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Trends in Acute Inpatient Hospitalizations and Day Surgery Visits in Canada, 1995–1996 to 2005–2006

Introduction

The Canadian Institute for Health Information (CIHI) releases hospital utilization statistics on an annual basis to help monitor hospital use at the national and provincial/territorial levels. These statistics are intended to support health care management decision-making and to facilitate provincial/territorial and national comparative reporting.

This *Analysis in Brief* features new hospitalization data from the 2005–2006 fiscal year and presents trends in inpatient hospitalizations and day surgery visits in Canada over the last 10 years. It describes provincial and territorial differences in hospitalization rates, average length of in-hospital stay and number of day surgery visits. Trends in the number of surgeries performed on an inpatient basis compared to day surgery settings over the past decade are also featured.

Inpatient hospitalization statistics are obtained from CIHI's national Hospital Morbidity Database (HMDB) and Discharge Abstract Database (DAD). Day surgery statistics are sourced from the DAD and the National Ambulatory Care Reporting System (NACRS). More information on data sources, methodology and data limitations is found in Appendix 1. A list of definitions used in this report is found in Appendix 2.

Highlights

- Canadian acute care hospitals handled approximately 2.8 million inpatient hospitalizations in 2005–2006, a decline of 13.4% since 1995–1996.
- An increase in the number of day surgery visits is observed with over 1.3 million day surgery visits in 1995–1996 compared to almost 1.8 million visits in 2005–2006 (up by 30.6%), as reported by the six provinces and three territories that consistently submitted day surgery data to CIHI over the 10-year period.
- While the absolute number of hospitalizations has started to increase in the last three years, the age-standardized hospitalization rate continued to decrease over the 10-year time frame.
- This indicates that after accounting for population growth (via rate calculations) and the aging of the Canadian population (via age-standardization), inpatient hospitalizations continued to decrease in the last decade.
- Approximately 8 in 100 Canadians were hospitalized in 2005–2006 compared to 11 out of 100 in 1995–1996, representing a decrease of 24.6% since 1995–1996.
- The number of days spent in acute care hospitals has also decreased from 23.3 million in 1995–1996 to 20.3 million in 2005–2006, down by 13.1% since 1995–1996.
- The national average length of stay (ALOS) remained unchanged at 7.2 days since 1995–1996, oscillating between 7.0 days and 7.4 days over the past decade.
- When adjusted for age, the national ALOS decreased by 6.7% from 7.5 days in 1995–1996 to 7.0 days in 2005–2006.
- An increasing number of surgeries are being performed in a day surgery setting (up by 30.6%) compared to an inpatient hospital setting (down by 16.5%) over the past decade.
- While the setting for elective surgeries has shifted from an inpatient to day surgery setting, the total number of surgical events (inpatient and day surgery settings combined) has increased by 17.3% over the last decade, which indicates that more surgeries are being performed today as compared to 10 years ago.

Acute Inpatient Hospitalizations

Canadian acute care hospitals handled approximately 2.8 million inpatient hospitalizations in 2005–2006, a decline of 13.4% since 1995–1996 (Table 1). Most provinces reported a decrease in the number of hospitalizations between 1995–1996 and 2005–2006, with the largest percent decrease reported by Nova Scotia (24.5%), Newfoundland and Labrador (21.3%), New Brunswick (19.7%) and Saskatchewan (19.5%). Increases were reported by Alberta (3.5%) and the Yukon (1.9%).

Table 1. Inpatient Hospitalizations for Canada, 1995–1996 and 2005–2006[†]

Province/Territory	1995–1996	2005–2006 [†]	1-year % change*	10-year % change**
Newfoundland and Labrador	69,000	55,000	3.8%	-21.3%
Prince Edward Island	19,000	15,000	-4.1%	-16.6%
Nova Scotia	115,000	87,000	-2.3%	-24.5%
New Brunswick	114,000	92,000	2.0%	-19.7%
Quebec [‡]	750,000	633,000 [‡]	-0.7%	-15.6%
Ontario	1,150,000	999,000	-0.3%	-13.1%
Manitoba	140,000	119,000	0.1%	-15.2%
Saskatchewan	158,000	127,000	1.1%	-19.5%
Alberta	298,000	309,000	1.3%	3.5%
British Columbia	413,000	358,000	1.5%	-13.3%
Yukon Territory	2,800	2,800	0.9%	1.9%
Northwest Territories	6,000	5,000	-2.8%	-16.1%
Nunavut	1,800	1,500	-0.1%	-19.3%
CANADA	3,236,600	2,803,300	0.2%	-13.4%

Notes:

[†] 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data using projection techniques because 2005–2006 data from Quebec were not available to CIHI at the writing of this report.

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

* "1-year % change" refers to the percent change from 2004–2005 to 2005–2006.

** "10-year % change" refers to the percent change from 1995–1996 to 2005–2006.

Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Hospitalization numbers are rounded. Percentages are calculated using actual (i.e. not rounded) numbers.

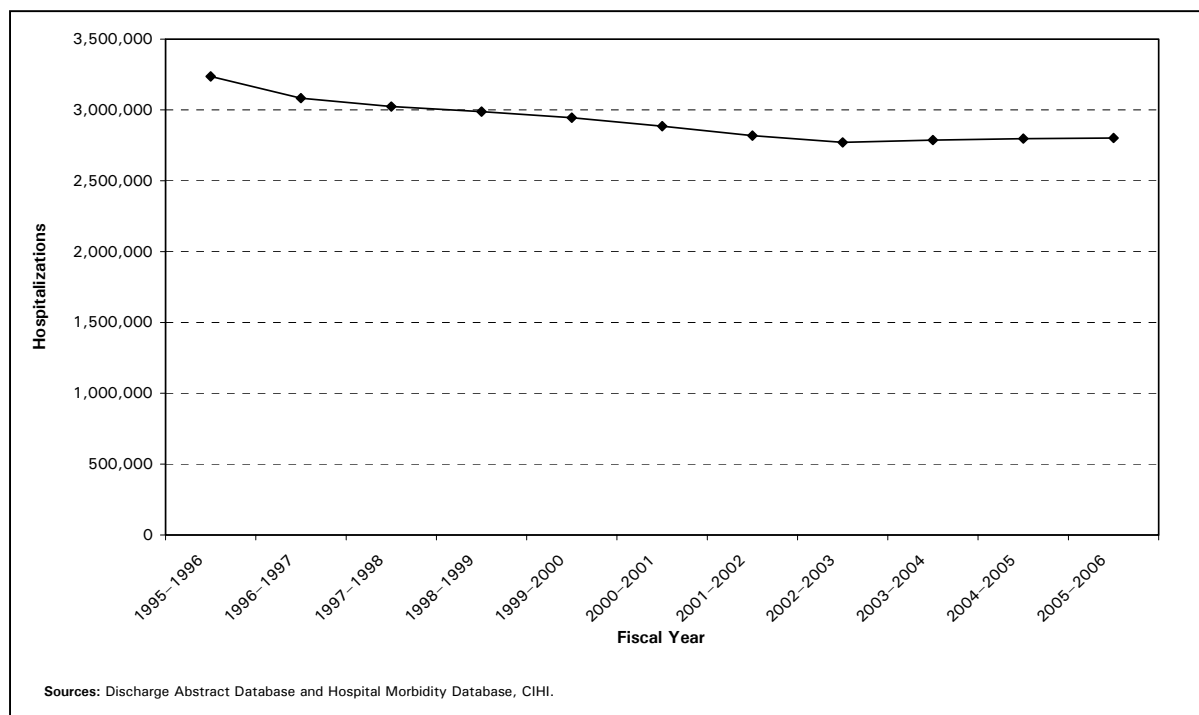
Sources: Discharge Abstract Database and Hospital Morbidity Database, CIHI.

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The number of hospitalizations in Canada has been declining steadily since 1995–1996. This downward trend began to reverse in 2003–2004 with a modest annual increase of 0.6%, 0.4% and 0.2% over the last three years (Figure 1). The provinces of British Columbia (5.1%), Alberta (4.4%), Quebec (1.2%), Ontario (0.2%) and Newfoundland and Labrador (0.2%) have also shown an increase in the number of hospitalizations since 2002–2003. The Yukon (5.5%) and Northwest Territories (3.4%) also reported increases over the last three years.

Figure 1. Inpatient Hospitalizations for Canada, 1995–1996 to 2005–2006



Notes:

2005–2006 Quebec numbers are estimated based on extrapolation of previous years’ data using projection techniques.

Missing data:

- 2002–2003 data missing from NU.
- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

Includes residents and non-residents of Canada.

Age-Standardized Inpatient Hospitalization Rates

The age-standardized rate of Canadian residents hospitalized in Canada was 8,200 per 100,000 population in 2005–2006 (Table 2). This means that approximately 8 in 100 Canadians were hospitalized in 2005–2006 compared to 11 out of 100 in 1995–1996. This represents a decrease of 24.6% from the 1995–1996 rate. Age-standardized rates are adjusted for population aging and account for population growth (via rate calculations).

With the exception of Nunavut and the Yukon Territory, all provinces and territories reported a decrease in the age-standardized hospitalization rate between 1995–1996 and 2005–2006. The largest decreases were reported by Nova Scotia (29.1%), British Columbia (27.0%), Ontario (26.3%), the Northwest Territories (25.7%) and Quebec (24.7%).

In contrast to the number of hospitalizations in Alberta, which have increased by 3.5% (Table 1), the rate of Alberta residents hospitalized has decreased by 16.9% since 1995–1996 (Table 2). This is driven by two factors:

1. The notable growth in Alberta's population over the last decade; and
2. Alberta's younger population relative to the Canadian population. Alberta's population increased by 19.3% between 1995–1996 and 2005–2006. This is nearly twice the growth rate of Canada's population (increased by 9.9%), and is only surpassed by Nunavut (up by 19.6%). When Alberta's population growth is taken into account, the hospitalization rate drops by 12.9%. After accounting for age, the rate drops even further to 16.9%. Alberta's younger population relative to the 1991 Canadian population (which is used as the standard in adjusting rates for age) explains this additional decrease.

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Table 2. Age-Standardized Inpatient Hospitalization Rates (per 100,000 Population) for Canada, 1995–1996 and 2005–2006[‡]

Province/Territory	1995–1996	2005–2006 [‡]	1-year % change*	10-year % change**
Newfoundland and Labrador	13,000	10,000	2.8%	-22.3%
Prince Edward Island	14,000	11,000	-5.1%	-22.0%
Nova Scotia	12,000	8,200	-2.5%	-29.1%
New Brunswick	15,000	11,000	12.0%	-24.1%
Quebec [‡]	10,000	7,800 [‡]	-2.2%	-24.7%
Ontario	10,000	7,500	-2.1%	-26.3%
Manitoba	12,000	9,200	-0.5%	-19.8%
Saskatchewan	15,000	12,000	0.9%	-18.5%
Alberta	11,000	9,300	-1.5%	-16.9%
British Columbia	11,000	7,700	-0.9%	-27.0%
Yukon Territory	11,000	12,000	3.9%	6.4%
Northwest Territories	20,000	15,000	-6.7%	-25.7%
Nunavut	9,400	15,000	-3.5%	62.8%
CANADA	11,000	8,200	-1.6%	-24.6%

Notes:

[‡] 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data using projection techniques because 2005–2006 data from Quebec were not available to CIHI at the writing of this report.

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

* "1-year % change" refers to the percent change from 2004–2005 to 2005–2006.

** "10-year % change" refers to the percent change from 1995–1996 to 2005–2006.

Geography represents the province/territory of the patient at the time of discharge (i.e. numbers include residents of Canada only).

Hospitalization rates are rounded. Percentages are calculated using actual (i.e. not rounded) rates.

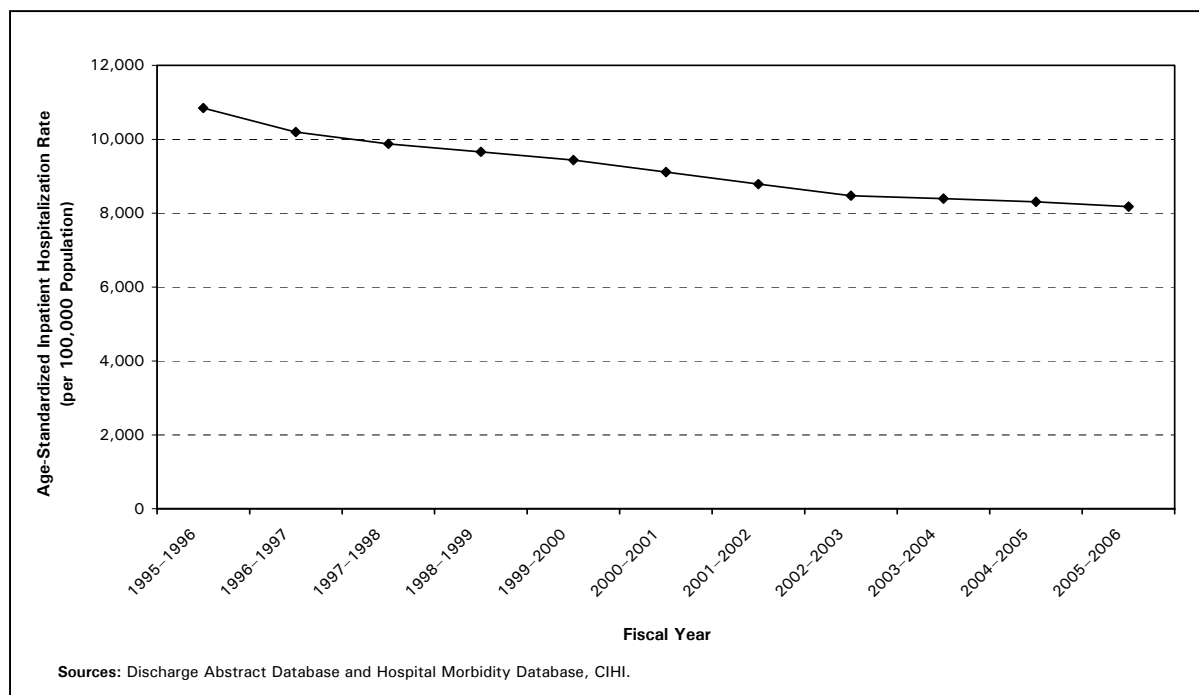
Sources: Discharge Abstract Database and Hospital Morbidity Database, CIHI.

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Contrary to the trend in the number of hospitalizations, which started to level off in 2003–2004, the age-adjusted hospitalization rate has continued to decrease since 1995–1996 (Figure 2). This indicates that after adjusting for Canada’s population growth and the aging of the population across the 10-year period, inpatient hospitalizations in Canada have decreased more intensely.

Figure 2. Age-Standardized Inpatient Hospitalization Rates (per 100,000 Population) for Canada, 1995–1996 to 2005–2006



Notes:

2005–2006 Quebec numbers are estimated based on extrapolation of previous years’ data using projection techniques.

Missing data:

- 2002–2003 data missing from NU.
- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

Includes residents of Canada only.

Total Hospital Days and Average Length of Stay for Acute Care Inpatients in Canada

The number of days spent in acute care hospitals decreased from 23.3 million in 1995–1996 to 20.3 million in 2005–2006, representing a 13.1% decrease in the last 10 years (Table 3). However, the unadjusted national average length of stay (ALOS) remained unchanged at 7.2, oscillating between 7.0 days and 7.4 days during the same time period (Table 4 and Figure 3). After adjusting for age, the national ALOS decreased by 6.7% between 1995–1996 (7.5 days) and 2005–2006 (7.0 days) and has also remained relatively stable, fluctuating between 7.0 days and 7.5 days over the last 10 years (Table 5 and Figure 3).

Table 3. Total Inpatient Hospital Days for Canada, 1995–1996 and 2005–2006[†]

Province/Territory	1995–1996	2005–2006 [†]	1-year % change*	10-year % change**
Newfoundland and Labrador	527,000	425,000	2.9%	-19.4%
Prince Edward Island	141,000	128,000	3.6%	-9.2%
Nova Scotia	841,000	734,000	-0.4%	-12.8%
New Brunswick	770,000	674,000	0.4%	-12.5%
Quebec [†]	6,744,000	5,334,000 [†]	-1.8%	-20.9%
Ontario	7,535,000	6,354,000	-0.6%	-15.7%
Manitoba	1,294,000	1,103,000	-2.4%	-14.8%
Saskatchewan	1,076,000	782,000	2.8%	-27.4%
Alberta	1,726,000	2,144,000	1.8%	24.2%
British Columbia	2,635,000	2,568,000	2.1%	-2.5%
Yukon Territory	11,000	14,000	-1.1%	22.9%
Northwest Territories	25,000	21,000	-13.4%	-17.6%
Nunavut	6,900	4,200	5.6%	-39.1%
CANADA	23,331,900	20,285,200	-0.2%	-13.1%

Notes:

[†] 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data using projection techniques because 2005–2006 data from Quebec were not available to CIHI at the writing of this report.

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

* "1-year % change" refers to the percent change from 2004–2005 to 2005–2006.

** "10-year % change" refers to the percent change from 1995–1996 to 2005–2006.

Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Total inpatient hospital days are rounded. Percentages are calculated using actual (i.e. not rounded) numbers.

Sources: Discharge Abstract Database and Hospital Morbidity Database, CIHI.

Table 4. Average Length of Inpatient Hospital Stay (in Days) for Canada, 1995–1996 and 2005–2006[§]

Province/Territory	1995–1996	2005–2006 [§]	1-year % change*	10-year % change**
Newfoundland and Labrador	7.6	7.8	0%	2.6%
Prince Edward Island	7.6	8.3	7.8%	9.2%
Nova Scotia	7.3	8.5	2.4%	16.4%
New Brunswick	6.7	7.3	-1.4%	9.0%
Quebec [§]	9.0	8.4 [§]	-1.2%	-6.7%
Ontario	6.6	6.4	0%	-3.0%
Manitoba	9.3	9.3	-2.1%	0%
Saskatchewan	6.8	6.1	1.7%	-10.3%
Alberta	5.8	6.9	0%	19.0%
British Columbia	6.4	7.2	1.4%	12.5%
Yukon Territory	4.0	4.8	-2.0%	20.0%
Northwest Territories	4.2	4.1	-10.9%	-2.4%
Nunavut	3.8	2.9	7.4%	-23.7%
CANADA	7.2	7.2	-1.4%	0%

Notes:

§ 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data using projection techniques because 2005–2006 data from Quebec were not available to CIHI at the writing of this report.

Missing data:

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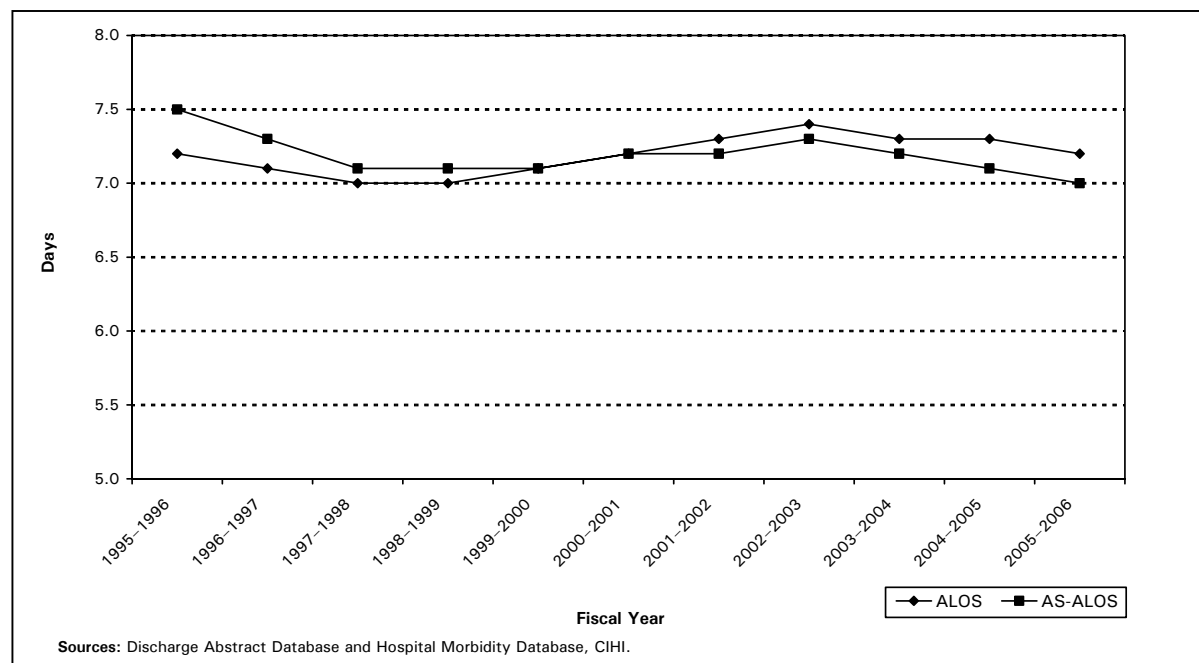
Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Average length of stay is calculated using actual (i.e. not rounded) number of hospitalizations and total inpatient hospital days.

Sources: Discharge Abstract Database and Hospital Morbidity Database, CIHI.

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Figure 3. Average Length of Stay (ALOS, in Days) and Age-Standardized Average Length of Stay (AS-ALOS, in Days) for Canada, 1995–1996 to 2005–2006



Notes:

2005–2006 Quebec numbers are estimated based on extrapolation of previous years’ data using projection techniques.

Missing data:

- 2002–2003 data missing from NU.
- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

Includes residents and non-residents of Canada.

Most provinces and territories experienced a decrease in the total number of hospital days between 1995–1996 and 2005–2006, with the largest percent decrease reported by Nunavut (39.1%), Saskatchewan (27.4%), Quebec (20.9%), Newfoundland and Labrador (19.4%) and Ontario (15.7%). An increase was reported by the same two regions that also reported an increase in the number of hospitalizations, namely Alberta (24.2%) and the Yukon Territory (22.9%), during the same time period.

Since 2001–2002, among the provinces, Manitoba continued to report the highest average length of stay (9.3 days in 2005–2006), while Saskatchewan continued to report the lowest (6.1 days in 2005–2006). As in previous years, the average length of stay in the territories continued to be lower than the national average.

Most provinces and territories reported an increase in the average length of stay (Table 4) since 1995–1996. Once adjusted for age, only Alberta (12.7%), Nova Scotia (8.2%), British Columbia (4.5%) and the Yukon (10.4%) continued to show an increase in the average number of days spent in an acute care hospital. However, this increase is less pronounced after age is taken into account.

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It is interesting to note that the national age-standardized ALOS increased to 7.5 days from the unadjusted ALOS of 7.2 days in 1995–1996, indicating a younger patient population in 1995–1996 as compared to the standard population (that is, the pooled number of hospitalized patients over the last decade) used to adjust for age. In contrast, the age-standardized ALOS decreased to 7.0 days from the unadjusted ALOS of 7.2 days in 2005–2006, which is indicative of an older patient population in 2005–2006 as compared to the standard population.

The same pattern is observed in all provinces except Alberta. The ALOS in Alberta as well as the territories increased in 2005–2006 after adjusting for age. This means that the inpatient population hospitalized in Alberta and the territories was younger than the standard population in 2005–2006. In other words, if the age-distribution of the inpatient population in Alberta and the territories were the same as that of the standard population, their ALOS would be higher.

Table 5. Age-Standardized Average Length of Inpatient Hospital Stay (in Days) for Canada, 1995–1996 and 2005–2006[§]

Province/Territory	1995–1996	2005–2006 [§]	1-year % change*	10-year % change**
Newfoundland and Labrador	8.1	7.6	-1.2%	-6.2%
Prince Edward Island	7.8	7.8	6.7%	0%
Nova Scotia	7.3	7.9	1.6%	8.2%
New Brunswick	6.9	6.9	-1.7%	0%
Quebec [§]	9.5	8.2 [§]	-1.3%	-13.7%
Ontario	6.9	6.2	-0.5%	-10.1%
Manitoba	9.4	8.8	-2.2%	-6.4%
Saskatchewan	6.9	5.9	1.4%	-14.5%
Alberta	6.3	7.1	0.2%	12.7%
British Columbia	6.6	6.9	0.1%	4.5%
Yukon Territory	4.8	5.3	-8.2%	10.4%
Northwest Territories	5.3	5.0	-10.3%	-5.7%
Nunavut	6.3	3.3	-2.1%	-47.6%
CANADA	7.5	7.0	-0.6%	-6.7%

Notes:

§ 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data using projection techniques because 2005–2006 data from Quebec were not available to CIHI at the writing of this report.

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

* "1-year % change" refers to the percent change from 2004–2005 to 2005–2006.

** "10-year % change" refers to the percent change from 1995–1996 to 2005–2006.

Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Average length of stay is calculated using actual (i.e. not rounded) number of hospitalizations and total inpatient hospital days.

Sources: Discharge Abstract Database and Hospital Morbidity Database, CIHI.

Day Surgery Visits and Hospitalizations for Surgery

The number of day surgery visits in the six provinces and three territories that consistently submitted day surgery data to CIHI between 1995–1996 and 2005–2006 is shown in Table 6. In 1995–1996, Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, British Columbia and the three territories reported a total of 1,348,700 day surgery visits. In 2005–2006, these same jurisdictions collectively reported 1,759,800 day surgery visits, an increase of 30.6% since 1995–1996.

Table 6. Number of Day Surgery Visits by Province and Territory, 1995–1996 to 2005–2006

Province/Territory	1995–1996	2005–2006	1-year % change*	10-year % change**
Newfoundland and Labrador	26,000	68,000	12.2%	160.9%
Prince Edward Island	8,700	11,000	2.5%	30.4%
Nova Scotia	76,000	107,000	5.2%	41.3%
New Brunswick	49,000	49,000	4.7%	0.6%
Ontario	928,000	1,184,000	5.3%	27.6%
British Columbia	257,000	335,000	8.2%	30.3%
Yukon Territory	1,600	1,700	6.2%	8.4%
Northwest Territories	1,800	3,400	2.2%	92.1%
Nunavut	600	700	-6.2%	20.3%
TOTAL	1,348,700	1,759,800	5.9%	30.6%

Notes:

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Day surgery data not available for Alberta, Saskatchewan, Manitoba and Quebec.

* “1-year % change” refers to the percent change from 2004–2005 to 2005–2006.

** “10-year % change” refers to the percent change from 1995–1996 to 2005–2006.

Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Day surgery visit numbers are rounded. Percentages are calculated using actual (i.e. not rounded) numbers.

Sources: Discharge Abstract Database and National Ambulatory Care Reporting System, CIHI.

Contrary to the downward trend in inpatient hospitalizations, an upward trend is observed in the number of day surgery visits since 1995–1996 (Figure 4). A notable deviation from this trend occurred in 2003–2004. This anomaly is driven by Ontario and is explained by the change in the reporting of day surgery data to CIHI by the province of Ontario in 2003–2004. April 1, 2003, marked the shift in reporting of Ontario day surgery visits from the DAD to the NACRS database. With this shift, the definition of day surgery changed (now, identified and reported through day surgery Management Information Systems [MIS] functional centres). The SARS outbreak is

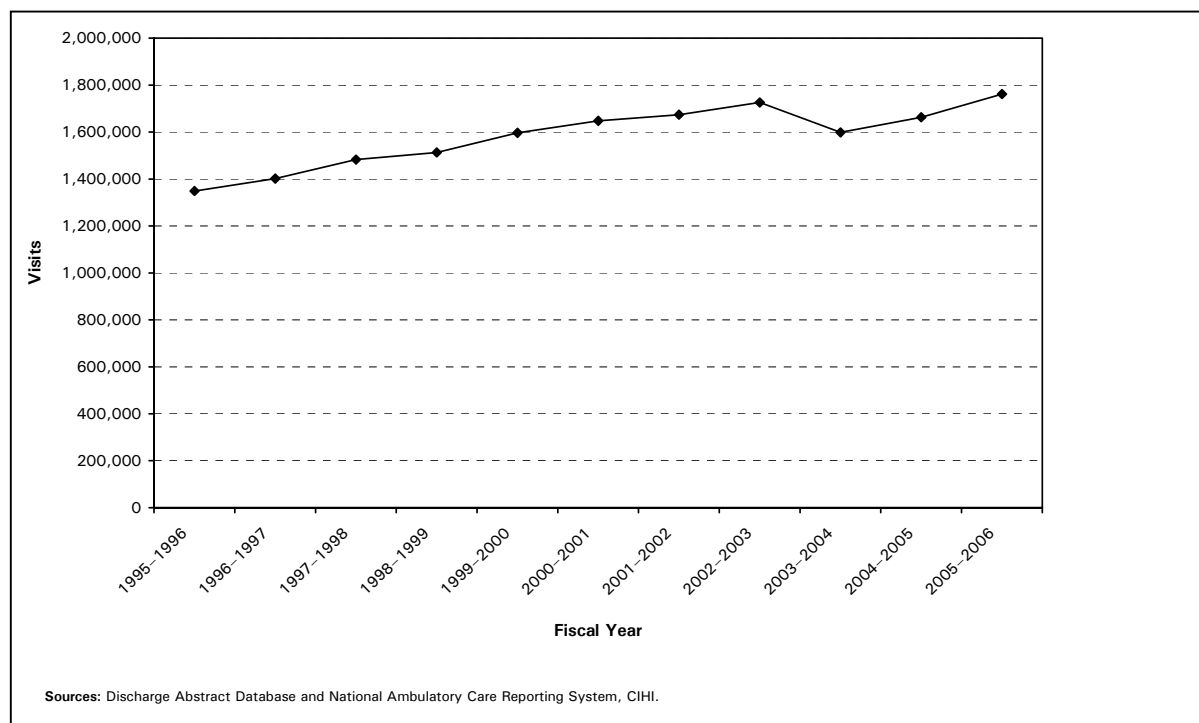
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also likely to have contributed to the decrease in 2003–2004 as a result of the cancellation of many elective surgeries.

The number of day surgery visits reported by Ontario dropped by 129,500 (10.9%) between 2002–2003 and 2003–2004. In addition to Ontario, New Brunswick and the Yukon Territory also reported fewer day surgeries to CIHI in 2003–2004 as compared to 2002–2003: 1,300 fewer day surgery visits were reported by New Brunswick and 100 fewer day surgery visits by the Yukon Territory.

Figure 4. Day Surgery Visits, 1995–1996 to 2005–2006



Notes:

Day surgery data not available:

- Alta, Sask., Man., Que. for all years.
- Nun. for 2002–2003
- Two hospitals from NL for 1995–1996
- One hospital from P.E.I. for 2001–2002
- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.

Includes residents and non-residents of Canada.

The number of inpatient surgical events is presented in Table 7. Inpatient surgical discharges capture the patient population treated on a surgical service that had undergone an intervention during the hospital stay. The specialty of the provider most responsible for the care of these patients is a surgical specialty (for example, general surgery, orthopedic surgery, colorectal surgery). Refer to Appendix 3 for a complete list of surgical specialties.

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In contrast to the growing trend in surgeries performed in a day surgery setting, the number of surgeries performed on an inpatient basis has declined by 16.5% since 1995–1996 (Figure 5). It is important to note that the inpatient numbers include elective and non-elective surgeries. Approximately 32% of the decrease in the overall number of hospitalizations (275,600) between 1995–1996 and 2005–2006 is attributed to the decrease in the number of hospitalizations for surgery (87,600) for the six provinces and three territories shown in Table 7.

In 2005–2006, just under one quarter (23.9%) of Canada’s inpatient hospitalizations were for patients having surgery, while the largest proportion (48.5%) was for patients treated for medical conditions. Medical hospitalizations include patients who are most frequently treated for such conditions as digestive diseases, respiratory diseases and heart disease. Medical patients have a higher average length of stay (8.1 days) than surgical patients, who stayed an average of 5.6 days in hospital in 2005–2006. Both the medical and surgical populations include adult and pediatric patients.

The observation that the number of inpatient hospitalizations for surgery is decreasing while the average length of stay has remained stable over the past decade would suggest advances in medical technology leading to more efficient ways of treating inpatients.

Table 7. Number of Acute Inpatient Surgical Discharges, 1995–1996 to 2005–2006

Province/Territory	1995–1996	2005–2006	1-year % change*	10-year % change**
Newfoundland and Labrador	20,000	15,000	2.8%	-24.4%
Prince Edward Island	4,500	3,400	-6.3%	-24.7%
Nova Scotia	31,000	25,000	2.9%	-18.7%
New Brunswick	30,000	23,000	6.0%	-22.4%
Ontario	332,000	279,000	1.6%	-15.7%
British Columbia	112,000	95,000	1.7%	-15.2%
Yukon Territory	500	500	-5.6%	18.5%
Northwest Territories	600	700	-4.7%	16.7%
Nunavut	200	200	5.2%	4.7%
TOTAL	530,800	441,800	1.8%	-16.5%

Notes:

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.

* “1-year % change” refers to the percent change from 2004–2005 to 2005–2006.

** “10-year % change” refers to the percent change from 1995–1996 to 2005–2006.

Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Surgical discharge numbers are rounded. Percentages are calculated using actual (i.e not rounded) numbers.

Source: Discharge Abstract Database

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While the setting for elective surgeries has shifted from inpatient to day care, the total number of surgical events (inpatient and day surgery settings combined) has increased by 17.3% over the last decade, which indicates that more surgeries are being performed today as compared to 10 years ago (Table 8). A future *Analysis in Brief* will examine the types of surgeries that shifted from an inpatient to day surgery setting.

Table 8. Total Number of Hospitalizations for Surgery: Inpatient and Day Surgery Settings Combined, 1995–1996§ to 2005–2006

Province/Territory	1995–1996	2005–2006	1-year % change*	10-year % change**
Newfoundland and Labrador	46,000	83,000	10.3%	79.3%
Prince Edward Island	13,000	15,000	0.3%	11.7%
Nova Scotia	107,000	132,000	4.8%	24.0%
New Brunswick	79,000	72,000	2.6%	-6.3%
Ontario	1,260,000	1,464,000	4.6%	16.2%
British Columbia	369,000	430,000	6.7%	16.5%
Yukon Territory	2,000	2,200	3.1%	10.7%
Northwest Territories	2,400	4,100	0.9%	72.9%
Nunavut	800	1,000	-3.8%	16.3%
TOTAL	1,879,200	2,203,300	5.1%	17.3%

Notes:

Missing data:

- One hospital in New Brunswick did not submit 4 periods of data to the 2004–2005 DAD.
- Two hospitals in Newfoundland and Labrador did not submit data to the 1995–1995 DAD
- Three hospitals in Alberta did not submit full periods of data to the 2005–2006 DAD.
- Day surgery data not available for Alberta, Saskatchewan, Manitoba and Quebec.

* “1-year % change” refers to the percent change from 2004–2005 to 2005–2006.

** “10-year % change” refers to the percent change from 1995–1996 to 2005–2006.

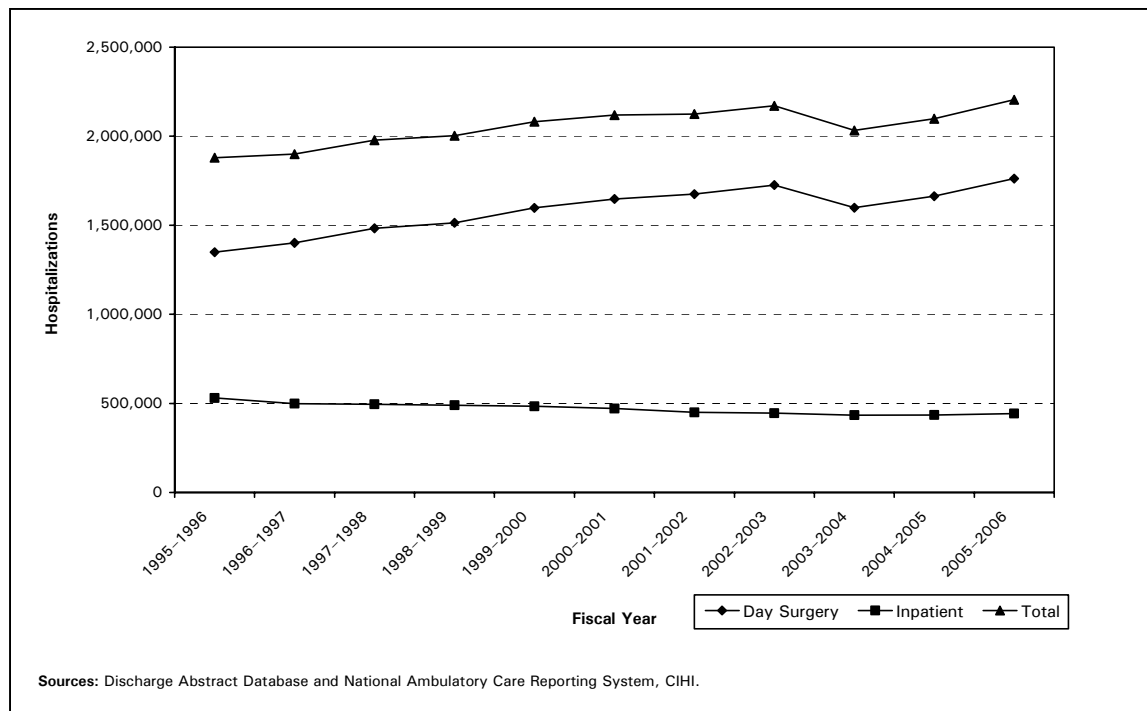
Geography represents the province/territory where the hospital is located (i.e. numbers include non-residents of Canada). Hospitalizations for surgery numbers are rounded. Percentages are calculated using actual (i.e. not rounded) numbers.

Sources: Discharge Abstract Database and National Ambulatory Care Reporting System, CIHI.

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Figure 5. Number of Day Surgery and Acute Inpatient Surgery Hospitalizations, 1995–1996 to 2005–2006



Notes:

Day surgery data not available:

- Alta, Sask., Man., Que. for all years.
- Nun. for 2002-2003
- Two hospitals from NL for 1995-1996
- One hospital from P.E.I. for 2001-2002
- One hospital in New Brunswick did not submit 4 periods of data to the 2004-2005 DAD.

Includes residents and non-residents of Canada.

Summary

This *Analysis in Brief* presented hospital utilization patterns over the 10-year period of 1995–1996 to 2005–2006 in Canada, with a focus on acute inpatient and day surgery settings. Overall, inpatient hospitalizations continued the downward trend observed since 1995–1996, with 434,000 fewer hospitalizations in 2005–2006 as compared to 1995–1996. In contrast, day surgery visits continued to increase with 412,000 more day surgery visits in 2005–2006 than in 1995–1996 (combined total of the six provinces and three territories that submitted day surgery data to CIHI over the 10-year period). The total number of inpatient hospital days continued to decline since 1995–1996, with 3 million fewer days spent in hospital in 2005–2006 than in 1995–1996. The average number of days patients spend in an acute care hospital in Canada has remained stable over the past decade, at 7.2 days.

This report also examined the number of surgical inpatient discharges compared to number of day surgery visits over the last decade. Contrary to the growing trend in surgeries being performed in a day surgery setting (up by 30.6% since 1995–1996), the number of surgeries performed on an inpatient basis has declined by 16.5% during the same time period.

The total number of surgical events (inpatient and day surgery settings combined) has increased by 17.3% over the last decade, which indicates that more surgeries are being performed today as compared to 10 years ago. A future *Analysis in Brief* will examine the types of surgeries that shifted from an inpatient to day surgery setting and the characteristics of the patient population that undergo a surgical intervention on an inpatient basis or in a day surgery setting.

Appendix 1: Data Sources, Methodology and Data Limitations

Data Sources

Inpatient hospitalization statistics are obtained from CIHI's national Hospital Morbidity Database (HMDB) and Discharge Abstract Database (DAD). Day surgery statistics are sourced from the DAD and the National Ambulatory Care Reporting System (NACRS). The DAD and HMDB data holdings capture administrative, clinical and demographic information on inpatient events from acute care hospitals in Canada. The HMDB is populated by a subset of DAD data. Hospitalization data from jurisdictions that do not submit to the DAD are appended to the HMDB. At present, Quebec is the only jurisdiction not submitting to the DAD due to differences between the DAD minimum data set and the Med-Echo database. The DAD also captures data on day surgery events from participating Canadian hospitals. For example, in 2005–2006, the provinces of Alberta, Quebec and Ontario did not submit day surgery data to the DAD. The NACRS data holding captures administrative, clinical and demographic information on ambulatory care events from participating Canadian hospitals, mostly from Ontario. For example, in 2005–2006, all Ontario hospitals and three hospitals from Nova Scotia submitted day surgery data to NACRS.

Hospitalization (inpatient or day surgery) statistics reflect the number of hospitalizations, which is somewhat higher than the number of individuals hospitalized, since individuals with multiple hospitalizations during a single year would be counted more than once in the totals.

Data are based on the fiscal year of discharge. For example, the 2005–2006 inpatient and day surgery hospitalization statistics are based on discharges occurring between April 1, 2005, and March 31, 2006. The terms "hospitalization" and "discharge" are used interchangeably in this document. Refer to Appendix 2 for a list of definitions used in this report.

Methodology

The primary population of analysis in this report consists of inpatient discharges (release or death) from an acute care hospital in Canada from 1995–1996 to 2005–2006. Data from Quebec for 2005–2006 were not available at the writing of this report. Therefore, 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data (1995–1996 to 2004–2005) using projection techniques. Simple linear regression methods were used to model a linear relationship for forecasting hospitalizations and total hospital days.

The secondary population of analysis consists of day surgery visits (release or death) from participating day surgery settings in Canada from 1995–1996 to 2005–2006. Day surgery statistics are reported for those six provinces and three territories that submitted day surgery data to CIHI for all years between 1995–1996 and 2005–2006.

The populations of analysis exclude stillborn and cadaveric donor records as well as records of babies born in the reporting hospital. Babies born outside of the reporting hospital and subsequently admitted to the reporting hospital are included.

With the exception of data presented in Table 2 and Figure 2 (hospitalization rates), the geography represents the province or territory where the patient was treated—that is, where the hospital is located. Therefore, all inpatient and day surgery hospitalization statistics (with the exception of hospitalization rates) include residents and non-residents of Canada treated in a Canadian acute care hospital or day surgery setting. For hospitalization rates, the geography represents the province or territory in which the patient resided at the time of discharge. Therefore, statistics presented in Table 2 and Figure 2 include residents of Canada only.

Hospitalization rates presented in Table 2 and Figure 2 as well as average-length-of-stay statistics presented in Table 5 and Figure 3 are age-standardized (or adjusted for age). Age-standardization is a statistical technique used to remove the effect of the difference in the age distribution of two or more populations when comparing rates across different populations or the same population over time. The 1991 Canadian population is used for the standard population in adjusting hospitalization rates for age. Fiscal annual provincial and territorial population estimates on October 1 provided by Statistics Canada were used in the calculation of age-standardized hospitalization rates. The standard population used for adjusting the average length of stay is the pooled number of the hospitalized patient population from 1995–1996 to 2005–2006 in Canada, which is the average age distribution of the Canadian inpatient hospital population from 1995–1996 through 2005–2006. There is an inherent assumption with using a hospitalized patient population as the reference population for adjusting average length of stay for age. The assumption is that the hospitalization rate by age group has not significantly changed over the past decade. Given that hospitalization rates have decreased relatively slowly, it is reasonable to conclude that this assumption holds true.

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Acute inpatient surgical discharges are presented in Table 7 and Figure 5. Inpatient surgical discharges capture the patient population that was primarily treated by a surgeon during the inpatient hospital stay. A surgical discharge is identified by the presence of a surgical specialty as the most responsible provider service (for example, general surgery, orthopedic surgery, colorectal surgery, etc.) or the main patient service by which the patient was treated where at least one intervention is coded on the patient's abstract.

Inpatient medical discharges capture the patient population that was primarily treated by a non-surgical specialist during the inpatient hospital stay. A medical discharge is identified by the presence of a non-surgical specialty as the most responsible provider service (for example, general practitioner, cardiologist, gastroenterologist) or the main patient service by which the patient was treated. Both the medical and surgical populations include adult and pediatric patients. Refer to Appendix 3 for a complete list of surgical and medical specialties included in the surgical and medical patient populations.

Nunavut numbers prior to the creation of the territory of Nunavut on April 1, 1999, are isolated from those of the Northwest Territories based on the postal code of the hospitals situated in Nunavut and the Northwest Territories.

Data Limitations

The methodology for calculating the age-standardized hospitalization rate has been revised from previous years, resulting in slightly different rates from previously published hospitalization rates from the Hospital Morbidity Database. The abstracts that were missing (N = 1,391) from the 2004–2005 acute care population at the publication of last year's *Analysis in Brief* (Inpatient Hospitalizations and Average Length of Stay Trends in Canada, 2003–2004 and 2004–2005, CIHI, November 30, 2005), have since been appended to the 2004–2005 database and are included in the 2004–2005 acute inpatient numbers in this report. Acute inpatient hospitalization numbers for 1997–1998, 1999–2000 and 2001–2002, as well as the number of day surgery visits in 1995–1996, have also been revised since the publication of the November 2005 *Analysis in Brief*. Inpatient and day surgery data are missing for Nunavut for 2002–2003. Day surgery data are missing for two hospitals in Newfoundland and Labrador for 1995–1995 and for one hospital in Prince Edward Island for 2001–2002.

Quebec discharge data for 2005–2006 were not available at the writing of this report. Therefore, 2005–2006 Quebec numbers are estimated based on extrapolation of previous years' data (1995–1996 to 2004–2005) using projection techniques. A simple linear regression model was used with no adjustments for factors that may affect hospitalizations (for example, seasonal factors, comorbidities and population health). For the 2005–2006 hospitalization rates presented in Table 2 and Figure 2, residents of provinces and territories—with the exception of New Brunswick—

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hospitalized in a Quebec acute care hospital are missing from the numbers. The same projection techniques used to estimate 2005–2006 Quebec numbers were employed to forecast the number of New Brunswick residents hospitalized in Quebec in 2005–2006. Time series analyses have shown that approximately 1% of New Brunswick residents that are hospitalized in any given year are hospitalized in a Quebec acute care hospital. The proportion of residents from other provinces and territories hospitalized in Quebec is generally less than 0.4% of all hospitalizations of residents from that province or territory. Therefore, 2005–2006 hospitalization numbers for provinces other than New Brunswick were not projected as the effect of the missing hospitalizations in Quebec on provincial hospitalization rates is negligible.

Prior to 2001–2002, it was not possible to identify the province or territory of residence of non-Quebec patients hospitalized in a Quebec hospital. Therefore, the provincial and territorial hospitalization rates presented in Table 2 (which are based on province/territory of residence) are somewhat under-estimated because they do not include residents hospitalized in a Quebec hospital. For example, the New Brunswick hospitalization rate does not include the number of New Brunswick residents seen in a Quebec hospital for all years between 1995–1995 and 2000–2001. With the exception of residents of Nunavut and the Northwest Territories, this was no longer an issue as of 2001–2002. Residents of Nunavut seen in a Quebec hospital are captured together with residents of the Northwest Territories seen in a Quebec hospital. As it is not possible to distinguish residents of Nunavut from those of the Northwest Territories, the hospitalization rates presented in Table 2 are somewhat under-reported for Nunavut and over-reported for the Northwest Territories.

In this analysis, patients were considered to be surgical if their most responsible provider was a surgeon, and their health record indicated that a procedure had been performed during the hospitalization. Other approaches may be used to identify surgical patients. For example, cases might be identified based on their assignment to a surgical Case Mix Group (CMG), the presence of certain intervention codes, or whether a procedure was performed in a designated operating room. Because a more consistent approach would facilitate the understanding and comparison of surgical data, CIHI will work with external partners to achieve a standardized approach.

There are variations between provinces and territories in what defines day surgery. This can make it difficult to draw comparisons of day surgery statistics between provinces and territories. For the statistics presented here, CIHI defined day surgery visits (or discharges) as follows:

DAD: records submitted under an Institution Type of day surgery

NACRS: records submitted under an MIS (Management Information Systems)

Functional Centre of day surgery

Appendix 2: Definitions

Age-standardization: A statistical technique used to remove the effect of the difference in the age distribution of two or more populations when comparing rates across different populations or the same population over time. The terms age-standardized rate and age-adjusted rate are used interchangeably.

Discharge: The release (to home, to another hospital or institution) or death of a person who was admitted to a hospital on an inpatient or day surgery basis. It is also referred to as an encounter with the health care system or hospital event.

Length of stay (LOS): The number of days a patient spends in hospital from time of admission to time of discharge. Note that the length of stay of day surgery hospitalizations is typically less than one day.

Main patient service: The main patient service is the type of service responsible for caring for a patient during his or her hospital stay (for example, general surgery, obstetrics or cardiology).

Most responsible provider service: The health care provider specialty most responsible for the care of the patient during his or her inpatient hospital stay (for example, cardiac surgery or internal medicine).

Appendix 3: Surgical and Medical Discharges

Patient Group	Inclusion Criteria
Surgical	<p>Most Responsible Provider Service:</p> <ul style="list-style-type: none"> • Cardiac surgery • Cardiothoracic surgery • Colorectal surgery • Dental surgery • Endodontic surgery • General surgery • Gynecologic oncology • Neurosurgery • Obstetrics and gynecology (obstetrics cases not included—see below) • Ophthalmology • Oral surgery • Orthodontic surgery • Orthopedic surgery • Otolaryngology • Pediatric dental surgery • Pediatric cardiac surgery • Pediatric cardiothoracic surgery • Pediatric general surgery • Pediatric neurosurgery • Pediatric ophthalmology • Pediatric oral surgery • Pediatric orthopedic surgery • Pediatric otolaryngology • Pediatric plastic surgery • Pediatric thoracic surgery • Pediatric vascular surgery • Pediatric urology • Pedodontic surgery • Periodontic surgery • Plastic surgery • Thoracic surgery • Urology • Vascular surgery

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Patient Group	Inclusion Criteria
Obstetrics	Main Patient Service: <ul style="list-style-type: none"> • Obstetrics delivered • Obstetrics antepartum • Obstetrics aborted • Obstetrics postpartum
Medical	Most Responsible Provider Service: <ul style="list-style-type: none"> • Anatomical pathology • Anesthesia • Cardiology • Clinical immunology and allergy • Clinical pharmacology • Community medicine • Critical care medicine • Dermatology • Diagnostic radiology • Emergency medicine • Endocrinology and metabolism • Family practice/general practice • Gastroenterology • General pathology • Geriatric medicine • Gynecologic reproductive endocrinology and infertility • Hematological pathology • Hematology • Infectious diseases • Internal medicine • Medical genetics • Medical microbiology • Medical oncology • Neonatal-perinatal medicine • Nephrology • Neurology • Nuclear medicine • Nursing • Pediatrics • Pediatric anesthesia • Pediatric cardiology • Pediatric endocrinology and metabolism • Pediatric gastroenterology • Pediatric hematology • Pediatric immunology and allergy • Pediatric nephrology • Pediatric neurology

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Patient Group	Inclusion Criteria
Medical (cont'd)	<ul style="list-style-type: none"> • Pediatric radiology • Pediatric respirology • Pediatric rheumatology • Physical medicine and rehabilitation • Podiatry • Radiation oncology • Respirology • Rheumatology

Records with unknown/invalid most responsible provider service and/or main patient service are excluded.

