: Aboriginal Children

- Promote efforts to reduce poverty and improve living conditions in Aboriginal communities.
- Support efforts by Aboriginal people to achieve self-governance.
- Support programs and services that focus on the development of self-esteem, coping skills, and healthy behaviours.

Chapter 8: Disease and Injury Prevention

Congenital Anomalies

- Cooperate with federal authorities to ensure that the grain supply is enriched with folic acid to a level that will provide health benefits.
- Continue to follow scientific developments, such as the pilot study currently under way in Newfoundland. Press for a higher level of fortification of the grain chain, if evidence indicates that this is effective in preventing neural tube and other birth defects.
- Develop a professional and public education campaign to prevent neural tube defects. Encourage folic acid as a daily supplement for all women who may become pregnant (0.5 mg for most women, 4 mg for women who have had a child with a neural tube defect).
- Ensure that all women who may become pregnant have information and sufficient income to provide for an adequate diet and vitamin/mineral supplements, where appropriate.
- Include congenital anomalies from medically terminated pregnancies in provincial and national birth defects registries, to provide more complete information about the occurrence of congenital anomalies in the population.

Fetal Alcohol Syndrome

- Develop better methods for tracking the occurrence of fetal alcohol syndrome among the total population and among groups at higher risk. The Health Status Registry and reporting sources should work together to improve provincial information on this condition.
- Develop substance abuse education and prevention programs, for students at all levels and the general public.

- Ensure that programs such as Pregnancy Outreach are available and accessible to women at risk.
- Improve the ability of nurses, physicians, teachers, social workers, and other professionals to accurately identify drinking patterns and drinking problems.
- Develop, monitor, and report on physician performance in identifying and counselling for alcohol use in pregnancy.
- Develop hospital discharge planning protocols for FAS and drug-affected babies.

Drug-Affected Babies

- Encourage community-wide solutions to the problems of alcohol and drug abuse.
- Provide special treatment and recovery programs for women dealing with drug abuse.
- Provide integrated care for drug-affected babies and their families.

Sudden Infant Death Syndrome

- Increase awareness among parents, caregivers, and professionals of actions that are known to reduce the risk of SIDS, including having a healthy baby sleep on its back, not smoking during pregnancy or around a baby, and breastfeeding.
- Target SIDS awareness efforts to parents and caregivers of babies in high risk groups, such as Aboriginal babies and children-in-care.
- Continue to follow SIDS trends, scientific research, and prevention programs in this and other jurisdictions.
- Provide follow-up and support to families experiencing a SIDS death.

Respiratory Disease

- Set goals to increase the proportion of children who are raised in non-smoking environments.

- Develop ways to educate parents about prevention and treatment of common childhood illnesses, such as the connection between smoking and childhood respiratory disease.
- Develop a coordinated childhood asthma management plan to help standardize care around the province.
- Make greater use of at-home intravenous antibiotic programmes for selected cases of pneumonia and cystic fibrosis.

Unintentional Injuries

- Continue to work on strategies identified in the provincial injury prevention plan.
- Develop injury prevention plans at the community level.
- Increase research activities through the Injury Surveillance, Prevention, and Research Unit, with input from regions throughout the province.

Violence and Abuse

- Support development of effective programs to prevent child abuse and neglect, particularly those that focus on early childhood, such as home visiting programs and Nobody's Perfect (a parenting program).
- Health and social service agencies and community leaders should review the Declaration and Agenda for Sexually Exploited Children and Youth, as a basis for the development of actions to prevent the sexual exploitation of children in the future and in planning for appropriate services.
- Support community-level initiatives that address the underlying causes of violence.
- Develop programs to help parents recognize and control violent and aggressive behaviours in young children.
- Work with parents and families to help them understand how their behaviours may influence violent and aggressive behaviour in young children.

Vaccine-Preventable Diseases

- All regions should develop immunization goals and targets and plans as to how to achieve them.
- Health information standards should be developed for immunization and communicable disease reporting, so all jurisdictions within the province are able to report in a consistent and comparable way.
- An electronic registry for reporting communicable diseases, immunization rates, and adverse reactions should be an urgent priority. This will require cooperation between the Ministry of Health and local health authorities. Ways and means to enable reporting from physicians' offices should also be explored with the Medical Services Plan and the B.C. Medical Association.
- All who administer vaccines should closely examine the Guidelines for Immunization Practices (Table 35) and comply with them to the extent possible.
- The pneumococcal vaccine program should be expanded to protect the vulnerable of all age groups.
- Systems need to be developed to better report influenza vaccine coverage throughout the province.
- The Ministry of Health should examine the effectiveness and efficiency of the current mixed delivery system of immunization in British Columbia.

HIV/AIDS in Children

- Offer HIV testing to all pregnant women, with counselling and informed consent.
- Provide optimal HIV drug treatment to HIV-infected pregnant mothers and their children.
- Improve HIV care for disadvantaged children and families.
- Improve understanding of HIV disease in schools, health and social agencies, and in the community.

- Increase support of children whose parents have died from AIDS.

Allergies

- Identify innovative approaches to the management of asthma and other allergies that could be generalized to other areas of the province.
- Ensure that all school districts and schools have policies and procedures in place to ensure that the estimated 1% of British Columbia's children with life-threatening allergies are protected while they are at school and in child care settings.

Dental Health

- Improve access to dental health education and dental care among at-risk groups (Aboriginal children, immigrant children, children in disadvantaged families).
- Increase awareness of nursing early childhood tooth decay and bottle tooth decay as dental health problems.
- Promote dentally-healthy child feeding and comforting practices.
- Support fluoridation of community water supplies to levels recommended by the Canadian Dental Association and the College of Dental Surgeons of B.C.

Chapter 10: Investing in Child Health

- Develop a provincial children's agenda to provide a comprehensive approach to child health and development.
- Integrate specific questions on child health into impact assessments and other policy and planning decisions.
- Publicize examples of corporations and other organizations that have family-friendly policies.

Appendix A

Acknowledgements

A

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Appendix B References

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Appendix C

Convention on the Rights of the Child



In 1991, Canada ratified the *Convention on the Rights of the Child*, which seeks to protect children's civil, political, social, economic, and cultural rights.

The *Convention* is an international treaty that has been adopted by the United Nations General Assembly, signed and ratified by many countries. Its 54 articles deal with issues such as the health and welfare of children, education, cultural rights, and children in conflict with the law.

Canada and other nations that have signed the *Convention* are required to make periodic reports to the United Nations regarding progress on children's rights. Canada's next report, covering the period 1994-1998, is due to be made in January 1999.

This Appendix summarizes some of the information presented in this year's Provincial Health Officer's Annual Report, as it relates to articles in the *Convention*. This table is not intended to be critical of government or other sectors. Rather, it is designed to be helpful in thinking about areas for improvement, and to identify measures that could be used to monitor progress.

Please note that this Appendix does not include all 54 articles of the *Convention*, but only those for which related topics and indicators are presented in the Annual Report.

Copies of the full *Convention*, as adopted by the General Assembly of the United Nations on November 20, 1989, are available from:

Human Rights Program
Citizens' Participation Directorate
Department of Canadian Heritage
Hull QC K1A 0M5
Telephone 819-994-3458

CONVENTION ARTICLES DISCUSSED IN THE PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT

Topic	Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<i>Protection from discrimination</i>	Article 2(1): State Parties shall respect and ensure the rights set forth in the present Convention to each child within their jurisdiction without discrimination of any kind, irrespective of the child's or his or her parent's or legal guardians' race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.	<p>Progress:</p> <ul style="list-style-type: none"> ● Aboriginal children have made significant health gains in recent years. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● A system of haves and have-nots exists. Aboriginal children, children in low-income families, and those living in the north and in parts of Vancouver do not enjoy the same good health as those in other groups and regions of the province.
<i>Standards for child care and protection</i>	Article 3(3): State Parties shall ensure that the institutions, services, and facilities responsible for the care or protection of children shall conform with the standards established by competent authorities, particularly in the areas of safety, health, in the number and suitability of their staff, as well as competent supervision.	<p>Progress:</p> <ul style="list-style-type: none"> ● Standards are in place for child care facilities that are licensed under the <i>Community Care Facility Act</i> and the Child Care Regulation. Standards cover administration and health and safety (e.g., fire safety, hygiene, space requirements, staff qualifications). <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Better methods are needed to assess the quality and outcomes of care provided. ● Most (79%) children in non-parental care are in unregulated (unlicensed and unmonitored) care arrangements.
<i>Implementation</i>	Article 4: State Parties shall undertake all appropriate legislative, administrative, and other measures for the implementation of the rights recognized in the present Convention. With regard to economic, social and cultural rights, States Parties shall undertake such measures to the maximum extent of their available resources and, where needed, within the framework of international cooperation.	<p>Progress:</p> <ul style="list-style-type: none"> ● The importance of child health has been recognized and some concrete actions taken. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Problems such as child poverty and inequities in health status are well-known and long-standing. Child poverty rates have shown no improvement over the past 20 years.

CONVENTION ARTICLES DISCUSSED IN THE PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT

Topic	Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<i>Children's right to survival and development</i>	Article 6(2): States Parties shall ensure to the maximum extent possible the survival and development of the child.	<p>Progress:</p> <ul style="list-style-type: none"> ● Infant and child death rates have declined and are now at a low rate. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Some children do not survive, grow, and develop to their full potential. ● Preventable deaths, illnesses, and injuries occur. ● Mental and emotional health is an area of particular concern.
<i>Support for child care services</i>	Article 18(2): For the purpose of guaranteeing and promoting the rights set forth in the present Convention, States Parties shall render appropriate assistance to parents and legal guardians in the performance of their child-rearing responsibilities and shall ensure the development of institutions, facilities, and services for the care of children. Article 18(3): States Parties shall take all appropriate measures to ensure that children of working parents have the right to benefit from child-care services and facilities for which they are eligible.	<p>Progress:</p> <ul style="list-style-type: none"> ● Provincial government funding for child care has increased substantially in recent years. Much (60%) of the government's child care funding is used to subsidize the child care costs of low-income families. ● Programs have been established to provide training, support, and referrals to parents and caregivers. ● Efforts are under way to improve accountability for results and to make better use of existing dollars. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Government funding covers only 15% of the total cost of child care services. ● Nearly one-third (31%) of parents report child-care barriers such as cost or difficulty finding care they feel comfortable with. ● More work is needed to identify and monitor the outcomes we aim to achieve from child care programs and services.

CONVENTION ARTICLES DISCUSSED IN THE PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT

Topic	Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
Protection from violence and abuse	Article 19(1): States Parties shall take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the care of parent(s), legal guardian(s), or any other person who has the care of the child. Article 19(2): Such protective measures should, as appropriate, include effective procedures for the establishment of social programmes to provide necessary support for the child and for those who have the care of the child, as well as for other forms of prevention and for identification, reporting, referral, investigations, treatment and follow-up of instances of child maltreatment described heretofore, and, as appropriate, for judicial involvement.	<p>Progress:</p> <ul style="list-style-type: none"> • There are policies and services in place to respond to identified cases of child abuse. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • The number of children who experience violence, abuse, or maltreatment is not known precisely. Available data, such as confirmed cases of child abuse and neglect, show that violence and abuse are not uncommon. • Section 43 of the federal <i>Criminal Code</i> allows parents to use physical force (punishment) to correct a child.
Quality of life for disabled children	Article 23(1): States Parties recognize that a mentally or physically disabled child should enjoy a full and decent life, in conditions which ensure dignity, promote self-reliance and facilitate the child's active participation in the community.	<p>Progress:</p> <ul style="list-style-type: none"> • Statistics Canada's Health and Activity Limitation Survey (in 1986) provided data on the ability of B.C. children with disabilities to participate in activities of daily living (school attendance, availability of public transportation). <p>Areas for improvement:</p> <ul style="list-style-type: none"> • We lack ongoing, comprehensive data to assess quality of life for disabled children.
Access to health services	Article 24(1): States Parties recognize the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health. States Parties shall strive to ensure that no child is deprived of his or her right of access to such health care services.	<p>Progress:</p> <ul style="list-style-type: none"> • Under the terms of the <i>Canada Health Act</i>, all children have access to essential medical services that are comprehensive and accessible without financial barriers. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • Levels of antibiotic prescribing and regional variations in services such as Ritalin prescribing, myringotomy, and tonsillectomy suggest that some children may be receiving unnecessary treatments.

CONVENTION ARTICLES DISCUSSED IN THE PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT

Topic	Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
Primary health care	<p>Article 24(2): States Parties shall pursue full implementation of this right and, in particular, shall take appropriate measures: (a) to diminish infant and child mortality (b) to ensure the provision of necessary medical assistance and health care to all children with emphasis on the development of primary health care (c) to combat disease and malnutrition, including within the framework of primary health care, through, <i>inter alia</i>, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution (d) to ensure appropriate pre-natal and post-natal health care for mothers (e) to ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breast-feeding, hygiene and environmental sanitation and the prevention of accidents (f) to develop preventive health care, guidance for parents and family planning education and services.</p>	<p>Progress:</p> <ul style="list-style-type: none"> ● Most children are receiving immunization, screening for specific diseases and health problems, and other effective population programs designed to maintain health. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Improvements are possible on various indicators, such as rates of infant mortality, low birthweight, breastfeeding, obesity, exposure to environmental tobacco smoke, intestinal illnesses, unintentional injuries, uptake of preventive health services, and availability prenatal outreach services.
Right to an adequate standard of living	<p>Article 27(1): States Parties recognize the right of every child to a standard of living adequate for the child's physical, mental, spiritual, moral and social development.</p>	<p>Areas for improvement:</p> <ul style="list-style-type: none"> ● One child in five lives in a low-income family, and the trend is not improving. Not all children living in poverty have poor outcomes, but a stable and adequate family income provides greater opportunities for children to achieve health.
Material assistance and support	<p>Article 27(2): The parent(s) or others responsible for the child have the primary responsibility to secure, within their abilities and financial capacities, the conditions of living necessary for the child's development. Article 27(3): States Parties, in accordance with the national conditions and within their means, shall take appropriate measures to assist parents and others responsible for the child to implement this right and shall in case of need provide material assistance and support programmes, particularly with regard to nutrition, clothing, and housing.</p>	<p>Progress:</p> <ul style="list-style-type: none"> ● The provincial government provides a range of supports such as income assistance and social housing. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● The income assistance support allowance (to cover food, transportation, clothing, recreation, and toiletries) is less than the cost of nutritious food, and one-third of renter households are unable to afford suitable, adequate, and affordable housing.

CONVENTION ARTICLES DISCUSSED IN THE PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT

Topic	Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<i>Education</i>	<p>Article 29(1): States Parties agree that the education of the child shall be directed to (a) the development of the child's personality, talents, and mental and physical abilities to their fullest potential (b) the development of respect for human rights and fundamental freedoms, and for the principles enshrined in the Charter of the United Nations (c) the development of respect for the child's parents, his or her own cultural identity, language and values, for the national values of the country in which the child is living, the country from which he or she may originate, and for the civilizations different from his or her own (d) the preparation of the child for responsible life in a free society, in the spirit of understanding, peace, tolerance, equality of sexes, and friendship among all peoples, ethnic, national and religious groups and persons of indigenous origin (e) the development of respect for the natural environment.</p>	<p>Progress:</p> <ul style="list-style-type: none"> ● Most children enter school "school-ready", have positive attitudes about school, and achieve reading, math, and science skills that are comparable to children in other industrialized countries. <p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Some children are unable to take full advantage of educational opportunities, because the effects of poverty or other experiences in early childhood compromise productive learning.
<i>Access to cultural and recreational activity</i>	<p>Article 31(1): States Parties recognize the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts. Article 31(2): States Parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of appropriate and equal opportunities for cultural, artistic, recreational, and leisure activity.</p>	<p>Areas for improvement:</p> <ul style="list-style-type: none"> ● We lack data to measure children's access to cultural, artistic, and recreational activity. ● Two-thirds of Canadian children are not active enough to enjoy the health benefits of physical activity.
<i>Protection from illicit drug use</i>	<p>Article 33: States Parties shall take all appropriate measures, including legislative, administrative, social and educational measures, to protect children from the illicit use of narcotic drugs and psychotropic substances as defined in the relevant international treaties, and to prevent the use of children in the illicit production and trafficking of such substances.</p>	<p>Areas for improvement:</p> <ul style="list-style-type: none"> ● Based on hospital records, about 150 babies each year are born affected by their mothers' use of drugs during pregnancy. The drugs involved are primarily cocaine and heroin.

CONVENTION ARTICLES DISCUSSED IN THE PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT

Topic	Convention on the Rights of the Child	Information in Provincial Health Officer's Annual Report
<i>Protection from sexual abuse and exploitation</i>	Article 34: States Parties undertake to protect the child from all forms of sexual exploitation and sexual abuse. For these purposes, States Parties shall in particular take all appropriate national, bilateral, and multilateral measures to prevent (a) the inducement or coercion of a child to engage in any unlawful sexual activity (b) the exploitative use of children in prostitution or other unlawful sexual practices (c) the exploitative use of children in pornographic performances and materials.	<p>Progress:</p> <ul style="list-style-type: none"> • A recent conference resulted in a declaration and agenda for action that was developed by children and youth themselves who have been sexually exploited. <p>Areas for improvement:</p> <ul style="list-style-type: none"> • The number of children and youth who are sexually abused or sexually exploited is not known precisely. Interviews with children and youth involved in sex trade work show that sexual exploitation does occur.

This table summarizes some of the information presented in this year's Provincial Health Officer's Annual Report, as it relates to articles in the Convention on the Rights of the Child. The table does not include all 54 articles of the Convention, but only those for which related topics and indicators are presented in this annual report. Copies of the full Convention, as adopted by the General Assembly of the United Nations on November 20, 1989, are available from: Human Rights Program, Citizens' Participation Directorate, Department of Canadian Heritage, Hull QC K1A 0M5, telephone 819-994-3458.

Appendix D

Goals & Outcome Objectives for Children and Families

Source: Measuring Our Success: A Framework for Evaluating Population Outcomes. B.C. Ministry for Children and Families, September 1997. Copies of the full report, which includes baseline data for British Columbia and benchmarks for measuring progress, are available from Regional Operations and Performance Management Division, Ministry for Children and Families, telephone (250) 387-3010.

Goal 1: To promote the healthy development of children, youth and families.

Objective 1.1: To optimize the health of babies at birth.

Objective 1.2: To optimize the health and well-being of infants and young children.

Objective 1.3: To optimize the health and well-being of children.

Objective 1.4: To optimize the health and well-being of youth.

Objective 1.5: To optimize potential of children and youth with disabilities.

Objective 1.6: To optimize the health and well-being of families with children.

Objective 1.7: To reduce teen pregnancy.

Objective 1.8: To reduce substance abuse by children and youth.

Objective 1.9: To reduce substance abuse by adults.

Objective 1.10: To reduce suicide by children and youth.

Goal 2: To protect children and youth from abuse, neglect and harm.

Objective 2.1: To reduce abuse, neglect and harm of children and youth.

Objective 2.2: To reduce the occurrence and spread of vaccine-preventable diseases.

Objective 2.3: To reduce unintentional injury and premature death of children and youth.

Goal 3: To support adults with developmental or multiple disabilities to live successfully and participate in the community.

Objective 3.1: To increase success of adults with developmental or multiple disabilities living in the community.

Objective 3.2: To increase participation of adults with developmental or multiple disabilities in the community.

Goal 4: To protect public safety.

Objective 4.1: To reduce youth involvement in crime.

Appendix E

Provincial Health Goals

*Source: Health Goals for British Columbia.
B.C. Ministry of Health and Ministry
Responsible for Seniors, December 1997.
Copies of the health goals document are
available from the Office for the Provincial
Health Officer, telephone (250) 952-0876.*

Mission: To maintain and improve the health of British Columbians by enhancing quality of life and minimizing inequalities in health status.

Goal 1: Positive and supportive living and working conditions in all our communities.

Objective 1.1: Improve and maintain equitable opportunities for employment for British Columbians, by expanding the diversity of the economy and ensuring the sustainability of economic activity.

Objective 1.2: Reduce the concentration of marginalized and disadvantaged groups in lower paying and lower status jobs, and increase social recognition and valuing of jobs at all levels.

Objective 1.3: Reduce the impact of job loss on individuals and communities, for example, through effective industrial adjustment strategies and re-training initiatives.

Objective 1.4: Increase participation in decision-making and reasonable control over work tasks for all types of workers.

Objective 1.5: Improve and maintain quality of life in the workplace, including:

- protection from physical hazards and freedom from harassment;
- policies and supports to help balance work and family responsibilities; and,
- supports for workers with disabilities, chronic illnesses, or other special needs.

Objective 1.6: Improve and maintain appropriate supports and protection for workers in non-standard employment situations such as part-time work, job sharing, home employment, and self-employment.

Objective 1.7: Reduce poverty in British Columbia.

Objective 1.8: Reduce the gap between British Columbians at the lowest and highest income levels, to achieve a more equitable income distribution.

Objective 1.9: Increase the safety and security of communities throughout B.C., including:

- increased sense of personal safety and mutual responsibility for safe communities; and,
- reduced crime and interpersonal violence.

Objective 1.10: Increase opportunities to develop positive and supportive interpersonal relationships and social networks, including:

- access to organized and informal community-based sports, recreation, social, arts, and cultural activities;
- opportunities and supports for voluntary activities; and,
- access to self-help and mutual support activities.

Objective 1.11: Increase opportunities and supports for healthy family functioning, including:

- education and supports for effective parenting;
- affordable quality child care and other supports for working parents;
- recognition and supports for unpaid family caregivers; and,
- access to self-help and mutual support resources for families.

Objective 1.12: Increase access to affordable housing that meets household needs, with reasonable choice in tenure, building type, and location, including:

- affordability of home ownership for first time buyers;
- sufficient amount and variety of moderately priced rental housing; and,
- affordable and accessible housing options for individuals with low incomes or other special needs.

Objective 1.13: Increase the range of secure housing options and housing stock for people who are homeless or at risk of homelessness.

Objective 1.14: Improve and maintain the design of communities to ensure quality of life for residents, including:

- accessible public places for all persons;
- appropriate transportation infrastructure, including public transportation; and,
- neighbourhoods with appropriate access to services and amenities required for health, security and stability, and protection from hazards that harm quality of life.

Goal 2: Opportunities for all individuals to develop and maintain the capacities and skills needed to thrive and meet life's challenges and to make choices that enhance health.

Objective 2.1: Improve and maintain supports to ensure all young children receive the best possible start in life, including:

- appropriate prenatal and postnatal care;
- effective early childhood nurturing and parenting; and,
- appropriate early childhood stimulation, socialization, and education.

Objective 2.2: Improve and maintain the skills and personal characteristics British Columbians need to participate fully in the social, cultural, and economic life of the province, through learning opportunities and supports to develop:

- a sense of personal effectiveness, self-reliance, and self-esteem;
- skills for acquiring knowledge, thinking critically, solving problems, making informed decisions, communicating effectively, managing life events, and coping with stress;
- awareness of individual rights and a capacity to exercise personal responsibilities as members of society; and,
- a commitment to life-long learning.

Objective 2.3: Improve and maintain the skills and capacities of British Columbians to find productive employment in a competitive labour market, including:

- appropriate employment competencies for youth and young adults, developed within a flexible, accessible formal education system; and,
- capacity of those in the workforce to adapt and respond to changes in skill requirements and labour market demands, through access to education and training opportunities throughout adult life.

Objective 2.4: Improve and maintain individual capacity and supports for making healthy lifestyle choices to enhance personal well-being and reduce health risks by:

- Increasing the percentage of British Columbians who do not smoke;
- Reducing the percentage of British Columbians who use alcohol or drugs inappropriately or excessively;
- Increasing the percentage of British Columbians who regularly participate in healthy physical activity;
- Increasing the percentage of British Columbians who have a healthy diet;
- Increasing the percentage of sexually active British Columbians who use appropriate contraception and safer sex practices; and
- Increasing the percentage of British Columbians who use appropriate safety practices, e.g., safe driving habits, safe participation in sports, protection from over-exposure to the sun.

Objective 2.5: Increase or maintain the capacity for independent living of persons who require assistance with activities of daily living due to disabilities or limitations in their physical, mental, social, or emotional functioning, including:

- access to necessary supports and services, including recognition of and supports for family and other informal caregivers, and
- capacity to take responsibility for, or participate in, planning and managing personal supports and services.

Goal 3: A diverse and sustainable physical environment with clean, healthy, and safe air, water and land.

Objective 3.1: Improve and maintain air quality throughout British Columbia.

Objective 3.2: Improve and maintain the quality and safety of water throughout British Columbia.

Objective 3.3: Improve and maintain a sustainable, safe and nutritious food supply for all British Columbians.

Objective 3.4: Improve and maintain the quality of land and soil across British Columbia.

Objective 3.5: Decrease damage to the global atmosphere.

Objective 3.6: Minimize the negative impact of human settlement and activity on the long-term sustainability of natural resources.

Goal 4: An effective and efficient health service system that provides equitable access to appropriate services.

Objective 4.1: Maintain commitment to a health service system that is based on the principles of universality, accessibility, comprehensiveness, portability and public administration.

Objective 4.2: Improve the process of allocating resources for health services across the province, to ensure that it is equitable, understandable, and based on population characteristics and needs.

Objective 4.3: Increase access to services that have been proven cost-effective but are not uniformly or consistently used. Decrease utilization of health services, technologies, and medication which the evidence indicates are inappropriate, ineffective, or over-utilized.

Goal 5: Improved health for Aboriginal peoples.

Although considerable work toward developing objectives and indicators for this goal has occurred, more discussions are still needed. A process to finalize specific objectives and indicators must include the extensive involvement of Aboriginal peoples, and must complement the other processes and negotiations that are underway concerning Aboriginal health, First Nations self-government, and other key issues. Therefore, no objectives or indicators are being presented at this time.

Goal 6: Reduction of preventable illness, injuries, disabilities, and premature deaths.

Objective 6.1: Reduce cardiovascular disease.

Objective 6.2: Reduce breast cancer, cervical cancer, lung cancer, and melanoma skin cancer.

Objective 6.3: Reduce respiratory disease.

Objective 6.4: Reduce or maintain current very low levels of vaccine-preventable diseases.

Objective 6.5: Reduce cases of active tuberculosis.

Objective 6.6: Reduce HIV infection rates.

Objective 6.7: Reduce sexually transmitted diseases.

Objective 6.8: Reduce the incidence and impact of chronic disabling conditions.

Objective 6.9: Reduce unintentional injuries and premature deaths.

Objective 6.10: Reduce injuries and deaths from interpersonal violence and abuse.

Objective 6.11: Reduce deaths from use of illegal drugs.

Objective 6.12: Reduce waterborne and foodborne diseases.

Objective 6.13: Reduce neural tube defects.

Objective 6.14: Reduce the negative impact of mental illness.

Objective 6.15: Reduce suicides.

Objective 6.16: Reduce the incidence and spread of infectious diseases, particularly emerging infectious diseases, through improved surveillance.

Appendix F

Data by Health Region

Note:

The indicators presented in this report were compiled from various sources. For many data sources, e.g., national surveys, data are available for the province as a whole, but not at the sub-provincial level.

Where data permit, the following Appendix provides indicator data for 20 geographic regions, for the most recent year available. A map showing the names and locations of the regions may be found in Appendix G.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate				
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				CAP			
EK	WK	NO	SO	TH	FV	SFV	SF	CG	CVI	UI	CA	NW	PL	NI	VA	BU	NS	RI	CAP								
HEALTH STATUS																											
1 Infant mortality																											
Infant deaths 1992-1996	20	29	33	65	38	90	186	104	18	100	44	23	38	29	69	227	44	35	35	87	1318						
Rate per 1,000 live births	4.9	7.3	5.6	5.8	5.2	5.6	5.0	5.2	4.1	7.9	6.5	4.8	5.3	5.6	7.6	7.6	4.3	3.7	4.1	5.2	5.7	3.7	7.9				
2 Stillbirths																											
Stillbirths 1992-1996	28	28	40	63	43	119	258	115	39	80	51	29	45	23	87	244	57	38	49	99	1544						
Rate per 1,000 total births	6.8	7.0	6.7	5.6	5.9	7.3	6.8	5.7	8.8	6.3	7.5	6.1	6.3	4.4	9.5	8.1	5.6	4.0	5.7	5.9	6.6	4.0	9.5				
3 Low birthweight, 1992-1996																											
Births less than 2500 grams	170	218	223	612	404	778	1982	963	206	630	322	253	333	216	459	1731	562	411	392	798	11683						
As a percent of live births	4.2	5.4	3.8	5.5	5.5	4.8	5.3	4.8	4.7	5.0	4.8	5.3	4.7	4.2	5.1	5.8	5.5	4.4	4.6	4.8	5.1	3.8	5.8				
4 Pre-term births, 1992-1996																											
Births less than 37 wks	174	225	290	699	480	939	2406	1196	261	838	409	311	445	252	586	2118	680	535	517	1051	14429						
As a percent of live births	4.3	5.6	4.9	6.2	6.6	5.8	6.4	6.0	6.0	6.6	6.1	6.5	6.2	4.9	6.5	7.1	6.7	5.7	6.0	6.3	6.2	4.3	7.1				
5 Child mortality rate																											
ASMR age 0-18	5.5	7.1	7.3	6.7	7.6	6.4	5.1	5.5	5.6	8.4	7.1	10.1	9.5	8.1	9.6	7.3	4.6	4.4	4.4	6.3	6.6	4.4	10.1				
6 Life expectancy at birth																											
Male	76.5	74.7	75.9	76.8	73.7	76.1	77.0	75.4	75.7	75.1	75.3	74.8	74.3	74.4	74.3	73.5	76.2	78.1	78.8	76.6	75.8	78.8	73.5				
Female	81.9	80.7	81.1	82.9	81.1	81.3	81.9	81.0	81.1	80.9	80.1	80.7	80.7	80.3	79.3	82.0	82.0	82.3	83.4	81.8	81.6	83.4	79.3				
Total	79.1	77.6	78.4	79.8	77.1	78.6	79.5	78.2	78.3	78.0	77.6	77.5	77.2	77.0	76.6	77.7	79.1	80.3	81.2	79.3	78.7	81.2	76.6				
GROWING UP IN BC																											
1 Children age 0-14																											
Number (thousands)	16.5	15.7	22.9	40.4	27.4	53.1	119.5	62.9	15.1	46.6	26.3	17.3	23.0	16.8	31.1	74.7	29.7	30.7	28.1	53.5	751.3						
As % of region's population	20.7	19.3	19.8	18.0	20.7	22.7	21.7	20.5	20.0	19.6	21.9	23.2	25.3	25.7	23.9	13.6	15.8	17.4	17.9	16.1	19.2						
As % of BC population 0-14	2.2	2.1	3.0	5.4	3.6	7.1	15.9	8.4	2.0	6.2	3.5	2.3	3.1	2.2	4.1	9.9	4.0	4.1	3.7	7.1	100.0						
2 Children-in-care (age 0-18)																											
As % of region's pop 0-18	1.0%	0.7%	0.9%	1.2%	1.1%	0.9%	0.6%	0.5%	0.7%	1.1%	0.9%	1.4%	1.3%	1.1%	1.5%	1.3%	0.9%	0.4%	0.4%	1.0%	0.9%						

Notes and Sources

HEALTH STATUS

1. Total number of infant deaths (age 0 to 364 days) for the 5-year period 1992-1996 and rate per 1,000 live births. Provincial total includes 4 infant deaths of unspecified health region. B.C. Vital Statistics Agency, Annual Report 1996, Appendix 3, Table C.
2. Total number of stillbirths for the 5-year period 1992-1996 and rate per 1,000 total births (live births plus stillbirths). Provincial total includes 9 stillbirths of unspecified health region. B.C. Vital Statistics Agency, Vital Statistics Annual Report 1996, Appendix 3, Table C.
3. Live births with birthweight less than 2,500 grams, total number for the 5-year period 1992-1996 and as a percentage of all live births. Provincial total includes 20 births of unspecified birthweight. B.C. Vital Statistics Agency, Vital Statistics Annual Report 1996, Appendix 3, Table C.
4. Pre-term births ("premature", gestational age less than 37 weeks), total number for the 5-year period 1992-1996 and as a percentage of all live births. Provincial total includes 17 births of unspecified gestational age. B.C. Vital Statistics Agency, Vital Statistics Annual Report 1996, Appendix 3, Table C.

5. Age standardized mortality rate (ASMR) per 10,000 children age 0 to 18, all causes of death, annual average for the nine-year period 1987-1995. B.C. Vital Statistics Agency. Unpublished tables, May 20, 1997.

6. Life expectancy at birth (years), 1992-1996. Prepared by Population Section, BC STATS, B.C. Ministry of Finance and Corporate Relations, May 1998. Data acquired from <http://www.bcstats.gov.bc.ca/data/pop/vital>

GROWING UP IN B.C.

1. Number of children age 0 to 14 (in thousands), children age 0 to 14 as a percent of each region's population, and children in each region as a percent of British Columbia's total child population, 1997. BC STATS, B.C. Ministry of Finance and Corporate Relations, March 1998. Compiled by Information and Analysis Branch, B.C. Ministry of Health.
2. Number of children (age 0 to 18) who are in the care of child welfare authorities, as a percent of each region's population age 0 to 18. Average month-end count for the period February 1997 to February 1998. Management Services, B.C. Ministry for Children and Families. Unpublished tables, March 1998.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
EK	WK	NO	SO	TH	FV	SFV	SF	CG	CVI	UI	CA	NW	PL	NI	VA	BU	NS	RI	CAP				
3 Income Assistance, age 0-64 % on Basic Benefits	6.5	9.3	8.7	8.3	10.4	9.2	7.1	6.5	7.1	11.0	9.4	8.8	8.8	7.0	9.2	9.5	7.4	3.0	3.9	7.4	8.0		
4 Unemployment rate Age 15 and over	11.0	13.3	13.0	12.0	13.4	10.5	9.0	8.7	11.4	12.0	11.7	14.4	14.1	11.0	13.6	10.8	9.0	6.9	7.5	7.7	10.3	6.9	14.4
5 Education levels % less than HS grad, 25-34	24.9	22.1	28.3	23.8	25.2	27.1	23.6	18.6	23.5	26.8	26.6	34.9	29.6	30.4	30.8	15.2	16.2	11.1	16.5	17.8	21.3	11.1	34.9
6 Socio-economic indicators Overall rank (1 = best)	7	13	14	11	17	12	6	3	8	16	14	20	17	10	19	9	4	1	2	4		1	20
7 Food costs Nutritious Food Basket	\$665	\$764	\$708	\$694	\$750	\$722	\$704	\$705	\$690	\$742	\$668	\$851	\$749	\$718	\$688	\$721	\$693	\$746	\$746	\$723	\$721	\$665	\$851
8 Crime rate, 1996 Person ("violent crimes")	12.4	10.8	10.8	10.7	14.9	16.7	14.1	12.5	15.2	14.8	16.2	18.5	23.3	19.6	20.6	15.9	14.1	9.1	7.8	13.0	14.2	7.8	23.3
Property and other	79	76	93	109	109	130	120	122	125	127	133	103	113	134	129	181	160	89	94	103	125	76	181
All Criminal Code offences	92	87	104	120	124	147	134	134	140	142	150	122	136	153	149	197	174	98	102	116	139	87	197
9 Lone-parent families Percent of families	10.7	11.0	11.0	10.4	13.1	10.5	10.9	12.1	10.4	11.7	12.1	12.3	12.7	11.5	12.7	15.5	12.7	11.1	11.8	12.5	12.1		
10 Child day care spaces Licensed spaces	1075	989	900	2455	1870	2343	5332	4570	973	3598	1755	1030	1149	571	2073	5399	1757	2476	1859	5313	47487		
Spaces per 100 children 0-5	18.7	17.1	10.7	16.2	17.9	10.8	10.8	17.6	15.8	20.5	18.6	16.3	12.3	8.6	17.5	17.1	14.5	20.9	16.7	24.8	15.9	24.8	8.6

Notes and Sources

GROWING UP IN B.C. (continued)

3. Percent of population age 0 to 64 receiving Basic BC Benefits. Includes Youth Works, Welfare to Work, and Age 60 to 64. Excludes Disabled Persons, Children in the Home of a Relative, and OAS/Seniors. Data do not include Aboriginal people living on reserve. Figures are as of June 1997. Ministry of Human Resources Administrative Files and BC STATS population estimates.
4. Unemployment rate, age 15 and older. 1991 Census of Canada. Statistics Canada. Data distributed by BC STATS, Ministry of Finance and Corporate Relations.
5. Percent of population age 25 to 34 with less than Grade 12 education. 1991 Census of Canada. Statistics Canada. Custom tabulation. Data distributed by BC STATS, Ministry of Finance and Corporate Relations.
6. Overall rank on socio-economic indicators 3 (income), 4 (employment), and 5 (educational levels) above. Rank: 1 = "best" overall rate, 20 = "worst" rate.
7. Nutritious Food Basket: Cost for a family of four (man, woman, boy 13-15 years, and girl 7-9 years). Based on surveys in February 1996 in the following communities (health regions): Cranbrook (EK), Castlegar (WK), Vernon (NO), Kelowna (SO), Kamloops (TH), Chilliwack (FV), Surrey (SFV), Coquitlam (SF), Powell River (CG), Nanaimo (CVI), Courtenay (UI), Williams Lake (CA), Smithers (NW), Dawson Creek (PL), Prince George (NI), Vancouver (VA), Burnaby (BU), North Shore (NS), Richmond (RI), and Victoria (CAP). Weekly cost times 4.2 weeks per month. Data labelled "BC" is actually for Vancouver, which was mid-range for the communities surveyed.
8. Criminal Code offences per 1,000 total population, 1996. "Person" offences are violent crimes, including homicide, attempted murder, sexual and non-sexual assault, robbery, and abduction. From Police Services, B.C. Ministry of Attorney General. Data acquired from the Health Planning Database, B.C. Ministry of Health. Note: Data are collected according to police jurisdictions, which do not match precisely to health region boundaries. In some cases, allocations to health region are based on the population distribution, and may not reflect the exact location of the event. B.C. total includes additional reporting from Ports Canada Police and other specialized units.
9. Lone-parent families as a percent of all families. 1991 Census of Canada. Statistics Canada. Data distributed by BC STATS, Ministry of Finance and Corporate Relations. Data acquired from the Health Planning Database, B.C. Ministry of Health.
10. Number of licensed child care spaces and spaces per 100 children age 0 to 5, as of March 31, 1997. Includes child minding, pre-school, group day care, family child care, special needs, and emergency care spaces in child care facilities licensed under the *Community Care Facility Act* and the Child Care Licensing Regulation. From Community Care Facilities Branch, B.C. Ministry of Health, Victoria. Data acquired from the Health Planning Database, B.C. Ministry of Health.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD			
	1 EK	2 WK	3 NO	4 SO	5 TH	6 FV	7 SFV	8 SF	9 CG	10 CVI	11 UI	12 CA	13 NW	14 PL	15 NI	16 VA	17 BU	18 NS	19 RI	20 CAP			
CHILD GROWTH & DEVELOPMENT																							
1 Breastfeeding rate - at birth				*		*		*	*	*	*		*		*			*	*		*	89%	
At 4-6 months																						30%	
2 Smoking rate																							
Age 12-18	16%	10%	13%	26%	20%	20%	11%	16%	14%	21%	24%	18%	18%	21%	22%	22%		15%		15%	20%	10%	26%
Age 19-24	37%	46%	34%	44%	41%	25%	22%	26%	43%	34%	44%	47%	41%	37%	28%	27%		34%		32%	31%	22%	47%
Age 12+	26%	21%	21%	23%	27%	22%	19%	23%	25%	24%	26%	27%	29%	29%	28%	21%		17%		19%	22%	17%	29%
3 Tobacco sales to minors																							
% retailers in compliance																							
Compliance checks	76%	52%	*	*	77%	*	92%	86%	*	71%	64%	*	76%	94%	85%	57%	86%	98%	85%	88%	81%	98%	52%
Decoy purchases	*	*	*	*	77%	*	82%	73%	*	53%	87%	*	*	*	74%	64%	89%	85%	86%	84%	76%	89%	53%
PHYSICAL ENVIRONMENT																							
1 ETS in the home																							
% of homes with children	27%	17%	17%	18%	24%	22%	13%	15%	23%	23%	23%	24%	19%	33%	27%	15%		5%		12%	18%	5%	33%
2 Fine particulates PM10 levels																							
3 Playground injuries																							
Hospital cases age 0-14	13	13	26	22	20	28	68	34	13	26	25	13	15	14	24	28	11	13	9	52	469		
Hospital days age 0-14	21	23	46	43	26	74	112	65	16	45	55	23	36	34	40	60	15	25	22	92	881		
Cases per 10,000	7.9	8.1	11.5	5.7	7.6	5.6	6.1	5.8	9.1	5.8	9.9	7.7	6.4	8.6	7.9	3.9	4.1	4.4	3.3	9.6	6.5		
Days per 10,000	12.8	14.3	20.4	11.1	9.8	14.8	10.0	11.1	11.2	10.0	21.8	13.6	15.4	20.8	13.2	8.4	5.7	8.5	8.1	17.0	12.2		

Notes and Sources

CHILD GROWTH AND DEVELOPMENT

1. * In these regions, health units/health departments have carried out local surveys on breastfeeding. Definitions and survey methods differ, and thus results are not directly comparable. Please contact local health unit/health department offices for further information. The provincial rate for breastfeeding initiation is from the National Longitudinal Survey of Children and Youth, 1994-95. The rate at 4-6 months is an estimate, based on local surveys.
2. Current cigarette smoking among B.C. residents by age group, 1997. Note: Vancouver (VA) data are for Vancouver/Richmond; Simon Fraser (SF) includes Burnaby. Heart and Stroke Foundation of B.C. and Yukon. Tobacco Use in B.C. 1997. A survey conducted by the Angus Reid Group with a grant from the B.C. Ministry of Health.
3. Percent of retailers in compliance with sales to minors legislation, as determined by compliance checks (test purchases) and decoy purchases, 1996/97. "*" indicates no compliance checks or decoy purchases were undertaken in 1996/97. SF (Simon Fraser) includes New Westminster. Source: Joint Tobacco Enforcement Program in British Columbia. Operational Report: Fiscal Year 1996/97. Available from Tobacco Reduction Strategy, B.C. Ministry of Health.

PHYSICAL ENVIRONMENT

1. Every day or nearly every day exposure to environmental tobacco smoke (ETS) in the home, homes with children age 11 years and under, 1997. Note: Vancouver (VA) data are for Vancouver/Richmond; Simon Fraser (SF) includes Burnaby. Heart and Stroke Foundation of B.C. and Yukon. Tobacco Use in B.C. 1997. A survey conducted by the Angus Reid Group with a grant from the B.C. Ministry of Health.
2. Fine particulate (PM₁₀) levels are monitored at more than 50 sites around the province. Some communities have more than one monitoring site. Sites graphed in Figure 43 are as follows: Merritt SCHU, Golden, Vernon RCMP Building, Williams Lake Firehall, Kamloops Federal Building, Prince George Plaza 400*, Quesnel Senior Secondary*, Chetwynd, Kelowna Okanagan College*, Squamish*, Cranbrook PR3*, Abbotsford Library*, Smithers St. Joseph*, Burnaby South*, Penticton Airport, Castlegar Seniors, Surrey East*, Victoria PAPS, and Port Alberni Courthouse. Data for sites with an asterisk (*) are taken from continuous samplers; other sites are from non-continuous samplers, with samples typically taken every six days. Data by monitoring site are available on request from the Air Resources Branch, B.C. Ministry of Environment, Lands, and Parks. A fact sheet on fine particulates is available from the State of Environment website, <http://www.env.gov.bc.ca/sppl/soerpt/fineparticulates>.

3. Hospital cases, days, and rates per 10,000 population for falls from playground equipment (ICD9 E884.0), ages 0 to 14, annual average for 5-year period 1992/93-1996/97. LAN Accident Reporting System, version 2.34. Information and Analysis Branch, B.C. Ministry of Health.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
EK	WK	NO	SO	TH	FV	SFV	SF	CG	CVI	UI	CA	NW	PL	NI	VA	BU	NS	RI	CAP				
4 Enteric diseases, 1996																							
Reported cases 0-14																							
Campylobacteriosis	8	12	14	14	6	73	72	36	5	28	11	7	9	7	12	101	1	9	10	33	468		
Giardiasis	5	5	12	8	18	29	82	23	9	12	14	5	5	3	13	69	0	6	1	23	342		
Salmonellosis	3	2	3	10	3	14	44	18	6	10	5	1	8	1	6	41	1	4	7	8	195		
Shigellosis	0	1	0	0	0	1	8	1	1	2	4	0	1	0	0	5	0	0	3	2	29		
Hepatitis A	0	0	0	1	0	13	11	5	1	19	0	0	3	0	1	3	0	2	1	7	67		
Amebiasis	0	0	0	0	0	0	5	1	0	0	10	0	0	0	0	4	0	2	0	2	24		
Cryptosporidiosis	20	26	65	128	104	36	60	35	6	24	16	9	13	2	24	31	0	1	4	15	619		
E. Coli	0	1	5	3	4	11	5	6	3	0	1	0	0	1	1	2	0	8	0	0	51		
Gastroenteritis: unspecified	37	8	0	0	0	0	38	0	0	0	64	0	23	1	19	0	0	1	0	63	254		
Yersiniosis	2	2	0	1	0	4	19	3	5	6	3	0	3	0	7	46	0	6	0	2	109		
Other	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	1	0	0	1	0	6		
Total	75	57	99	165	135	181	347	128	36	101	129	22	65	15	83	303	2	39	27	155	2164		
Rates per 100,000 age 0-14																							
Campylobacteriosis	49	74	60	35	22	138	62	58	33	60	42	41	38	42	39	138	4	30	35	60	63		
Giardiasis	30	31	51	20	66	55	70	37	60	26	53	29	21	18	43	94	0	20	4	42	46		
Salmonellosis	18	12	13	25	11	26	38	29	40	21	19	6	34	6	20	56	4	13	25	15	26		
Shigellosis	0	6	0	0	0	2	7	2	7	4	15	0	4	0	0	7	0	0	11	4	4		
Hepatitis A	0	0	0	2	0	25	9	8	7	41	0	0	13	0	3	4	0	7	4	13	9		
Amebiasis	0	0	0	0	0	0	4	2	0	0	38	0	0	0	0	5	0	7	0	4	3		
Cryptosporidiosis	122	161	277	317	380	68	51	56	40	52	61	53	55	12	79	42	0	3	14	27	83		
E. Coli	0	6	21	7	15	21	4	10	20	0	4	0	0	6	3	3	0	27	0	0	7		
Gastroenteritis: unspecified	225	49	0	0	0	0	32	0	0	0	243	0	97	6	62	0	0	3	0	115	34		
Yersiniosis	12	12	0	2	0	8	16	5	33	13	11	0	13	0	23	63	0	20	0	4	15		
Other	0	0	0	0	0	0	3	0	0	0	4	0	0	0	0	1	0	0	4	0	1		
Total	457	353	423	409	493	343	296	206	238	217	490	128	275	90	272	413	7	131	95	284	290		

Notes and Sources

PHYSICAL ENVIRONMENT (continued)

4. Reported cases of enteric infections age 0 to 14 and rates per 100,000 population age 0 to 14, 1996. Epidemiology Services, B.C. Centre for Disease Control Society. Data acquired from the Health Planning Database, B.C. Ministry of Health.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
EK	WK	NO	SO	TH	FV	SFV	SF	CG	CVI	UI	CA	NW	PL	NI	VA	BU	NS	RI	CAP				
HEALTH SERVICES																							
1 Immunization rates See DISEASE & INJURY PREVENTION																							
2 Newborn screening Percent screened	84%	92%	96%	100%	94%	100%	81%	93%	93%	91%	99%	84%	76%	92%	83%	N/A	N/A	N/A	N/A	N/A	91%	100%	76%
3 Hearing screening Newborns (percent)	97%	92%	85%	96%	90%	83%	100%	70%	82%	88%	83%	100%	76%	91%	99%	N/A	84%	N/A	83%	82%	88%	100%	70%
Kindergarten (percent)	94%	71%	88%	90%	73%	82%	100%	100%	79%	60%	100%	80%	56%	95%	59%	N/A	100%	N/A	61%	88%	90%	100%	56%
4 Vision screening Kindergarten (percent)	74%	73%	99%	94%	90%	94%	N/A	92%	31%	64%	85%	86%	78%	85%	97%	N/A	N/A	N/A	N/A	N/A	86%	99%	31%
5 Prenatal outreach Est'd target population	78	74	119	219	149	325	747	406	86	251	137	97	142	100	177	604	210	187	172	310	4,588		
Clients served in 1997/98	122	121	144	0	184	96	418	0	44	362	144	154	259	30	173	604	94	0	0	231	3,180		
Areas with lack of services				*		*	*	*	*					*			*	*	*	*			
6 Methylphenidate, age 0-19 Children rec'ing prescriptions	367	228	663	999	961	1322	2580	1126	318	738	394	355	355	268	690	874	434	482	522	1114	*****		
Rate per 1,000 pop 0-19	16.8	10.6	22.5	20.1	27.5	21.3	18.3	15.4	17.7	12.6	12.3	15.6	11.8	12.8	17.1	9.0	12.0	12.4	14.4	15.7	16.0		
7 Respiratory infections, 0-14 Physician office visits # of children (thousands)	6.1	4.5	9.1	14.3	10.7	19.3	57.1	29.0	4.5	16.9	9.6	5.9	8.1	4.9	12.9	41.7	15.7	11.7	13.9	19.2	315.0		
Rate per 1,000 pop 0-14	383	287	397	360	399	362	481	460	293	367	375	353	343	293	424	556	568	394	492	353	423		
# of office visits (thousands)	9.9	6.3	14.9	22.3	17.9	31.4	105.9	51.2	6.6	27.2	15.4	9.4	13.7	7.8	22.1	84.0	29.6	19.4	26.4	30.0	551.5		
Rate per 1,000 pop 0-14	631	400	650	556	665	585	891	798	437	586	599	578	579	466	733	1112	1055	650	951	545	737		

Notes and Sources

HEALTH SERVICES

1. Immunization Rates: see indicators 9, 10, and 11, pages F-16 and F-17.
2. Estimated percent of newborns screened for physical, emotional, and social risk factors using the Priority Assessment for Infants and Preschool Children (HLTH 184), 1993/94. Areas served by the (former) Central Fraser Valley Health Unit are included in the BC total, but are not included in the regional data. Source: Selected Summary Statistics: Public Health Nursing Activities, Provincial Health Units, 1991/92-1993/94. Prepared for Public Health Nursing, B.C. Ministry of Health, August 1995.
3. Estimated percent of infants and kindergarten children screened for hearing problems, High Priority Hearing Registry, 1996/97. Source: B.C. Ministry for Children and Families.
4. Estimated percent of kindergarten children screened for vision problems, 1995/96. Source: Public Health Nursing, B.C. Ministry of Health. Coast Garibaldi figure is for Howe Sound (School District 48) only. Central Vancouver Island figure includes Cowichan and Nanaimo (School Districts 65 and 68) only.
5. Availability of prenatal outreach services. Target population: 10% of live births in 1996; an estimated 10% of pregnant women are considered to be at risk by pregnancy outreach criteria. Clients served: Number of clients enrolled in prenatal outreach programs, 1997/98. Includes Pregnancy Outreach Programs (POP), Canada Prenatal Nutrition Programs (CPNP), Community Action Program for Children (CAPC), Healthiest Babies Possible, and Sheway. Regions with an asterisk ("*") are considered to have a significant lack of outreach services. Target population calculated from live births 1996 in Vital Statistics Annual Report 1996, Appendix 1. Number of clients served from Infant and Child Team, B.C. Ministry for Children and Families.
6. Number of children age 0 to 19 who received prescriptions for methylphenidate and rate per 1,000 children in this age group, 7-year period 1990-1996. Methylphenidate is a stimulant medication prescribed for Attention Deficit Hyperactivity Disorder (ADHD); Ritalin is the most common brand. Individual children are counted only once during the 7-year study period. The provincial total includes 199 cases of unknown/unspecified health region. Miller, A.R., Lalonde, C.E., & Armstrong, R.A. B.C. Methylphenidate Survey. Unpublished tables.
7. Physician office visits (Medical Services Plan paid services for fee codes 100 and 107, in thousands) and age standardized rates per 1,000 population, upper respiratory infections (ICD9 460-465), children age 0 to 14, 1996. # of children: number of patients (unique individuals) age 0 to 14 who had office visits for upper respiratory infections, in thousands. # of office visits: Number of MSP services (office visits) children received where diagnosis was upper respiratory infections, in thousands. Medical Services Plan data. Prepared by Clinical Support Unit, Community Health, July 1997 and April 1998. Out-of-province events (e.g., B.C. residents treated in Alberta) are not included.

Notes and Sources

HEALTH SERVICES (continued)

8. Physician office visits (Medical Services Plan paid services for fee codes 100 and 107, in thousands) and age standardized rates per 1,000 population, otitis media (ICD9 381-382), children age 0 to 14, 1996. # of children: number of patients (unique individuals) age 0 to 14 who had office visits for otitis media, in thousands. # of office visits: Number of MSP services (office visits) children received where diagnosis was otitis media, in thousands. Medical Services Plan data. Prepared by Clinical Support Unit, Community Health, July 1997 and April 1998. Out-of-province events (e.g., B.C. residents treated in Alberta) are not included.

9. Percent of hospital cases that were treated within the patients' region of residence (e.g., 82% of East Kootenay cases age 0 to 14 who were hospitalized went to hospitals within the East Kootenay region), 1996/97. Morbidity Database. Information and Analysis Branch, B.C. Ministry of Health. Unpublished tables, October 1997.

10. Hospital cases, days, rates per 1,000 population, and MNRH as a percent of all cases and days, cases that "may not require hospitalization" (MNRH), children age 0 to 14, acute and rehabilitation levels of care, 1996/97. B.C. total includes 18 cases of unspecified health region. MNRH is a classification developed by the Canadian Institute for Health Information. MNRH is used to describe cases in which the combination of diagnosis, procedure, and age usually means that care can be provided properly on a non in-patient basis. Age Standardized Utilization Rates, version 2.2. Information and Analysis Branch, B.C. Ministry of Health.

11. Hospital cases and age standardized rates per 1,000 population for tonsillectomy and/or adenoidectomy (SSL 045-047), age 0 to 14, in-patient and day surgery levels of care, 1996/97. B.C. total includes 9 cases of unspecified health region. Age Standardized Utilization Rates, version 2.2. Information and Analysis Branch, B.C. Ministry of Health.

12. Hospital cases and age standardized rates per 1,000 population for myringotomy (SSL 035), age 0 to 14, in-patient and day surgery levels of care, 1996/97. Age Standardized Utilization Rates, version 2.2. B.C. total includes 16 cases of unspecified health region. Information and Analysis Branch, B.C. Ministry of Health.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate	
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
EK	WK	NO	SO	TH	FV	SFV	SF	CG	CVI	UI	CA	NW	PL	NI	VA	BU	NS	RI	CAP					
ABORIGINAL HEALTH																								
1 Infant mortality rate																								
Status Indian, 1987-92	22.0	22.0	5.6	9.6	9.2	19.7	4.6	8.5	11.6	22.0	15.0	17.6	12.9	11.2	14.4	14.3	5.3	0.0	8.7	10.3	13.9	0.0	22.0	
Excl. Status Indian, 1987-92	5.3	5.3	7.6	7.1	7.2	4.6	5.8	6.2	7.5	7.6	8.1	11.0	8.3	6.3	10.4	8.6	4.7	5.5	5.2	6.7	6.8	4.6	11.0	
2 Dental procedures, age 0-14																								
Status Indian children																								
Cases	4	0	9	11	67	40	10	9	22	111	19	115	202	23	48	34	5	7	1	29	768			
Rate per 1,000	11.0	0.0	13.9	11.6	27.1	22.1	11.3	14.4	19.8	27.5	7.9	67.5	34.7	23.1	17.7	15.7	13.8	12.1	8.5	20.8	24.6	0.0	67.5	
Excluding Status Indians																								
Cases	50	115	154	142	189	321	598	386	48	362	176	139	88	141	149	522	187	94	160	162	4,183			
Rate per 1,000	3.3	7.4	7.0	3.7	7.8	6.2	5.0	6.1	3.4	8.6	7.7	9.5	4.9	8.9	5.4	7.3	6.9	3.2	5.8	3.0	5.9	3.0	9.5	
DISEASE & INJURY PREVENTION																								
1 Congenital anomalies																								
Number of anomalies	226	246	304	527	482	783	2169	1203	315	671	405	325	422	285	523	2604	641	588	537	661	*****			
Rate per 1,000 total births	24.2	28.8	26.4	26.7	32.2	28.1	32.9	32.8	38.0	27.8	29.4	31.9	27.2	25.9	26.8	44.0	32.5	31.2	32.4	19.7	31.3			
2 Neural tube defects																								
NTDs, 1985-1994	8	10	14	19	17	41	79	31	12	25	13	17	22	11	27	66	19	14	22	27	495			
Rate per 1,000 total births	0.9	1.2	1.2	1.0	1.1	1.5	1.2	0.8	1.4	1.0	0.9	1.7	1.4	1.0	1.4	1.1	1.0	0.7	1.3	0.8	1.1	0.7	1.7	
3 Drug-affected babies																								
Number per year	1	<1	1	3	8	6	22	9	<1	5	1	1	2	1	7	45	7	3	2	6	131			
Rate per 1,000 births	0.7	0.5	1.1	1.2	5.2	1.9	2.9	2.2	0.4	2.0	1.0	1.3	1.2	1.1	3.6	8.0	3.4	1.4	1.3	1.7	2.8	0.4	8.0	
4 SIDS																								
Deaths <1, 1985-1996	17	10	13	18	31	47	91	52	11	73	30	14	50	16	51	90	16	19	9	48	706			
Rate per 1,000 live births	1.57	1.00	0.94	0.75	1.74	1.37	1.13	1.17	1.10	2.52	1.83	1.16	2.76	1.24	2.23	1.27	0.67	0.85	0.45	1.21	1.32	0.4	2.8	

Notes and Sources

ABORIGINAL HEALTH

1. Infant mortality rate (deaths age 0 to 364 days per 1,000 live births), 1987-1992. Calculated from data in Division of Vital Statistics. (1994). Regional Analysis of British Columbia's Status Indian Population: Birth-Related and Mortality Statistics. Victoria, BC: Ministry of Health. Rates for East Kootenay and West Kootenay-Boundary are combined. Also, the area formerly served by Central Fraser Valley Health Unit is included in the provincial total, but is not reflected in the regional figures.
2. Cases and age standardized rates for tooth extraction, surgical removal of tooth, and other operations on teeth (Surgical Short List codes 041-043), inpatient and day surgery, age 0 to 14, Status Indian children and B.C. children excluding Status Indians, 1996/97. B.C. total for Status Indian children includes two cases of unspecified health region. Source: PURRFECT 2.23 and Status Indian Health Utilization Database. Information and Analysis Branch, B.C. Ministry of Health. Unpublished tables.

DISEASE AND INJURY PREVENTION

1. Number of congenital anomalies cases (individuals) reported to the Health Status Registry and rate per 1,000 total births (live births plus stillbirths), 1985-1994. Reporting sources include hospitals, health units, diagnostic and treatment centres, non-profit societies, government agencies, and the B.C. Vital Statistics Agency through registration of all live births, stillbirths, and deaths. Health Status Registry, B.C. Vital Statistics Agency. In Health Status Registry: Congenital Anomalies, Genetic Defects, Selected Disabilities, British Columbia to 1994, Tables 9-28. B.C. Vital Statistics Agency, May 1996. B.C. total includes eleven cases of unspecified health region. Live births and stillbirths from Vital Statistics Annual Report 1994 (1990-1994 data) and Health Planning Database (1985-1989 data).
2. Neural tube defects (NTDs): the number of NTD anomalies reported to the Health Status Registry, 1985-1994. Number of anomalies may be greater than the number of individuals (each individual may have more than one anomaly). ICD9 codes 740.0 anencephalus, 740.1 craniorachischisis, 740.2 iniencephaly, 741 spina bifida, and 742.0 encephalocele. NTDs are commonly defined as 740.0, 741, and 742.0. Above data includes 740.1 and 742.2; these conditions are extremely rare. Number of NTDs from Health Status Registry, B.C. Vital Statistics Agency. In Health Status Registry: Congenital Anomalies, Genetic Defects, Selected Disabilities, British Columbia to 1994, Tables 9-28. B.C. Vital Statistics Agency, May 1996. B.C. total includes one case of unspecified health region. Live births & stillbirths from Vital Statistics Annual Report 1994 (1990-1994 data) and Health Planning Database (1985-1989 data).
3. Number of newborns and rate per 1,000 births, diagnostic codes ICD9 760.7 (noxious influences affecting fetus) or 779.5 (drug withdrawal syndrome in newborn), annual average for 5-year period 1991/92-1995/96. B.C. total includes one case of unspecified health region. Morbidity Database, Information and Analysis Branch, B.C. Ministry of Health.
4. SIDS deaths (under age 1) and rates per 1,000 live births. Total number of deaths over the 12-year period 1985-1996 and average annual rate. B.C. Vital Statistics Agency. SIDS deaths from unpublished tables, November 1997. Live births from Vital Statistics Annual Reports.

Notes and Sources

DISEASE AND INJURY PREVENTION (continued)

5. Number of reported poisonings and rate per 100 children age 0 to 23 months, 1996. B.C. total includes 67 reports of unspecified health region. B.C. Drug and Poison Information Centre. Unpublished tables, October 1997.
6. Number of confirmed reports of abuse or neglect (as defined under the *Child, Family and Community Service Act*), children under 19 years of age, and rate per 1,000 population age 0 to 18, 1997/98. Data refer to child protection complaints that result in a section 16 investigation and a finding by the worker, in consultation with the supervisor, that the child is in need of protection. Such a finding does not necessarily result in admission to care, as other protective services may be more suitable. Number of cases from B.C. Ministry for Children and Families. Unpublished tables, May 8, 1998. B.C. total includes 11 cases of unknown or unspecified region. Population age 0 to 18 from BC STATS; data acquired from the Health Planning Database, B.C. Ministry of Health.
7. Number of hospital cases with diagnosis of asthma (ICD9 493), acute and rehabilitation care, and age standardized rate per 1,000 population age 1 to 14, 1996/97. B.C. total includes seven cases of unspecified health region. Morbidity Database. Data acquired from Age Standardized Utilization Rates, version 2.2, Information and Analysis Branch, B.C. Ministry of Health.
8. Cases and age standardized rates for tooth extraction, surgical removal of tooth, and other operations on teeth (Surgical Short List codes 041-043), inpatient and day surgery, ages 0 to 14, 1996/97. B.C. total includes ten cases of unspecified health region. Source: Age Standardized Utilization Rates, version 2.2. Information and Analysis Branch, B.C. Ministry of Health.
9. Percent of children who, by their second birthday, have completed the Primary Series for immunization, according to the Provincial Immunization Schedule: Diphtheria/Tetanus/Polio, 4 doses; Pertussis, 4 doses; Hib 4 doses; Measles/Mumps/Rubella, 4 doses. Rates are based on a one-month sample of children who were two years old in April 1997 and for whom Child Health Records (HLTH 182) were available. From Public Health Nursing, Public and Preventive Health, B.C. Ministry of Health. NOTE: Comparable data not available for Vancouver, Burnaby, North Shore, or South Fraser Valley regions.
10. Percent of children who, by the end of school entry year, have received the appropriate number of vaccine doses, according to the Provincial Immunization Schedule. Figures are for the school year ending June 1997. From Public Health Nursing, Public and Preventive Health, B.C. Ministry of Health. NOTE: "Diphtheria/Pertussis/Tetanus" figures are for Diphtheria/Pertussis/Tetanus or Diphtheria/Tetanus; coverage for pertussis is not tracked separately.
11. Percent of children who, by the end of grade six, have received three doses of hepatitis B vaccine according to the Provincial Immunization Schedule, during in-school immunization. Figures are for the school year ending June 1997. From Public Health Nursing, Public and Preventive Health, B.C. Ministry of Health.

HEALTH INDICATORS SUMMARY BY REGION, B.C.

Indicator	HEALTH REGION (See map, Appendix G, for region names and locations)																				BC	Best Rate	Worst Rate	
	Okanagan-Kootenay					Fraser Valley			Island-Coast			North				Lower Mainland				CRD				
	1 EK	2 WK	3 NO	4 SO	5 TH	6 FV	7 SFV	8 SF	9 CG	10 CVI	11 UI	12 CA	13 NW	14 PL	15 NI	16 VA	17 BU	18 NS	19 RI	20 CAP				
12 Vaccine-preventable diseases																								
Reported cases (all ages)																								
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Pertussis	14	20	25	71	15	32	199	92	21	80	31	34	18	22	30	100	48	90	28	9	979			
Tetanus	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4		
Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Measles	0	0	0	0	0	4	20	5	0	1	0	0	0	0	0	10	0	1	0	0	0	41		
Mumps	2	0	3	1	1	4	6	0	1	9	3	1	2	1	0	2	0	7	5	2	50			
Rubella	1	0	0	0	0	0	5	1	1	2	1	0	0	0	0	4	1	2	2	0	20			
Invasive Hib	1	1	2	1	0	2	0	2	0	2	0	0	0	0	1	0	0	0	0	0	0	12		
Hepatitis B - acute/undeter	3	4	72	23	8	13	64	35	11	38	19	1	13	10	10	576	33	60	305	37	1,335			
Hepatitis B - carrier/chronic	0	4	13	9	11	39	176	170	1	18	15	0	5	2	9	1114	252	25	98	56	2,017			
Rates per 100,000																								
Diphtheria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pertussis	17.5	24.7	20.8	32.1	11.6	14.0	37.9	31.0	28.4	33.8	25.9	45.0	19.4	34.1	23.3	18.4	26.8	51.7	18.9	2.7	25.4	2.7	51.7	
Tetanus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	5.3	
Polio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Measles	0.0	0.0	0.0	0.0	0.0	1.7	3.8	1.7	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.6	0.0	0.0	1.1	0.0	3.8	
Mumps	2.5	0.0	2.5	0.5	0.8	1.7	1.1	0.0	1.4	3.8	2.5	1.3	2.2	1.5	0.0	0.4	0.0	4.0	3.4	0.6	1.3	0.0	4.0	
Rubella	1.2	0.0	0.0	0.0	0.0	0.0	1.0	0.3	1.4	0.8	0.8	0.0	0.0	0.0	0.0	0.7	0.6	1.1	1.3	0.0	0.5	0.0	1.4	
Invasive Hib	1.2	1.2	1.7	0.5	0.0	0.9	0.0	0.7	0.0	0.8	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.7	
Hepatitis B - acute/undeter	3.7	4.9	60.0	10.4	6.2	5.7	12.2	11.8	14.9	16.0	15.9	1.3	14.0	15.5	7.8	106.1	18.4	34.5	205.6	11.1	34.6	1.3	205.6	
Hepatitis B - carrier/chronic	0.0	4.9	10.8	4.1	8.5	17.0	33.5	57.2	1.4	7.6	12.5	0.0	5.4	3.1	7.0	205.1	140.8	14.4	66.1	16.7	52.3	0.0	205.1	
13 HIV tests: pregnant women																								
Number of HIV tests	284	334	497	1035	659	1648	2395	2132	431	1328	690	430	723	657	716	4557	980	807	774	1644	23116			
Number of live births	779	744	1185	2186	1488	3248	7471	4064	860	2506	1369	970	1416	999	1767	6042	2097	1867	1721	3102	45883			
Est'd percent tested	36%	45%	42%	47%	44%	51%	32%	52%	50%	53%	50%	44%	51%	66%	41%	75%	47%	43%	45%	53%	50%			

Notes and Sources

DISEASE AND INJURY PREVENTION (continued)

12. Number of reported cases (all ages) and rates per 100,000 total population for vaccine-preventable disease, 1996. Hepatitis B "acute/undetermined" includes acute cases (persons recently infected) and undetermined cases (persons in whom it could not be determined on the basis of the bloodwork at hand whether they were acute or chronically infected; some of these undetermined cases will ultimately be classified as chronic). Epidemiology Services, B.C. Centre for Disease Control Society. Data acquired from the Health Planning Database, B.C. Ministry of Health.

13. HIV tests: Number of HIV test requisitions indicating that the test was being done as part of a prenatal assessment, 1996. Est'd percent tested: Number of HIV tests as a percent of live births in a given region. B.C. total includes 395 HIV tests of unspecified health region. Source: Number of HIV tests from Provincial Laboratory, B.C. Centre for Disease Control Society. Unpublished tables, October 1997. Live births from B.C. Vital Statistics Agency, Vital Statistics Annual Report 1996.

Appendix G

Map of Health Regions

Health Regions in British Columbia

Since 1994, the Ministry of Health has moved towards decentralizing the governance, administration, and provision of health services. This has involved some boundary changes, a process which always creates a number of data conversion issues.

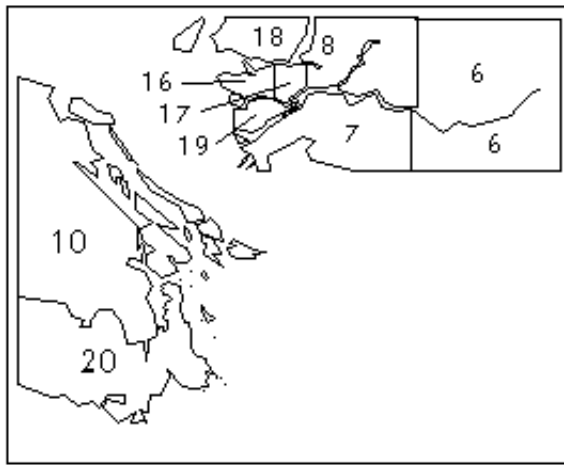
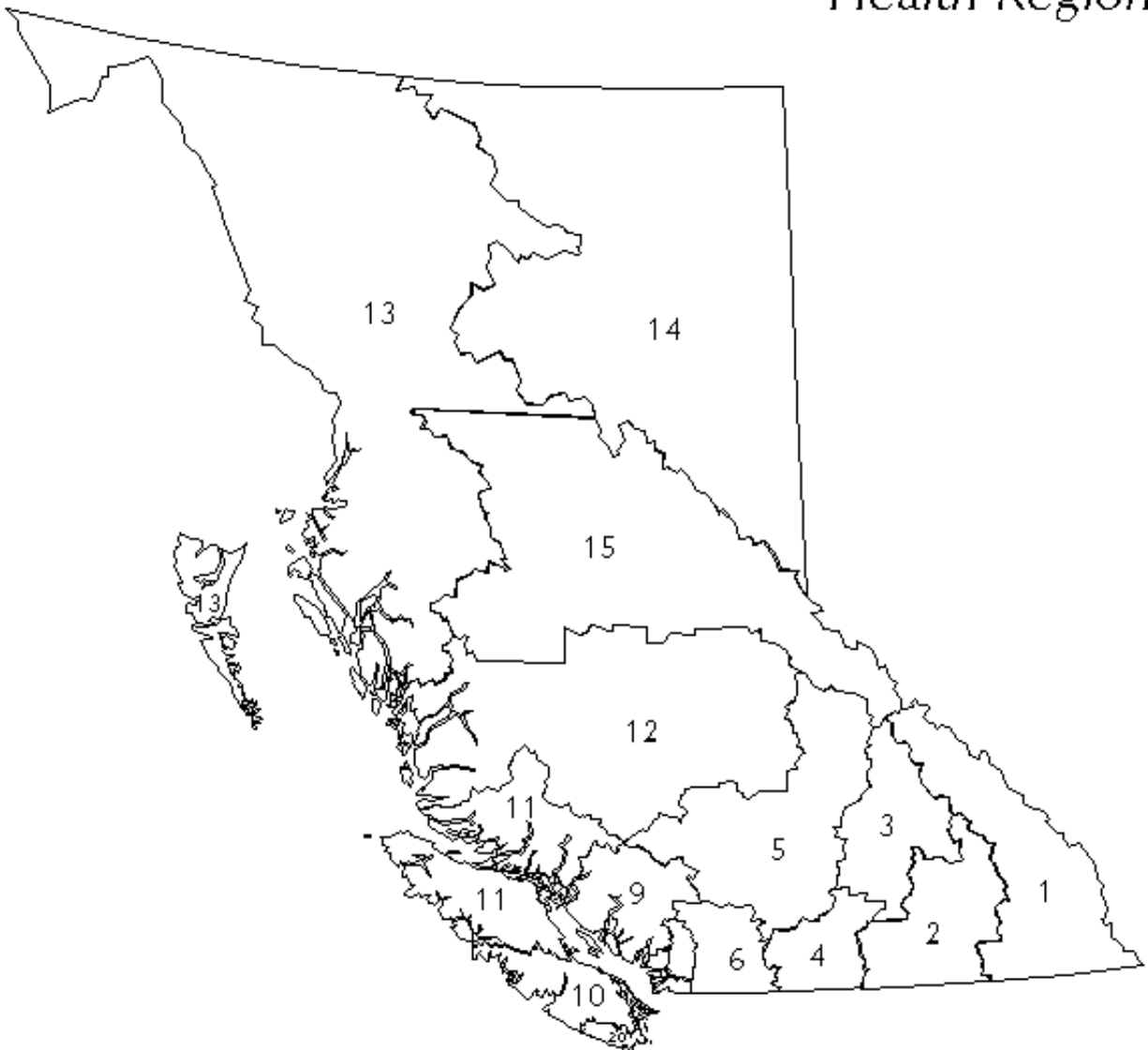
Over time, health information systems will be modified to reflect the names, numbers, and boundaries of the local health authorities (regional health boards, community health councils, and community health services societies). At the time this annual report was prepared, however, most information systems produced data based on the previous 20 health regions, which are roughly equivalent to the areas served by the former 20 health units/health departments.

To reflect the reality of the data, 20 geographic regions are used throughout this year's Annual Report. These regions are identical to those used in the Provincial Health Officer's annual reports for 1995 and 1996 and in Vital Statistics Annual Reports for 1995, 1996, and 1997. Names, abbreviations, and numbers are as follows:

Health Region Names, Abbreviations, and Numbers

Health Region		Health Unit/Health Department	
01 EK	East Kootenay	01 EK	East Kootenay
02 WK	West Kootenay-Boundary	02 CK	Central Kootenay
03 NO	North Okanagan	04 NO	North Okanagan
04 SO	South Okanagan Similkameen	05 SO	South Okanagan
05 TH	Thompson	06 SC	South Central
06 FV	Fraser Valley	07 UFV	Upper Fraser Valley
07 SFV	South Fraser Valley	09 BO	Boundary
08 SF	Simon Fraser	10 SF	Simon Fraser
09 CG	Coast Garibaldi	11 CG	Coast Garibaldi
10 CVI	Central Vancouver Island	13 CVI	Central Vancouver Island
11 UI	Upper Island/Central Coast	14 UI	Upper Island
12 CA	Cariboo	15 CA	Cariboo
13 NW	North West	16 SK	Skeena
14 PL	Peace Liard	17 PR	Peace River
15 NI	Northern Interior	18 NI	Northern Interior
16 VA	Vancouver	20 VA	Vancouver
17 BU	Burnaby	30 BU	Burnaby
18 NS	North Shore	40 NS	North Shore
19 RI	Richmond	50 RI	Richmond
20 CAP	Capital	60 CRD	Capital Regional District

British Columbia Health Regions



HEALTH REGIONS

- | | |
|-------------------------------|--------------------------------|
| 1. East Kootenay | 11. Upper Island/Central Coast |
| 2. West Kootenay-Boundary | 12. Cariboo |
| 3. North Okanagan | 13. North West |
| 4. South Okanagan Similkameen | 14. Peace Liard |
| 5. Thompson | 15. Northern Interior |
| 6. Fraser Valley | 16. Vancouver |
| 7. South Fraser Valley | 17. Burnaby |
| 8. Simon Fraser | 18. North Shore |
| 9. Coast Garibaldi | 19. Richmond |
| 10. Central Vancouver Island | 20. Capital |

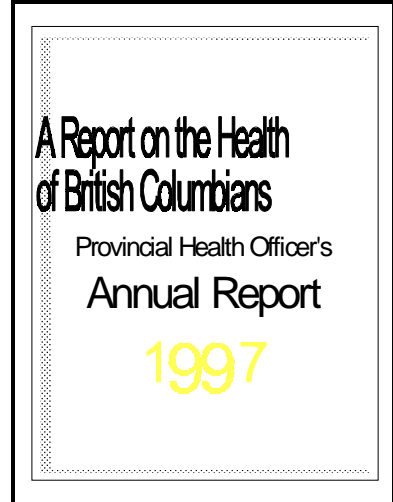
EVALUATION QUESTIONNAIRE



**Evaluation of
The Report on the Health of British Columbians:
Provincial Health Officer's Annual Report 1997**

Questionnaire

We would like to continue to improve the Provincial Health Officer's Annual Report to meet the needs of our readers. Please help us improve the report by answering the following questions. Fax your questionnaire to **(250) 952-0877**.



1 Information about You

1.1 What is your main work activity:

- Planning health services 1
- Health policy development 2
- Managing health services 3
- Patient care 4
- Public health practice 5
- Health monitoring and surveillance 6
- Health promotion 7
- Health research and development 8
- Informing consumers 9
- Teaching 10
- Consumer of health services 11 → *please specify below*
- Other 12

Main activity: _____

OPTIONAL

1.1 Name: _____

1.2 Position: _____

1.3 Address: _____

1.4 Telephone: _____

1.5 E-mail address: _____

2 Use of the Report

2.1 How have you used the Report? (*circle all that apply*)

- I haven't read or used it yet 1 → *go to section 4 (last page)*
- I have read some of it 2
- I have read most or all of it 3
- I have used it in my work or study 4 → *please describe below*

Description of use: _____

3 Report Content and Presentation

How would you rate the following aspects of the Report? (*circle **one** number for each question*)

	Excellent		OK		Poor	
3.1 Ease of finding information	1	2	3	4	5	
3.2 Organization and layout	1	2	3	4	5	
3.3 Presentation and appearance	1	2	3	4	5	
	Too long		About right		Too short	
3.4 Overall length of report	1	2	3	4	5	
	Too many		About right		Too few	
3.5 Number of figures and graphs	1	2	3	4	5	
3.6 Number of tables	1	2	3	4	5	
	Too much		About right		Not enough	
3.7 Amount of verbal description/interpretation of data	1	2	3	4	5	
3.8 Amount of detail on recommended actions	1	2	3	4	5	

How would you rate the quality and usefulness of the following chapters? (*circle **one** number for each question, circle "NA" (not applicable) if you have not read that chapter*)

Chapter	Excellent/ very useful		OK		Poor/ not useful		NA
3.9 1: Introduction	1	2	3	4	5	NA	
3.10 2: Health Status of Children	1	2	3	4	5	NA	
3.11 3: Growing Up in British Columbia	1	2	3	4	5	NA	
3.12 4: Child Growth and Development	1	2	3	4	5	NA	
3.13 5: Physical Environment	1	2	3	4	5	NA	
3.14 6: Health Services	1	2	3	4	5	NA	
3.15 7: Aboriginal Children	1	2	3	4	5	NA	
3.16 8: Disease and Injury Prevention	1	2	3	4	5	NA	
3.17 9: Are we Meeting our Commitments?	1	2	3	4	5	NA	
3.18 10: Investing in Health	1	2	3	4	5	NA	
3.19 11: Recommended Actions	1	2	3	4	5	NA	
3.20 Appendix	1	2	3	4	5	NA	
3.21 Index	1	2	3	4	5	NA	

3.23 Do you have any further comments about improving the content and presentation of the Report?

Comments: _____

4 Future Editions of the Report

4.1 In this edition, we have focused on a specific topic – child health. Other topics under consideration for future editions include Aboriginal health, youth health, mental illness, and health services. Do you think future editions should continue to focus on specific topics?

No. I would like the report to continue to cover a broad range of topics and issues. 1

Yes. I would like the report to be in-depth, covering a different topic or issue each year 2 → *please specify below*

Yes, for some editions. I would like the report to focus on specific topics in most years, with a broad overview report produced, say, every 3-5 years 3 → *please specify below*

Suggested topics for future reports: _____

4.2 Do you have any further suggestions for future editions of the Report, or any other comments?

Suggestions/comments: _____

Please return by mail or fax to: Office of the Provincial Health Officer
B.C. Ministry of Health
3rd Floor, Jack Davis Building
1810 Blanshard Street
Victoria, BC V8V 1X4
Telephone (250) 952-0876
Fax (250) 952-0877

**Thank you for taking the time to complete this evaluation.
We will do our best to incorporate your suggestions into future reports.**

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