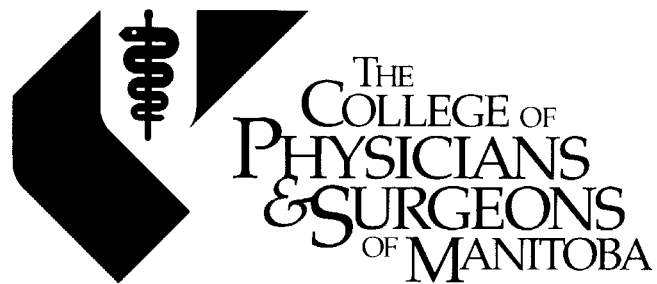


The
Child
Health
Standards
Committee
Annual Report

2001 and 2002



Acknowledgements

The Child Health Standards Committee (CHSC) wishes to acknowledge the continuing support of the following organizations. The information they provide has assisted the CHSC in its deliberations.

- Office of The Chief Medical Examiner
- Manitoba Vital Statistics
- Medical Records Departments, Manitoba Hospitals
- First Nations and Inuit Health Branch, Health Canada
- Insurance Division, Manitoba Health
- IMPACT, the injury prevention centre of Children's Hospital

The CHSC acknowledges the interest and cooperation of physicians and health care facilities across the province in providing information for the review process.

The committee is grateful to Manitoba Health for providing financial support.

Executive Summary 2001

- ❖ The Child Health Standards Committee (CHSC) met five times in 2001 and reviewed 127 deaths. Eighty-five were between the ages of 29 days and 14 years. Seventy-seven were Manitoba children and eight were from out of province. There were 37 deaths of teens aged 15 to 17 years, all Manitoba residents. Six deaths of children under 29 days of age were reviewed under the CHSC mandate.
- ❖ Overall mortality for children aged 29 days to 14 years was 32 per 100,000 compared to 31.8 per 100,000 in 2000 and 37.8 per 100,000 in 1999.
- ❖ The infant mortality rate was 5.9 per 1,000 live births, representing a slight increase compared to 2000, when it was 5.28. Manitoba continues to have one of the highest provincial infant mortality rates in Canada.
- ❖ The cause of death was preventable for 26 of 77 childhood deaths (34%) and 29 of 37 teen deaths (78%). Injury accounted for all but three of the preventable deaths.
- ❖ The overall injury mortality rate for children aged 29 days to 14 years was 10.8 per 100,000. The teenage (15 to 17 years) injury death rate was 58.4 per 100,000. The most common causes of injury-related mortality in teens were motor vehicle collisions and suicide. In children aged 29 days to 14 years, the most common causes of injury-related mortality were motor vehicle collisions, burns/smoke inhalation, and asphyxia.
- ❖ First Nations children aged 29 days to 14 years were five times more likely to die than other Manitoba children. First Nations children accounted for 31 of 77 childhood deaths in Manitoba (40%).
- ❖ In 2001, the CHSC initiated educational actions with seven physicians with respect to medical care provided. In two additional cases, other provinces were asked to review care provided by physicians involving patient transfers between jurisdictions. Two case reviews led to referral to another standards committee or another responsible authority. In five cases, multiple actions were taken. In five cases, educational action was taken elsewhere in the system.

Executive Summary 2002

- ❖ The Child Health Standards Committee (CHSC) met five times in 2002 and reviewed 113 deaths. Eighty-three were between the ages of 29 days and 14 years. Seventy-six of these were Manitoba children and seven were from out of province. There were 30 deaths of teens aged 15 to 17 years and, of these, 27 were Manitoba residents. One death of a child under 29 days of age was reviewed under the CHSC mandate.
- ❖ Overall mortality for children aged 29 days to 14 years was 31.9 per 100,000 compared with 32 per 100,000 in 2001 and 31.8 per 100,000 in 2000.
- ❖ The infant mortality rate was 5.7 per 1,000 live births, representing a slight decrease, compared to 2001, when it was 5.9. Manitoba continues to have one of the highest provincial infant mortality rates in Canada.
- ❖ The cause of death was preventable for 31 of 76 childhood deaths (41%) and 21 of 27 teen deaths (78%). Injury accounted for all of the preventable deaths.
- ❖ The overall injury mortality rate for children aged 29 days to 14 years was 13 per 100,000. The teenage (15 to 17 years) injury death rate was 45.8 per 100,000. The most common causes of injury-related mortality in teens were suicide, motor vehicle collisions, and asphyxia. In children aged 29 days to 14 years, the most common causes of injury-related mortality were suicide, motor vehicle collisions, asphyxia, and smoke inhalation.
- ❖ First Nations children aged 29 days to 14 years were 4.2 times more likely to die than other Manitoba children. First Nations children accounted for 28 of 76 childhood injury deaths in Manitoba (36%).
- ❖ In 2002, the CHSC initiated educational actions with two physicians with respect to medical care provided. In addition, two case reviews led to referral to another standards committee or another responsible authority. In eight cases, multiple actions were taken. In six cases, educational action was taken elsewhere in the system.

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Definitions

Age-Standardized Rates: Death rates are adjusted to account for the differing proportions of children by age group in different regions. Because infants are more likely to die than older children, a region with a higher proportion of infants would have an inflated death rate unless adjustments are made.

Delayed Neonatal Death: The death of an infant occurring after 28 days of age, who under natural selection circumstances, without the benefit of neonatal intensive care, would have died before 28 days of age.

Mortality Rate: The number of deaths occurring in a specified population per 100,000 population per year. Mortality rates for children under five years of age are usually reported as deaths per 1,000 population or 1,000 live births.

Infant Mortality Rate: The number of deaths occurring prior to one year of age per 1,000 live births.

Neonatal Mortality Rate: The number of neonatal deaths per 1,000 live births.

- **Early:** before the 7th full day of life (<168 hours), or
- **Late:** between the 8th and 28th full day of life (\geq 168 hours to <672 hours)

Post-Neonatal Mortality Rate: The number of deaths from 29 days to one year of age per 1,000 live births.

Under Five Mortality Rate: The number of deaths occurring prior to five years of age per 1,000 population.

First Nations: An individual who is registered under *The Indian Act of Canada*.

Non-First Nations or Other: All non-First Nations people, and those Métis and people of aboriginal descent who are not registered under *The Indian Act of Canada*.

Three-Year Moving Average: Three-year moving averages are used in some of the calculations because large fluctuations in rates may occur from year to year in small populations such as that of Manitoba. This rate is calculated by averaging the rate for 3 one-year periods and presenting that rate using the median year. For example, data for 1999, 2000, and 2001 rates are averaged and presented as a “2000” rate.

1. Introduction

Background

In 1976, the College of Physicians and Surgeons of Manitoba established the Paediatric Death Review Committee. In 2001, this committee was renamed the Child Health Standards Committee. This committee reports to the Central Standards Committee of The College of Physicians & Surgeons. The major function of all Standards Committees is to maintain and improve quality of care through education. *These educational functions of the College are separate and distinct from its disciplinary functions.*

Educational strategies used by the Child Health Standards Committee include:

- Sending letters to physicians, hospitals, Area Standards Committees, and regulatory agencies for other health professionals.
- Publishing articles in the College Newsletters and Annual Reports to draw members' attention to important aspects of medical care involving children.
- Recommendations for clinical practice guidelines to enhance paediatric care.
- Advocating for the health of Manitoba children by informing government and other public agencies of recommendations to improve legislation or public policy.

Goals and Objectives

To monitor and improve the quality of medical care provided to Manitoba children by:

- Reviewing all deaths in the province of children between the ages of 29 days and the day before their 18th birthday.
- Determining whether each death was preventable at the family, community or medical care level.
- Communicating with involved practitioners or agencies where care could have affected the outcome.
- Making recommendations to government, medical organizations and the community at large regarding preventable mortality and morbidity.

2. *Committee Activities*

In addition to reviewing deaths, the Child Health Standards Committee functions as a sounding board for child health issues for the College of Physicians and Surgeons.

The Medical Consultant conducts the initial case reviews and, with the administrative assistant, sends out and receives correspondence, maintains the database, contributes to the development of draft Guidelines and Newsletter items, attends relevant meetings, and collaborates with other interested parties.

Regional mortality rates are reported using the boundaries of the Manitoba Regional Health Authorities. In addition, the Committee divided Manitoba into three broad geographic regions: Urban (Winnipeg and Brandon); South (Assiniboine, Central and South Eastman); and North (Churchill, Burntwood, NorMan, North Eastman, Parkland and Interlake).

(Please refer to Definitions in Appendices.)

Clinical Practice Guidelines and Newsletter Items

The CHSC communicates with the profession through development of guidelines and the publication of items in the College Newsletter. A Guideline is practice generally recommended.

The CHSC worked on development and/or revision of 15 Guidelines in 2001 and 2002:

- 919 Management of Tonsillar Disease in Children
- 1624 Paediatric Burn Stabilization and Triage
- 904 Vascular Access
- 912 Raised Intracranial Pressure in Children
- 913 Treatment of Acute Asthma In Children
- 923 Screening for Type II Diabetes in Aboriginal Children
- 647 Fetal Alcohol Syndrome
- 902 Management of Diabetic Ketoacidosis in Childhood
- 918 Suspected Bacterial Meningitis: Initial Therapy for Infants and Children when Transportation is Required
- 910 – Eye Screening of the Infant and the Young Child
- 916 – Adoption of Children from Foreign Countries
- 920 – Sickle Cell Disease: Early Diagnosis and Treatment of Children
- 902 – Initial Fluid Management of DKA in Childhood
- 922 – Prevention of Iron Deficiency in Infants
- 900 – Enemas in Children: Use of Sodium Phosphate

The CHSC developed eight Newsletter items in 2001 and 2002:

- Child Car Seat Safety
- SIDS Prevention
- New Vaccines (published in December 2003)
- Suicide Risk Factors: Child and Teen
- Vitamin D Supplementation for Breastfeeding Babies
- Abdominal Radiographs for Paediatric Constipation
- Telephone Refills for Salbutamol for Paediatric Patients
- Early Diagnosis of Sickle Cell Disease Important

The CHSC conducted four Morbidity/Mortality Audits in 2001 and 2002:

- Diabetic Ketoacidosis Inpatient Management
- Child Oncology
- Croup Morbidity
- Suicide: Children and Teens

The CHSC advocated for changes regarding the following issues in 2001 and 2002:

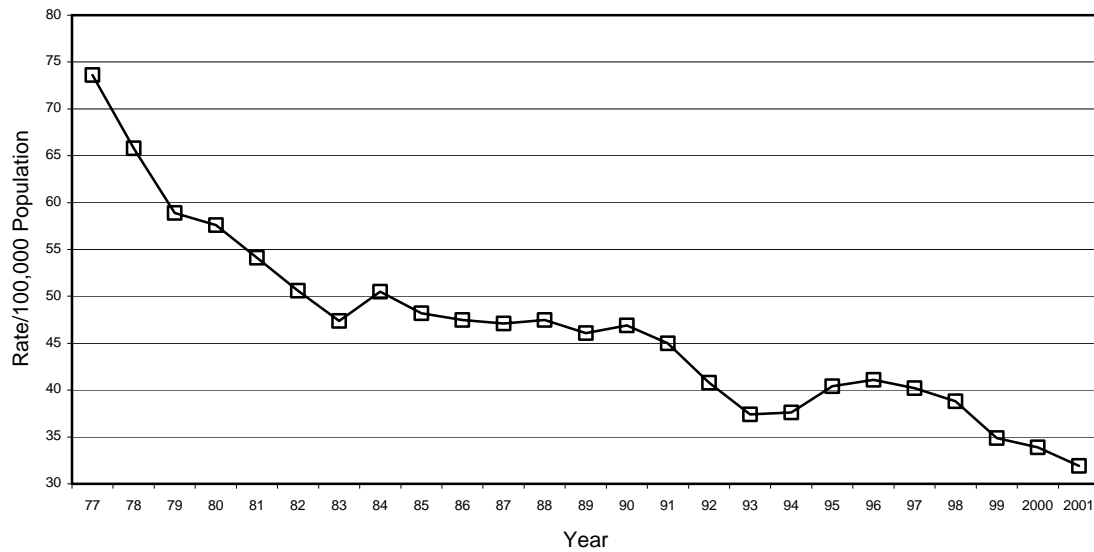
- Deaths involving riding in the back of pickup trucks and recommendation for changes to *The Highway Traffic Act*
- Recommendation for a WRHA audit on ventriculo-peritoneal shunt care and development of a shunt registry
- Improved provision of medical information for children and teenagers in care with Child and Family Services
- Full graduated drivers licensing program
- Recommendation for a WRHA Emergency Department vital signs form
- Injury prevention focusing on preventing child and teen suicide

3. Statistical Summary

Mortality Rates

Figure 1 shows the three-year moving average trends in paediatric mortality from 1977 to 2002 for Manitoba residents. *The 2002 data are included in the three-year moving average reported as 2001.*

**Figure 1 – MORTALITY RATES
In Children 29 Days to 14 Years
(Three-Year Moving Average)**



Deaths Grouped by Age For Manitoba Residents

Table 1a – MORTALITY RATES BY AGE GROUP 2001				
Age Group	Number of Deaths	Population	Rate/ 100,000	Three-Year Average (1999 – 2001)
29 days to <1 year	32	14,008	228.4	221.1
1 to 4 years	20	59,303	33.7	32.9
5 to 9 years	14	82,651	16.9	19.1
10 to 14 years	11	84,369	13	17.1
Total 29 days to 14 years	77	240,331	32	33.9
15 to 17 years	37	49,661	74.5	66.5

Table 1b – MORTALITY RATES BY AGE GROUP 2002				
Age Group	Number of Deaths	Population	Rate/ 100,000	Three-Year Average (2000 – 2002)
29 days to <1 year	34	13,921	244.2	226.8
1 to 4 years	10	58,328	17.1	24.7
5 to 9 years	11	80,987	13.6	16.5
10 to 14 years	21	84,805	24.8	19.4
Total 29 days to 14 years	76	238,041	31.9	31.9
15 to 17 years	27	50,203	53.9	63.8

Deaths Grouped by Gender For Manitoba Residents

Table 2a – MORTALITY RATES BY GENDER 2001

Gender	Number of Deaths	Population	Rate/ 100,000	Three-Year Average (1999 – 2001)
Male 29 days to 14 years	50	123,157	41.1	41.1
Female 29 days to 14 years	27	117,174	22.2	26.3
Male 15 to 17 years	29	25,475	113.8	87
Female 15 to 17 years	8	24,186	33.1	44.8

Table 2b – MORTALITY RATES BY GENDER 2002

Gender	Number of Deaths	Population	Rate/ 100,000	Three-Year Average (2000 – 2002)
Male 29 days to 14 years	44	121,873	36.1	36.3
Female 29 days to 14 years	32	116,168	27.5	27.3
Male 15 to 17 years	22	25,764	85.4	90.2
Female 15 to 17 years	5	24,439	20.5	36

Infant Mortality Rates

In 2001, there were 38 deaths in the Manitoba population between 29 days and one year of age. The number of live births based on Manitoba Health registrations was 14,573. This gives a post-neonatal infant mortality rate of 2.6 per 1,000 live births. There were also 54 neonatal deaths in the first 28 days of life. The neonatal mortality rate was 3.7 per 1,000 live births.

Combining the neonatal mortality rate with the post-neonatal mortality rate gives an overall infant mortality rate of 6.3 per 1,000 live births. This rate has increased this year, although it has been fairly stable for the past five years. These figures do not include neonates born weighing <500 grams.

For First Nations infants, there were 12 neonatal deaths and 13 post-neonatal deaths among 2,020 live births for an infant mortality rate of 12.4 per 1,000. For non-First Nations infants, there were 42 neonatal and 25 post-neonatal deaths among 12,553 live births for a rate of 5.3 per 1,000. The First Nations infant mortality rate was 2.3 times that for non-First Nations infants.

In 2002, there were 37 deaths in the Manitoba population between 29 days and one year of age. The number of live births based on Manitoba Health registrations was 14,329. This gives a post-neonatal infant mortality rate of 2 per 1,000 live births. There were also 48 neonatal deaths in the first 28 days of life. The neonatal mortality rate was 3.5 per 1,000 live births.

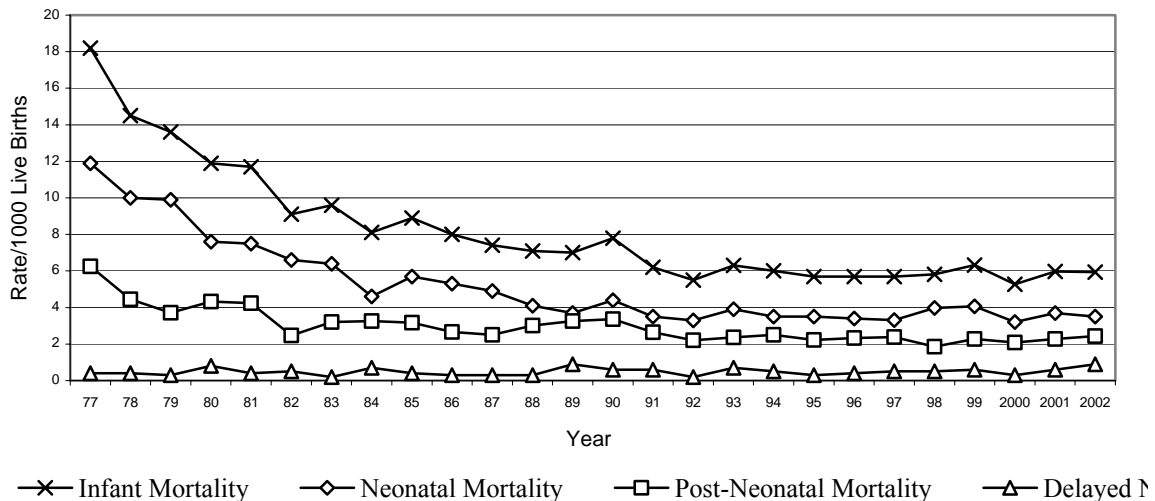
Combining the neonatal mortality rate with the post-neonatal mortality rate gives an overall infant mortality rate of 5.7 per 1,000 live births. This rate has increased slightly this year and has been fairly stable for the past five years. These figures do not count neonates born weighing <500 grams or infants from out of province who die in Manitoba.

For First Nations infants, there were 14 neonatal deaths and 13 post-neonatal deaths among 2,020 live births for an infant mortality rate of 13.4 per 1,000. For non-First Nations infants, there were 36 neonatal and 21 post-neonatal deaths among 12,514 live births for a rate of 4.7 per 1,000. The First Nations infant mortality rate was 2.8 times that for non-First Nations infants.

Infant Mortality Rates *Continued*

Figure 2 shows Manitoba infant mortality rates over time. Also plotted are neonatal, post-neonatal and delayed neonatal infant mortality rates. When children's lives are prolonged by technology and they die from neonatal illnesses after 28 days, they are classified as delayed neonatal deaths and become part of the post-neonatal infant mortality statistic. In 2001, nine infants under one year of age were classified as dying from delayed neonatal causes. This represents 24% of post-neonatal infant mortality. In 2002, 12 infants under one year of age were classified as dying from delayed neonatal causes. This represents 32% of post-neonatal infant mortality. Infant mortality rates have remained stable for the past decade.

Figure 2 – INFANT MORTALITY RATES



Infant Mortality Rates *Continued*

Table 3 shows Statistics Canada infant mortality rates for Canada as a whole, and by province. The Statistics Canada figures for Manitoba are slightly different than those presented in this report. Statistics Canada counts babies born in Manitoba to mothers from out of province as being the responsibility of Manitoba. They also count registered births and neonatal deaths weighing less than 500 grams, which are not included in our statistics.

Table 3 – INFANT MORTALITY RATES/1,000 BY PROVINCE AND TERRITORY							
Province/Country	1996	1997	1998	1999	2000	2001	2002
Canada	5.6	5.5	5.3	5.3	5.3	5.2	5.4
British Columbia	5.1	4.7	4.2	3.8	3.7	4.1	4.6
Nova Scotia	5.6	4.4	4.6	4.0	4.9	5.6	4.2
Alberta	6.2	4.8	4.8	5.8	6.6	5.6	7.3
Ontario	5.7	5.5	5.0	5.4	5.6	5.4	5.3
Yukon	-	8.4	5.1	2.6	2.7	8.7	8.8
Quebec	4.6	5.6	5.6	4.9	4.7	4.7	4.8
Newfoundland	6.6	5.2	6.2	4.9	4.9	4.9	4.5
New Brunswick	4.9	5.7	6.5	5.0	3.5	4.3	3.8
Manitoba	6.7	7.5	6.7	8.4	6.5	7.0	7.1
Saskatchewan	8.4	8.9	7.1	6.3	6.8	5.5	5.7
Prince Edward Island	4.7	4.4	8.0	6.6	3.5	7.2	1.5
Northwest Territories	12.2	10.9	18.5	16.7	8.9	4.9	11.0
Nunavut				10.9	12.3	16.9	11.0

Sources: Statistics Canada. Tabulations from Health Statistics Division. *The Daily*, July 1998, June 1999.

Statistics Canada. 1998 Catalogue No. 840211XPB.

Statistics Canada. 1999 Catalogue No. 84F0211XPB

Statistics Canada. Table 102-0507

http://www.statcan.ca/english/freepub/84F0211XIE/2002/tables/html/t018_en.htm

First Nations Mortality Rates

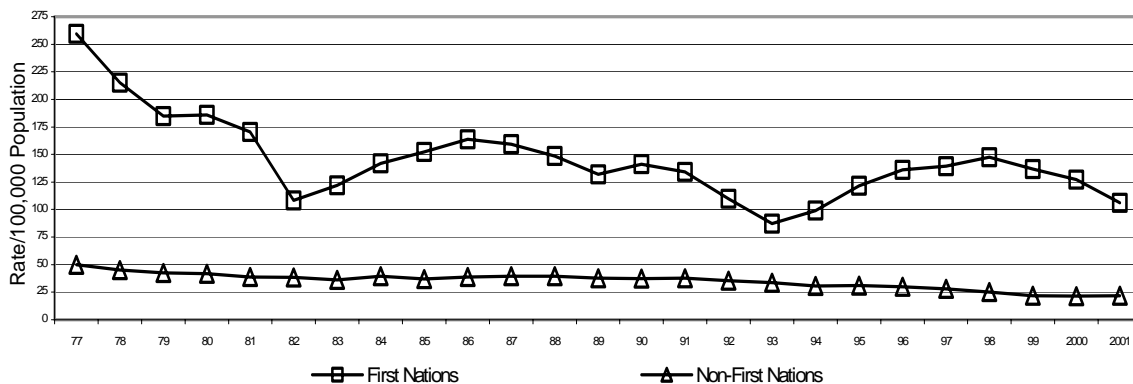
In 2001, First Nations children accounted for 13.5% of the population aged 29 days to 14 years in Manitoba and 40% of childhood deaths. There were 31 deaths among registered First Nations children (population 28,663) and 46 among all others (population 211,668). The rate for First Nations children was 108.2 per 100,000, and for all others 21.7. Therefore, First Nations children were five times more likely to die than other Manitoba children.

In Manitoba in 2001, 60% of First Nations children resided in First Nations communities. Of the 31 First Nations children who died, 13 resided in First Nations communities and 18 resided in other communities. Mortality rates for First Nations children were 76 per 100,000 in First Nations communities, and 156.1 per 100,000 First Nations children in all other communities.

In 2002, First Nations children accounted for 13.8% of the population aged 29 days to 14 years in Manitoba and 36% of childhood deaths. There were 28 deaths among registered First Nations children (population 28,877) and 48 among all others (population 209,164). The rate for First Nations children was 97 per 100,000, and for all others 23. First Nations children were 4.2 times more likely to die than other Manitoba children.

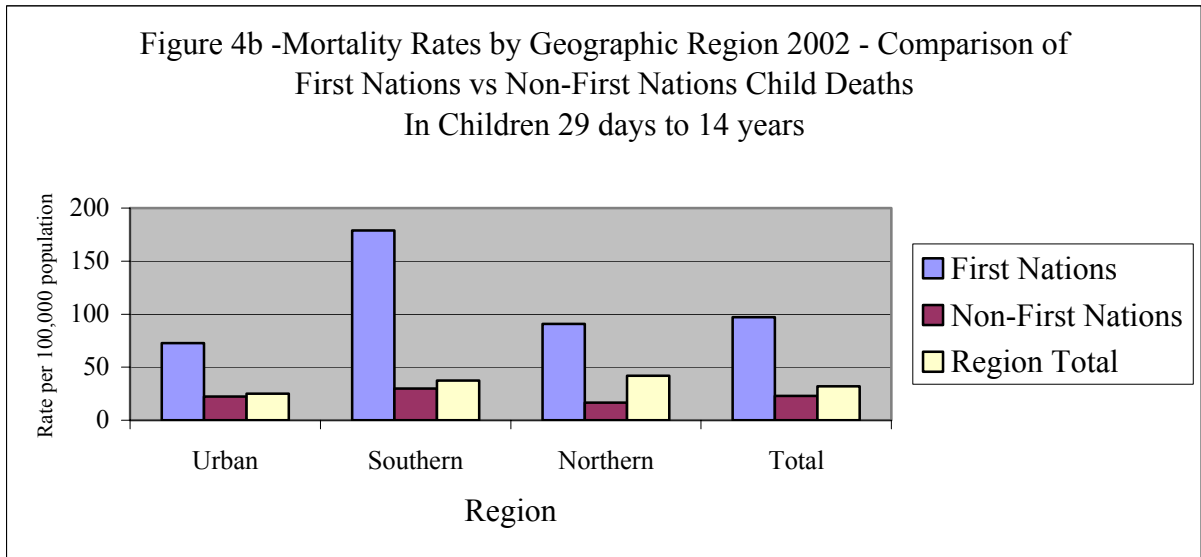
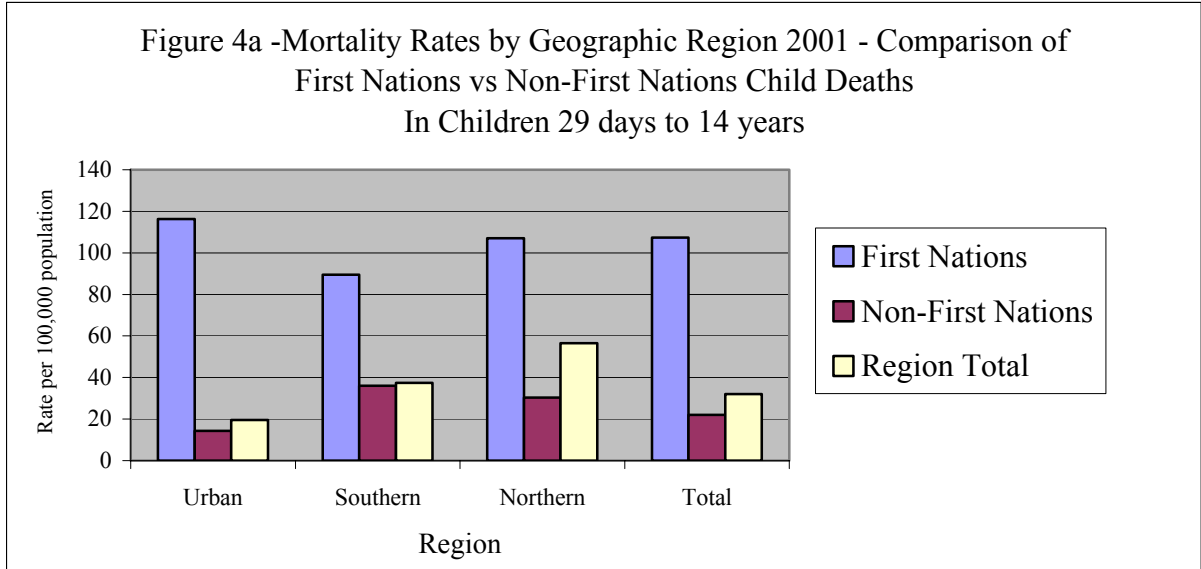
In Manitoba in 2002, 59% of First Nations children resided in First Nations communities. Of the 28 First Nations children who died, 14 resided in First Nations communities and 14 resided in other communities. Mortality rates for First Nations children were 82 per 100,000 in First Nations communities and 118 per 100,000 First Nations children in all other communities

(The Manitoba Health Client Registry is used for these calculations for both deaths and population figures. These data are felt to represent approximately two-thirds of First Nations individuals in Manitoba.)



**Figure 3 – MORTALITY RATES FOR FIRST NATIONS vs. NON-FIRST NATIONS CHILDREN
In Children 29 Days to 14 Years
(Three-Year Moving Average)**

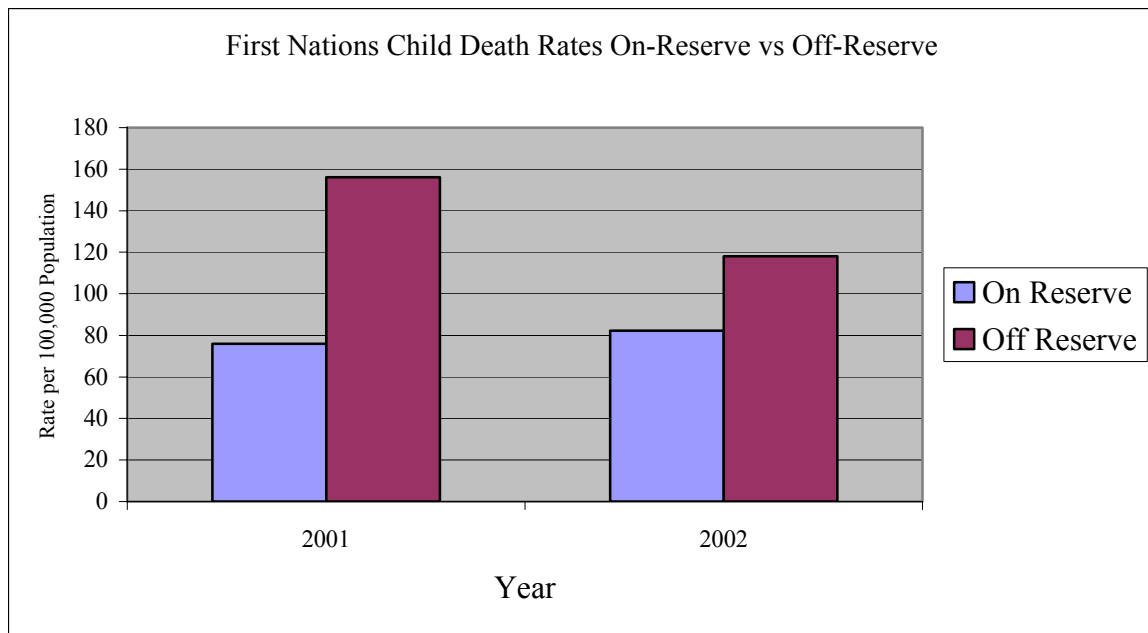
First Nations Mortality Rates *Continued*



Definition of geographic regions for the purpose of this report:

- North Rural – Churchill, Burntwood, NorMan, North Eastman, Parkland and Interlake RHAs
- South Rural – Assiniboine (Marquette and South Westman), Central and South Eastman RHAs
- Urban – Winnipeg and Brandon RHAs

First Nations Mortality Rates *Continued*



**Figure 5 – MORTALITY RATES BY RESIDENCE LOCATION
In Children 29 Days to 14 Years**

Regional Mortality Rates

Table 4a – REGIONAL MORTALITY RATES 2001 In Children 29 Days to 14 Years				
RHA	Number of Deaths	Population 0–14	Rate/100,000	Three-Year Average (1999 – 2001)
Brandon	1	9,759	10.2	10.2
Winnipeg	25	124,238	20.1	26.4
Marquette	4	7,414	54	26.9
South Westman	4	6,532	61.2	45
South Eastman	4	13,429	29.8	26.1
Central	8	23,423	34.2	22.7
Parkland	7	8,690	80.6	37.9
NorMan	4	6,665	60	64
Interlake	4	15,575	25.7	29.5
North Eastman	3	8,910	33.7	44.3
Churchill	0	251	0	0
Burntwood	13	15,445	84.2	101
All Manitoba	77	240,331	32	33.9

Table 4b – REGIONAL MORTALITY RATES 2002 In Children 29 Days to 14 Years				
RHA	Number of Deaths	Population 0–14	Rate/100,000	Three-Year Average (2000 – 2002)
Brandon	3	9,570	31.3	17.2
Winnipeg	30	123,206	24.3	24.2
Assiniboine*	9	13,540	66.5	43.6
South Eastman	3	13,528	22.2	26.6
Central	7	23,333	30	21.4
Parkland	2	8,481	23.6	34.7
NorMan	3	6,674	45	59.5
Interlake	2	15,347	13	21.3
North Eastman	3	8,681	34.6	41.2
Churchill	0	259	0	0
Burntwood	14	15,372	91.1	86.4
All Manitoba	76	238,041	31.9	31.9

*In 2002, South Westman and Marquette Regional Health Authorities merged to form Assiniboine Regional Health Authority.

Causes of Childhood Death

Table 5 shows the causes of death in children 29 days to 14 years of age.

In 2001, 77 deaths of Manitoba children were reviewed. Injury accounted for 34% of these deaths. The CHSC also reviewed eight deaths of children from out of province. Six deaths of children under 29 days of age were also reviewed under the CHSC mandate.

In 2002, 76 deaths of Manitoba children were reviewed. Injury accounted for 41% of deaths. The CHSC also reviewed seven deaths of children from out of province. One death of a child under 29 days of age was also reviewed under the CHSC mandate.

Table 5 – CAUSES OF DEATH In Children 29 Days to 14 Years				
	2001		2002	
	Deaths	Rate per 100,000	Deaths	Rate per 100,000
Unintentional Injury	23	9.6	21	8.8
Intentional Injury*	3	1.2	10	4.2
Injury Total	26	10.8	31	13
Congenital Anomaly	8	3.3	11	4.6
Sudden Infant Death Syndrome	7	2.9	5	2.1
Infectious Disease	4	1.7	1	0.4
Sudden Unexplained	6	2.5	5	2.1
Conditions Originating in Perinatal Period	5	2.1	3	1.3
Circulatory System	4	1.7	4	1.7
Digestive System	4	1.7	1	0.4
Nervous System	4	1.7	4	1.7
Respiratory System	3	1.2	6	2.5
Neoplasm	3	1.2	2	0.8
Disease of the Genitourinary System	2	0.8	0	0
Diseases of Blood & Blood-Forming Organs	0	0	1	0.4
Endocrine, Nutritional, Metabolic	1	0.4	2	0.8
Total	77	32	76	31.9

*Intentional Injury includes homicide and suicide.

Causes of Childhood Death *Continued*

Table 6 lists the frequency of various causes of post-neonatal infant mortality among Manitoba residents.

Table 6 – CAUSES OF POST-NEONATAL INFANT DEATH In Children 29 Days to 1 Year				
	2001		2002	
	Deaths	Rate per 100,000	Deaths	Rate per 100,000
Unintentional Injury	3	21.4	3	21.6
Intentional Injury*	0	0	2	14.4
Injury Total	3	21.4	5	35.9
Endocrine, Nutritional, Metabolic Diseases & Immunity Disorders	0	0	2	14.4
Digestive System	3	21.4	0	0
Nervous System	1	7.1	1	7.2
Respiratory System	2	14.3	3	21.6
SIDS	7**	50	5	35.9
Sudden Unexpected Infant Death	5	35.5	5	35.9
Infection	2	14.3	1	7.2
Congenital Anomaly	2	14.3	6	43.1
Circulatory System	3	21.4	2	14.4
Certain conditions originating in the perinatal period	4	28.6	3	21.6
Total	32	228.3	33	237.3

*Intentional Injury (homicide).

** There were 3 additional SIDS deaths < 29 days.

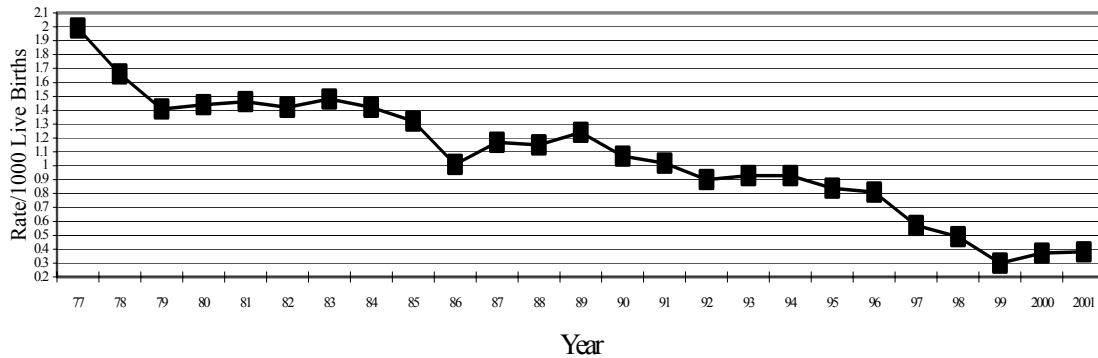
Infant deaths are classified as Sudden Infant Death Syndrome (SIDS) if they remain unexplained by clinical history, death scene investigation (by police), and detailed post mortem examination including skeletal x-rays and toxicology. Sudden Unexpected Infant Deaths (SUID) are those with historical, investigative or post mortem findings which suggest, but do not confirm a cause of death.

Sudden Infant Death Syndrome (SIDS)

Figure 6 shows the three-year moving average rates of Sudden Infant Death Syndrome from 1977 to the present. Data for 2002 are included in the 2001 average.

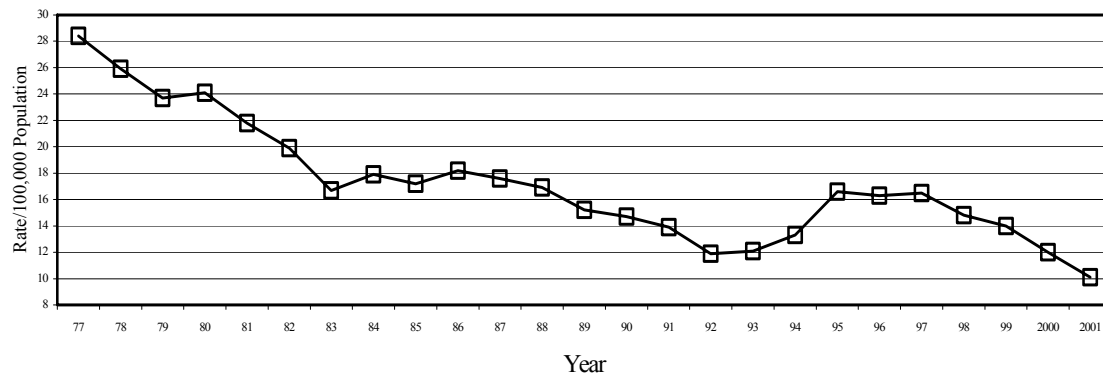
There had been a continuing decline in rates until 1999. In 2001, there were seven cases of SIDS in the 29 days to one-year age range, and three additional cases occurring in children under 29 days. Known SIDS risk factors included prone sleeping (three cases), co-sleeping on a sofa (two cases), co-sleeping with an adult smoker (two cases) and sleeping on soft bedding (one case). In 2002, there were five cases of SIDS in the 29 days to one-year age range. Known SIDS risk factors included co-sleeping with an adult smoker (two cases), prone sleeping (one case) and sleeping on soft bedding (one case).

**Figure 6 – SUDDEN INFANT DEATH SYNDROME
In Children 29 Days to 1 Year
(Three-Year Moving Average)**



Deaths from Injury

**Figure 7 – MORTALITY RATES FROM INJURY
In Children 29 Days to 14 Years
(Three-Year Moving Average)**



Deaths from Injury *Continued*

In 2001, there were 26 deaths from injury for Manitoba children under 14 years of age. Injuries caused 34 % of all the deaths of children between 29 days and 14 years of age (26 of 77).

Table 7a – INJURY-RELATED MORTALITY RATES BY AGE GROUP 2001				
Age Group	Number of Deaths	Population	Rate/100,000	Three-Year Average 1999-2001
29 days to <1 year	3	14,008	21.4	32.5
1 – 4 years	8	59,303	15.2	16.4
5 – 9 years	6	82,651	7.3	8.4
10 – 14 years	9	84,369	10.7	10.4
Total	26	240,331	10.8	12.4

Table 8a – TYPES OF INJURY CAUSING DEATH 2001 In Children 29 Days to 14 Years					
	Unintentional			Intentional	
	Cases	Rate per 100,000		Cases	Rate per 100,000
Motor Vehicle	7	3	Suicide: Hanging	3	1.2
Burns/Smoke	6	2.5			
Asphyxia	5	2			
Drowning	2	1			
Exposure	1	0.4			
Fall	1	0.4			
Bicycle	1	0.4			
Total	23	9.6	Total	3	1.2

Deaths from Injury *Continued*

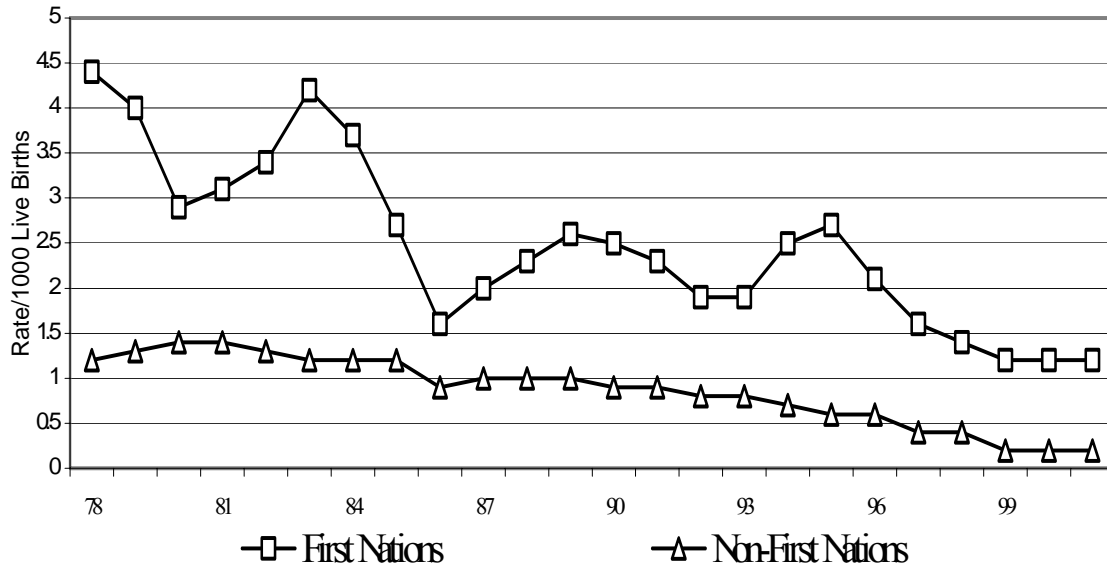
In 2002, there were 31 deaths from injury for Manitoba children under 14 years of age. Injuries caused 41% of all the deaths of children between 29 days and 14 years of age (31 of 76). **Table 8b** shows the number of deaths and death rates for injuries by age group.

Table 7b – INJURY-RELATED MORTALITY RATES BY AGE GROUP 2002				
Age Group	Number of Deaths	Population	Rate/100,000	Three-Year Average 1999-2001
29 days to <1 year	5	13,921	35.9	33
1 – 4 years	7	58,328	12	13.5
5 – 9 years	7	80,987	7.4	7.7
10 – 14 years	12	84,805	14.2	11.9
Total	31	238,041	12.6	11.9

Table 8b – TYPES OF INJURY CAUSING DEATH 2002 In Children 29 Days to 14 Years					
	Unintentional			Intentional	
	Cases	Rate per 100,000		Cases	Rate per 100,000
Motor Vehicle	5	2.1	Suicide:	6	2.5
Bicycle	2	1	Hanging		
Burns/Smoke	2	1	Homicide:	2	1
Drowning	2	1	Strangulation		
Asphyxia	6	2.5	Beating		
Fall	1	0.4			
Accidental Overdose	1	0.4			
Other	2	1			
Total	21	8.8	Total	10	4.2

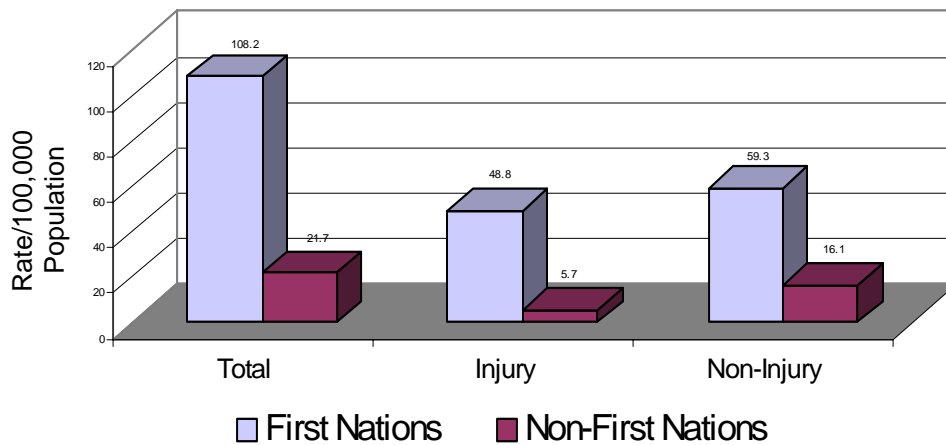
Selected Cause-Specific Mortality – First Nations Children

**Figure 8 – SUDDEN INFANT DEATH SYNDROME – FIRST NATIONS vs. NON-FIRST NATIONS
(Three-Year Moving Average)**

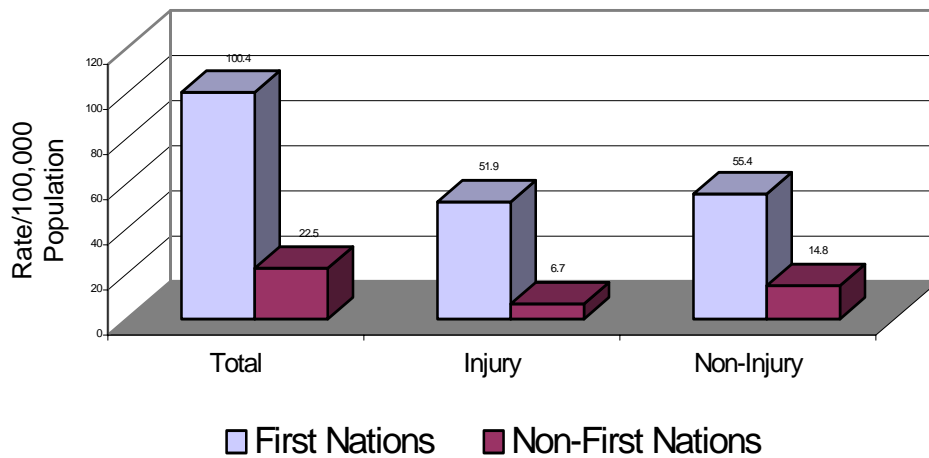


Selected Cause-Specific Mortality – First Nations Children *Continued*

**Figure 9a – MORTALITY RATES FROM INJURY – FIRST NATIONS vs. NON-FIRST NATIONS
In Children 29 Days to 14 Years
For Year 2001**



**Figure 9b – MORTALITY RATES FROM INJURY – FIRST NATIONS vs. NON-FIRST NATIONS
In Children 29 Days to 14 Years
For Year 2002**

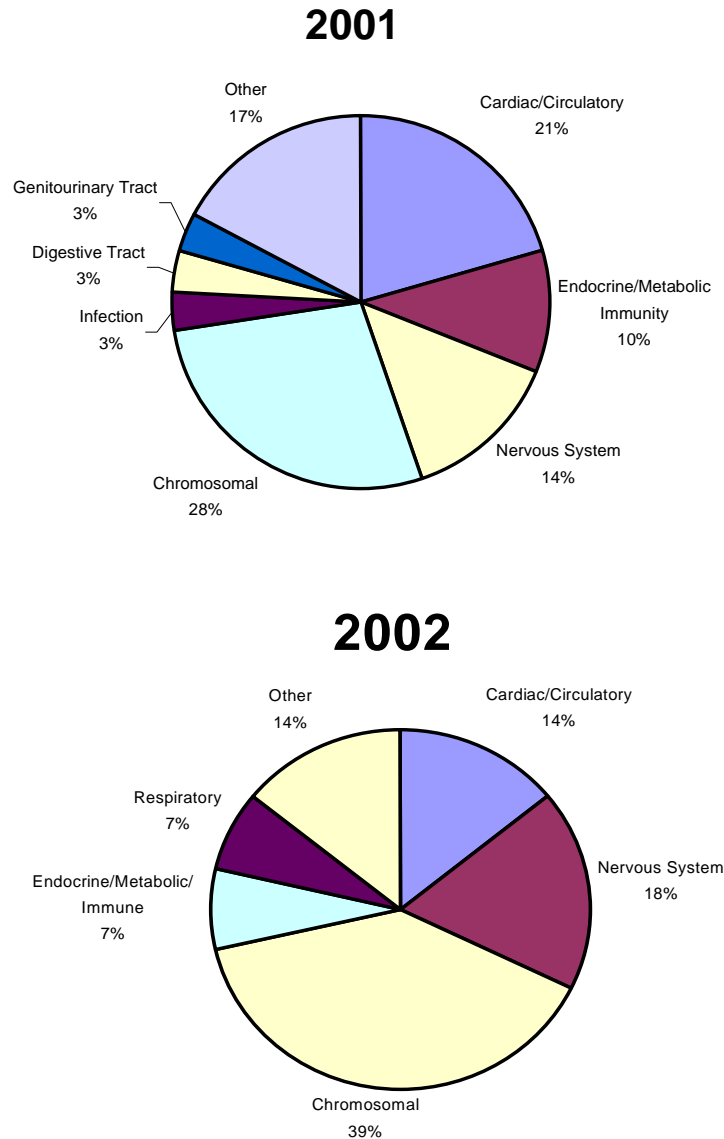


Congenital Disorders

In 2001, 38% of the deaths (29 of 77) involved children with congenital disorders.

In 2002, 37% of the deaths (28 of 76) involved children with congenital disorders.

Figure 10– TYPES OF CONGENITAL DISORDERS in Children 29 Days to 14 Years



Autopsies

In 2001, autopsies were performed on 55 of the 77 Manitoba children (71%) who died between the ages of 29 days and 14 years. Among the teenagers aged 15 to 17 years, 22 out of 37 had autopsies (59%).

In 2002, autopsies were performed on 52 of the 76 Manitoba children (68%) who died between the ages of 29 days and 14 years. Among the teenagers aged 15 to 17 years, 14 out of 27 had autopsies (52%). One additional partial autopsy was performed.

4. Teenage Deaths, 15 to 17 Years

Since 1994, the Child Health Standards Committee has reviewed deaths of Manitoba children from 15 to 17 years of age. The death rate in 2001 was 74.5 per 100,000, higher than the three-year average of 66.5 per 100,000. The male to female mortality ratio was 3.6 to one (see Table 2a). **Table 9** shows the causes of death for this age group and **Table 10** shows the types of injuries causing death. The injury-related mortality rate was 56.4 per 100,000. The male-to-female ratio was 3.7 to one for injury-related deaths. In two cases, organs were donated for transplant.

The death rate in 2002 was 53.8 per 100,000, lower than the three-year average of 63.8 per 100,000. The male-to-female teenage mortality ratio was 4.4 to one (see Table 2b). **Table 9** shows the causes of death for this age group and **Table 10** shows the types of injuries causing death. The injury-related mortality rate was 41.8 per 100,000. The male-to-female ratio was greater than 3.2 to two for injury-related deaths. In four cases, organs were donated for transplant.

Table 9 – CAUSES OF DEATH In Children 15 to 17 Years				
	2001		2002	
	Deaths	Rate per 100,000	Deaths	Rate per 100,000
Unintentional Injury	14	28.2	12	23.9
Intentional Injury*	14	28.2	9	17.9
Injury Total	28	58.4	21	41.8
Neoplasms	1	2	1	2
Central Nervous System	1	2	2	4
Endocrine, Nutritional, Metabolic	2	4	0	--
Circulatory System	3	6	3	6
Digestive System	1	2	0	--
Unexpected, unexplained	1			
Total	37	74.5	27	53.8

*Intentional injury includes homicide and suicide.

Table 10 – TYPES OF INJURY CAUSING DEATH In Children 15 to 17 Years									
Unintentional					Intentional				
	2001		2002			2001		2002	
	Cases	Rate / 100,000	Cases	Rate / 100,000		Cases	Rate / 100,000	Cases	Rate / 100,000
Motor Vehicle	6	12	8	16	Homicide:				
Rec. Vehicle	--	--	3	6	Beating	2	4	--	--
Bicycle	1	2	--	--	Stabbing	2	4	2	4
Burns/Smoke	1	2	--	--	Strangulation	--	--	1	2
Fall	1	2	--	--	Suicide:				
Asphyxia	1	2	--	--	Asphyxia	8	16	6	12
Drowning	--	--	1	2	Firearms	2	4	--	--
Farm Machine	1	2	--	--					
Train	1	2	--	--					
Overdose	1	2	--	--					
Other	1	2	--	--					
Total	14	28	12	24	Total	14	28	9	18

In 2001, 28 of the 37 teenage deaths were due to injuries. Motor vehicle related deaths were the leading cause of unintentional injury death. Six teenagers died in motor vehicle collisions, five being the driver and one being a passenger. No restraints were in use for four drivers. One driver was wearing a seat belt, as was the one teenage passenger. All six of these deaths involved inexperienced drivers. Two motor vehicle related deaths involved substance abuse. Two motor vehicle related deaths were First Nations youths.

There were 14 intentional deaths, of which 10 were suicides and four were homicides. Eight of the suicides were by hanging and two were by firearms. Six of the suicides were First Nations teens. Substance abuse or alcohol use was a factor at the time of suicide for six deaths.

In 2002, 21 of the 27 teenage deaths were due to injuries. Motor vehicle related deaths were the leading cause of unintentional injury death. Eight teenagers died in motor vehicle collisions, two being the driver, five being passengers, and one was a pedestrian struck by a car. No restraints were in use for three, and in one case seatbelt use was unknown. One driver was killed when he came in contact with a live electrical wire following the crash. Four of these deaths involved inexperienced drivers. Three teen deaths involved use of recreational vehicles. In one case, the driver did not wear a helmet.

There were nine intentional deaths, of which six were suicides by hanging and three were homicides. Five of the suicides were First Nations teens. Substance or alcohol use was a factor at the time of suicide for four deaths.

5. *Preventability of Death*

The CHSC divides preventability into two categories: (i) preventability of the disease or the injury that caused the death, and (ii) preventability of the outcome once the disease or injury has occurred. Medical care is sometimes involved in the preventability of outcome. Where there was deemed to be an error in medical management, educational action was taken, with the expectation that this will result in improved care in the future.

Childhood Deaths

(i) Preventable Cause

In 2001, 26 of the 77 childhood deaths were deemed to have a preventable cause. All 26 were related to injuries, the most common being motor vehicle collisions, burns, asphyxia, suicide, and drowning.

In 2002, 34 of the 76 childhood deaths were deemed to have a preventable cause. Thirty-one were related to injuries, the most common being motor vehicle collisions, asphyxia, and suicide. Three children died of preventable conditions but medical care was not sought.

(ii) Preventable Outcome

In 2001, there were 11 childhood deaths with preventable medical features, including four theoretically preventable deaths and seven classified not preventable, but medical care could have been improved.

Five of these deaths related to issues of transfer of ill or injured children:

- Antibiotic selection was inappropriate for a child transferred with meningitis.
- Two children with peritonitis were transferred for care without an IV being placed by the transferring facility.
- Management of airway during transfer was inadequate for a child deteriorating during transfer.
- A child receiving treatment for major injuries in a rural facility should have been transferred sooner for specialty care.

In four cases there was a delay in establishing intravenous access. Two of these cases were previously mentioned above.

- During resuscitation of a child in a rural facility an IV could not be established. There was no attempt to use intraosseous technique.

- A child presented to a remote facility with severe dehydration. An IV could not be established. A second attempt at other potential sites would have been appropriate.

Two cases were related to airway management. One was described above.

- Airway management was not promptly established for a child deteriorating in hospital.

Three additional non-preventable cases that had preventable features included:

- Cough medicine was prescribed during two outpatient visits for a young infant with bronchiolitis.
- Triage of a child presenting to rural facility could have been improved.
- In-hospital assessment of hydration status was inadequate leading to inappropriate fluid and electrolyte management.

In 2002, there were 10 childhood deaths with preventable medical features. One case was classified as preventable with better medical care.

- There was failure to diagnose a treatable cardiac condition in life.

Nine cases were classified as follows: three theoretically preventable; six not preventable but medical care could have been improved.

- The dose of drugs used during cardiac resuscitation was not optimal.
- Resuscitation drug dosing should be on a “dose per kilogram” basis for children. During resuscitation, weight of the child should be estimated based on age and size. Alternatively, the Broselow Tape provides appropriate resuscitation doses for children of all ages. (three cases)
- A low birth weight infant was not screened for iron deficiency.
- In-hospital management of increased intracranial pressure was delayed for a child with shunted hydrocephalus.
- A febrile infant presenting to a remote facility was observed for a period of several hours when more timely medical evacuation should have been undertaken.
- Cough medicine was administered in hospital to an infant with a lower respiratory tract infection.
- Neuroradiologic imaging was delayed for a child presenting with signs and symptoms of increased intracranial pressure.
- In-hospital assessment of hydration status was inadequate leading to inappropriate fluid and electrolyte management.
- An infant less than six months of age with failure to thrive should have been admitted for assessment of feeding.

Teenage Deaths

(i) *Preventable Cause*

In 2001, 29 of the 37 teenage deaths were judged to have a preventable cause. All but one was from trauma or suicide. In 2002, 21 of the 27 teenage deaths were judged to have a preventable cause. All were from trauma or suicide.

(ii) *Preventable Outcome*

There were two teen deaths each in 2001 and 2002 with preventable features.

- In-hospital assessment of hydration status was inadequate leading to inappropriate fluid and electrolyte management.
- A patient with an acute intestinal obstruction received inadequate initial IV fluid management.
- Airway management was inadequate for a child transferred with agitation and a low Glasgow Coma Scale. Sedation should not have been administered prior to airway management.
- Preliminary neuroradiographic imaging reports did not document all pertinent findings for a hospitalized patient.

Educational and Other Actions

The Child Health Standards Committee took educational action for 14 cases in 2001 and 12 cases in 2002. An additional 12 education actions taken by other Child Standards Committees were reviewed, six each in 2001, and 2002.

Table 11 – EDUCATIONAL ACTIONS		
Action Taken	2001	2002
Physician Providers	7	2
Health Administrators	2	2
Multiple Actions	5	8
Total	14	12

6. Recommendations

The Child Health Standards Committee had the following recommendations related to child health. (* denotes recommendations continuing from previous annual reports.

1. That community-directed culturally sensitive injury prevention approaches be initiated for the many causes of excess injury-related mortality in First Nations communities. *
2. That physicians and others providing health care services to adolescents are aware of risk factors for suicide and appropriate and timely mental health services be provided for youth/adolescents identified as being at risk for suicide. *
3. That legislation be adopted, and public education initiated, to ban the transportation of passengers in the box of a pickup truck. *
4. That the Winnipeg Regional Health Authority conduct an audit regarding shunt care, and develop a shunt registry.
5. That the Winnipeg Regional Health Authority develop an Emergency Department policy regarding vital signs monitoring in the Emergency Department and to consider modifying the Emergency Department record to include a field to indicate frequency of vital signs.
6. That Child and Family Services improve provision of medical information to health care providers.
7. That Manitoba implements a full graduated licensing program. [Note, a graduated licensing program has been instituted in Manitoba.]
8. That existing Manitoba car seat and seatbelt provisions of the *Manitoba Highway Traffic Act* be enforced, that Manitoba legislation be strengthened to reflect current Transport Canada guidelines, including booster seats for children up to 27 kg. and eight years of age, and transporting children younger than 12 years of age in the rear seat of the vehicle restrained in car seats and booster seats.
9. That plain abdominal radiographs not be routinely used for the evaluation of constipation.
10. That telephone prescription refills for bronchodilators such as salbutamol (Ventolin) be provided with caution.
11. That all breastfed infants be supplemented with vitamin D (400 IU per day) until the diet provides a source of vitamin D.

12. That health care providers reinforce the supine sleeping position at every health contact until six months of age, in order to reduce the risk of SIDS.
13. That children who need admission for croup be given dexamethasone, and that croup tents not be used.

Child Health Standards Committee

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Dr. J. Embree, Paediatric Infectious Disease (from June 2001)
Dr. B.J. Hancock, Paediatric Surgeon
Dr. C. Littman, Pathologist (from September 2002)
Dr. J. de Nanassy, Pathologist (to June 2002)
Dr. M. Roy, Family Physician
Dr. N. Schur, Paediatrician
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