# Data Quality Documentation, Discharge Abstract Database, 2009–2010

Executive Summary
October 2010

Revised February 2011

Canadian Institute for Health Information
Institut canadien d'information sur la santé

## Who We Are

Established in 1994, CIHI is an independent, not-for-profit corporation that provides essential information on Canada's health system and the health of Canadians. Funded by federal, provincial and territorial governments, we are guided by a Board of Directors made up of health leaders across the country.

## Our Vision

To help improve Canada's health system and the well-being of Canadians by being a leading source of unbiased, credible and comparable information that will enable health leaders to make better-informed decisions.

# February 2011 Revisions

| Revisions Table | |
|---|---|
| **Page Number** | **Changes** |
| **3** | Deleted Therapeutic Abortions Database and updated the Prepare Special Reports section |
| **17** | Minor text changes to each paragraph |
| **34** | Deleted most of the information about the reabstraction studies and added a reference to the studies |

# Table of Contents

# 1 Introduction

## 1.1 An Overview of the Discharge Abstract Database

The Discharge Abstract Database (DAD) is a national database for information on all separations from acute care institutions, including discharges, deaths, sign-outs and transfers within a fiscal year (April 1 to March 31). Over time, the DAD has also been used to capture day surgery procedures, long-term care, rehabilitation and other data. More than 3.2 million abstracts were submitted to the DAD in 2009–2010, representing approximately 75% of all acute inpatient separations in Canada (Quebec does not submit data to the DAD). Quebec's acute inpatient separations are reported to the Hospital Morbidity Database (HMDB) and usually account for 25% of the total inpatient separations in Canada.

Following its inception in 1963, when it was developed to collect data on separations from institutions in Ontario, it has expanded to provide coverage in all provinces except Quebec. DAD data is available for all fiscal years since 1979–1980, but the comprehensiveness and format of submissions have varied significantly. Data since 1990 is most readily available for use.

In addition to the collection and processing of data on institution separations, CIHI also provides electronic Hospital Specific Reports (eHSRs), value-added information (calculated Case Mix Groups, expected length of stay and Resource Intensity Weights) and national comparative reporting based on peer groups (eCHAP) to data suppliers. These facilitate management decision-making at the institutional, regional and provincial/territorial levels.

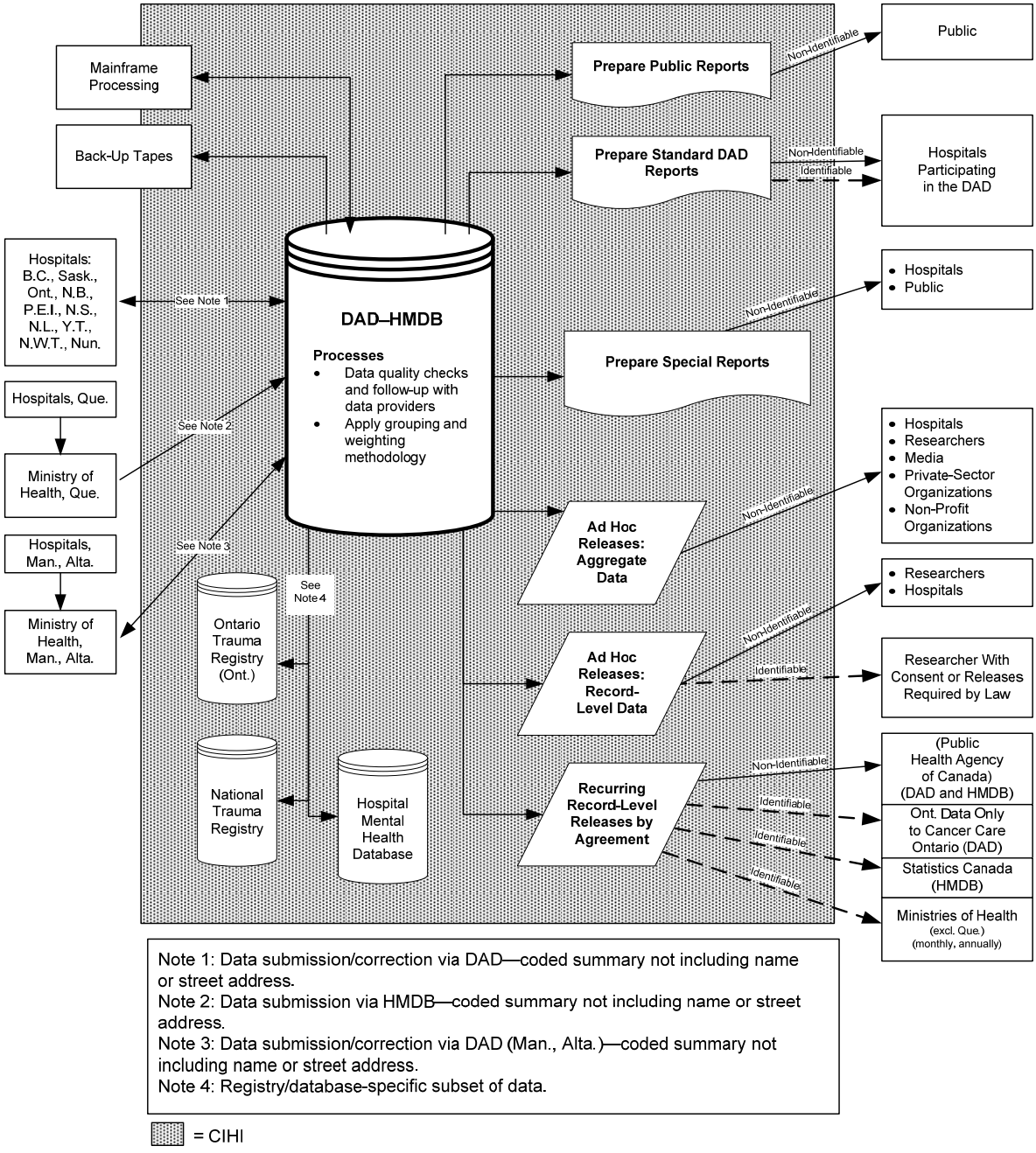
As a core database at the Canadian Institute for Health Information (CIHI), the DAD feeds other databases, including the HMDB, the Hospital Mental Health Database (HMHDB), the National Trauma Registry (NTR), the Ontario Trauma Registry (OTR) and the Therapeutic Abortions Database (TADB).

Information from the DAD is used by institutions, governments and academic institutions. Institutions use DAD data to support utilization management decisions and for administrative research. Governments use DAD data for funding, system planning and evaluation. Academic and other institutions use the DAD for a wide variety of research purposes.

Data from the DAD and the HMDB was merged in 2001 and is now housed in the same physical database. The Quebec Ministry of Health and Social Services submits a data file to CIHI on an annual basis. This data file is then merged with the DAD to create the national DAD–HMDB data file, though the two databases have different populations of reference and include different data elements. For example, the HMDB includes data from Quebec, whereas the DAD does not contain any discharges from this province. For a detailed description of the HMDB and to see how it resembles and differs from the DAD, please refer to the data quality documentation for the HMDB on the CIHI website.

The following diagram depicts data flow from institutions to the DAD and the HMDB.

## Discharge Abstract Database–Hospital Morbidity Database (DAD–HMDB) 2009–2010 Data Flow Diagram




Note 1: Data submission/correction via DAD—coded summary not including name or street address.
Note 2: Data submission via HMDB—coded summary not including name or street address.
Note 3: Data submission/correction via DAD (Man., Alta.)—coded summary not including name or street address.
Note 4: Registry/database-specific subset of data.

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# 2 Coverage

## 2.1 Population Covered by the DAD

The original function of the DAD was to collect acute inpatient data. Its uses have expanded over the years to include the collection of information on day surgery, long-term care and rehabilitation. Over time, provinces and territories have begun to submit chronic, rehabilitation and other types of level-of-care data to specialized databases at CIHI, including the Continuing Care Reporting System (CCRS), the National Rehabilitation Reporting System (NRS) and the Ontario Mental Health Reporting System (OMHRS), which has captured information on new admissions for adult inpatient mental health beds in Ontario since October 1, 2005. The data in the DAD for these other care types is therefore incomplete.

Table 1 shows some of the uses across the provinces and territories in 2009–2010.

**Table 1: Summary of 2009–2010 DAD Participation, by Province/Territory and Institution Type**

| Institution Type | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Nun. | Y.T. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acute Care** | √ | √ | √ | √ | N/A | √** | √ | √ | √ | √ | √ | √ | X* |
| **Day Surgery** | √ | √ | X† | √ | N/A | N/A‡ | √ | √ | N/A‡ | √ | √ | √ | √ |
| **Rehab** | N/A | N/A | X | X | N/A | N/A | NA§ | N/A | X | X | N/A | N/A | N/A |
| **Special Rehab** | N/A | N/A | X | N/A | N/A | X | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Chronic Care** | X | N/A | N/A | X | N/A | X | X | X | N/A | X | X | N/A | N/A |
| **Psychiatric** | N/A | N/A | X | X | N/A | N/A | X | N/A | X | N/A | N/A | N/A | N/A |
| **Home for the Aged** | N/A | N/A | N/A | N/A | N/A | N/A | X | N/A | N/A | N/A | N/A | N/A | N/A |

**Notes**

* One acute care institution in the Yukon, Watson Lake Hospital, fits the criteria of an institution that should report to the DAD. However, it has not submitted data to the DAD in any fiscal year due to resource shortages and is not anticipated to submit data in coming years. On average, this institution has approximately 400 separations per year. This institution number is not on the DAD frame because Yukon Health and Social Services does not require it to submit data; therefore, it is not reported in this document as a data quality issue of under-coverage.

† Three institutions in Nova Scotia submitted day surgery data to the National Ambulatory Care Reporting System (NACRS) in 2009–2010. Two of these institutions started submitting data to NACRS in 2003, and one started submitting data to NACRS in 2005.

‡ Ontario submits all of its day surgery abstracts to NACRS; Alberta submits day surgery abstracts to CIHI but the data is not stored in the DAD.

§ Due to a change in practice for capturing rehabilitation data on the DAD acute care abstract, institutions in Manitoba that previously submitted data to the DAD started submitting all rehabilitation data to the National Rehabilitation Reporting System (NRS) as of April 2008.

** Two acute care institutions from Ontario did not submit any data to CIHI in 2009–2010 due to staff shortages. A total of 335 abstracts were not reported to CIHI.

√: all valid institutions reporting.

X: partial reporting.

N/A: no reporting.

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

A valid submitting Institution Number is one that has been designated by a ministry or department of health in a province or territory for an institution that is required to report data on separations to the DAD. There were 857 of these institutions in 2009–2010, including 635 acute care Institution Numbers (74.10%) and 173 day surgery Institution Numbers (20.19%). Table 2 delineates these institutions by province/territory and Institution Type.

Table 2: Number of Valid Submitting Institution Numbers in the DAD, 2009–2010, by Province/Territory and Institution Type

| Institution Type | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Nun. | Y.T. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acute Care** | 34 | 7 | 34 | 21 | N/A | 176 | 97 | 70 | 109 | 81 | 4 | 1 | 1 | **635** |
| **Day Surgery** | 14 | 2 | 16 | 22 | N/A | 0 | 28 | 25 | 0 | 60 | 4 | 1 | 1 | **173** |
| **Rehab** | 0 | 0 | 3 | 4 | N/A | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | **10** |
| **Special Rehab** | 0 | 0 | 1 | 0 | N/A | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** |
| **Chronic Care** | 1 | 0 | 0 | 15 | N/A | 1 | 2 | 1 | 0 | 3 | 4 | 0 | 0 | **27** |
| **Psychiatric** | 0 | 0 | 1 | 2 | N/A | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | **9** |
| **Home for the Aged** | 0 | 0 | 0 | 0 | N/A | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| **Total** | **49** | **9** | **55** | **64** | **N/A** | **178** | **131** | **96** | **113** | **146** | **12** | **2** | **2** | **857** |

**Note**

N/A: not applicable (Quebec data is not part of the DAD frame).

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

Table 3 lists the number of Institution Numbers reporting separations in 2009–2010, by Institution Type and submitting province/territory. The total figures are smaller than in Table 2 because they are based on actual discharges reported during 2009–2010. Nine facilities sent data files to CIHI each indicating that the total number of separations from their facility was equal to zero; therefore, they do not constitute an issue of data coverage in the DAD.

Table 3: Number of Valid Institution Numbers Reporting Separations in the DAD, 2009–2010, by Province/Territory and Institution Type*

| Institution Type | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Nun. | Y.T. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Acute Care** | 33 | 7 | 34 | 21 | N/A | 173 | 97 | 69 | 108 | 81 | 4 | 1 | 1 | **629** |
| **Day Surgery** | 13 | 2 | 16 | 20 | N/A | 0 | 28 | 25 | 0 | 59 | 4 | 1 | 1 | **169** |
| **Rehab** | 0 | 0 | 3 | 4 | N/A | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | **10** |
| **Special Rehab** | 0 | 0 | 1 | 0 | N/A | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** |
| **Chronic Care** | 1 | 0 | 0 | 14 | N/A | 1 | 2 | 1 | 0 | 3 | 4 | 0 | 0 | **26** |
| **Psychiatric** | 0 | 0 | 1 | 2 | N/A | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | **9** |
| **Home for the Aged** | 0 | 0 | 0 | 0 | N/A | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| **Total** | **47** | **9** | **55** | **61** | **N/A** | **175** | **131** | **95** | **112** | **145** | **12** | **2** | **2** | **846**† |

**Notes**

* Institution Type refers to the level of care associated with each Institution Number as defined by the provincial/territorial ministries/departments of health.

† There were 846 Institution Numbers with separations to report to the DAD in 2009–2010, although there were 857 valid Institution Numbers in the DAD frame. This is because nine valid Institution Numbers had no separations to report and two institutions had discharges but did not submit any data in 2009–2010 due to staff shortages.

N/A: not applicable (Quebec data is not part of the DAD frame).

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

In 2009–2010, 3,265,637 abstracts were submitted to the DAD, including 2,416,413 acute care abstracts (74%) and 839,239 day surgery abstracts (25.7%). A detailed breakdown of all abstracts submitted, by province/territory and Institution Type, is provided in Table 4.

Table 4: Number of Abstracts Submitted to the DAD, 2009–2010, by Province/Territory and Institution Type

| Submitting Province | Acute Care | Day Surgery | Rehab | Special Rehab | Chronic Care | Psychiatric | Home for the Aged | Total |
|---|---|---|---|---|---|---|---|---|
| **N.L.** | 56,682 | 74,076 | 0 | 0 | 56 | 0 | 0 | **130,814** |
| **P.E.I.** | 15,999 | 12,081 | 0 | 0 | 0 | 0 | 0 | **28,080** |
| **N.S.** | 93,312 | 108,242 | 411 | 140 | 0 | 154 | 0 | **202,259** |
| **N.B.** | 89,815 | 53,725 | 593 | 0 | 1,567 | 293 | 0 | **145,993** |
| **Que.** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | **N/A** |
| **Ont.** | 1,091,694 | 0 | 0 | 222 | 555 | 0 | 0 | **1,092,471** |
| **Man.** | 139,169 | 101,972 | 0 | 0 | 186 | 181 | 80 | **241,588** |
| **Sask.** | 138,958 | 107,891 | 0 | 0 | 34 | 0 | 0 | **246,883** |
| **Alta.** | 367,405 | 0 | 1,716 | 0 | 0 | 2,927 | 0 | **372,048** |
| **B.C.** | 412,256 | 375,499 | 784 | 0 | 28 | 0 | 0 | **788,567** |
| **N.W.T.** | 5,749 | 3,177 | 0 | 0 | 58 | 0 | 0 | **8,984** |
| **Nun.** | 2,146 | 678 | 0 | 0 | 0 | 0 | 0 | **2,824** |
| **Y.T.** | 3,228 | 1,898 | 0 | 0 | 0 | 0 | 0 | **5,126** |
| **Total** | **2,416,413** | **839,239** | **3,504** | **362** | **2,484** | **3,555** | **80** | **3,265,637** |

**Note**

N/A: not applicable (Quebec data is not part of the DAD frame).

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

Table 5 summarizes the percentage change in DAD submissions from 2008–2009 to 2009–2010, by province/territory and Institution Type. Overall, there was a 1.03% increase in the total number of submissions for 2009–2010. This increase is mainly due to an increase of 0.62% in acute care submissions and an increase of 2.20% in day surgery submissions. There was an increase in psychiatric submissions of 12.11%. This increase was primarily due to Manitoba and Alberta submitting 140 and 224 more abstracts, respectively, in 2009–2010 than in 2008–2009.

Table 5: Percentage Change in the Number of Abstracts Submitted to the DAD Between 2008–2009 and 2009–2010, by Province/Territory and Institution Type

| Submitting Province | Acute Care | Day Surgery | Rehab | Special Rehab | Chronic Care | Psychiatric | Home for the Aged | Total |
|---|---|---|---|---|---|---|---|---|
| **N.L.** | 0.22 | 2.44 | - | - | 9.80 | - | | **1.47** |
| **P.E.I.** | 0.52 | 2.13 | - | - | - | - | | **1.20** |
| **N.S.** | 0.80 | 3.65 | 5.38 | 26.13 | - | -6.67 | | **2.32** |
| **N.B.** | -3.64 | 2.79 | 4.40 | - | -0.25 | 11.83 | | **-1.27** |
| **Que.** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | **N/A** |
| **Ont.** | 0.45 | | - | 8.29 | 21.44 | - | - | **0.46** |
| **Man.** | 1.49 | 2.64 | - | - | 1.09 | 341.46 | 53.85 | **2.04** |
| **Sask.** | 1.18 | -2.18 | - | - | 36.00 | - | | **-0.31** |
| **Alta.** | 1.83 | | 17.21 | - | - | 8.29 | | **1.94** |
| **B.C.** | 0.56 | 2.89 | -45.37 | - | -9.68 | - | | **1.57** |
| **N.W.T.** | 2.02 | -3.61 | - | - | -4.92 | - | | **-0.09** |
| **Nun.** | -0.23 | 13.19 | - | - | - | - | | **2.69** |
| **Y.T.** | -3.90 | 2.37 | - | - | - | - | | **-1.67** |
| **Total** | **0.62** | **2.20** | **-9.15** | **14.56** | **4.37** | **12.11** | **53.85** | **1.03** |

**Notes**

A hyphen (-) indicates that there were no abstracts submitted in 2009–2010.

N/A: not applicable (Quebec data is not part of the DAD frame).

**Source**

Discharge Abstract Database, 2008–2009 and 2009–2010, Canadian Institute for Health Information.

Over time, provinces and territories have begun to submit chronic, rehabilitation and other types of level-of-care data to specialized databases at CIHI, including CCRS, NRS and OMHRS, which has captured information on new admissions for adult inpatient mental health beds in Ontario since October 1, 2005. The data in the DAD for these other care types is therefore incomplete.

## 2.2 Population of Reference for the DAD

The population of reference for 2009–2010 includes all separations (excluding stillbirths and cadaveric donors) from acute inpatient and day surgery institutions, as defined by the Analytical Institution Type Code, in all provinces and territories except Quebec, between April 1, 2009, and March 31, 2010. The Analytical Institution Type Code was a new data element introduced to the DAD in 2004–2005 to minimize the impact of the differences between level-of-care definitions across provinces/territories and to facilitate comparative reporting across Canada. It is a CIHI-defined data element that is assigned when the Institution Type assigned to an Institution Number is known to differ from the type of care provided. CIHI consults and confirms the level of care with the institutions and the provincial/territorial ministries or departments of health before assigning this value. The provincially/territorially assigned Institution Type remains in the database under the Institution Type Code field.

Of the institutions that reported data, 56 were assigned an Analytical Institution Type that differed from the Institution Type assigned by the ministry or department of health, including 50 that were changed from an acute Institution Type to a non-acute Analytical Institution Type. Of the 50, 13 were changed from an acute Institution Type to a subacute Analytical Institution Type, 11 were changed from an acute Institution Type to a psychiatric Analytical Institution Type, 4 were changed from an acute Institution Type to a chronic Analytical Institution Type and 22 were changed from an acute Institution Type to an unclassified Institution Type. Two institutions were changed from a chronic Institution Type to a psychiatric Analytical Institution Type and 4 were changed from a day surgery Institution Type to an organized outpatient Analytical Institution Type.

The introduction of the Analytical Institution Type Code does not alter CIHI's eHSRs and eCHAP reports, as these and all other reports produced from the DAD production system have always been based on the Institution Type assigned by provinces and territories. **Users are advised to use Analytical Institution Type Codes to identify acute inpatient separations.**

Table 6 shows the number of acute care and day surgery Institution Numbers in the DAD as defined by the provincial/territorial Institution Type Code and the number defined by CIHI under the Analytical Institution Type Code in 2009–2010. There were fewer institutions defined as acute care and day surgery by the Analytical Institution Type Code than by the Institution Type Code.

Table 6: Acute Care and Day Surgery Institution Numbers Reporting Separations to the DAD, 2009–2010, by Institution Type Code and Analytical Institution Type, by Province/Territory*

| | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Nun. | Y.T. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acute Care Defined by **Institution Type** | 33 | 7 | 34 | 21 | N/A | 173 | 97 | 69 | 108 | 81 | 4 | 1 | 1 | **629** |
| Acute Care Defined by **Analytical Institution Type** | 33 | 7 | 33 | 21 | N/A | 167 | 73 | 65 | 96 | 80 | 4 | 1 | 1 | **581** |
| Day Surgery Defined by **Institution Type** | 13 | 2 | 16 | 20 | N/A | 0 | 28 | 25 | 0 | 59 | 4 | 1 | 1 | **169** |
| Day Surgery Defined by **Analytical Institution Type** | 13 | 2 | 16 | 17 | N/A | 0 | 28 | 25 | 0 | 59 | 4 | 1 | 1 | **166** |

**Notes**

* The level of care of an institution, as defined by the Analytical Institution Type Code, may change over time due to hospital mergers, closures or when CIHI validation processes or analyses determine that it was incorrectly assigned. The totals reported in this table reflect the level of care recorded in the DAD at the time of closure.

N/A: not applicable (Quebec data is not part of the DAD frame).

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

Table 7 shows the total number of abstracts submitted to the DAD for 2009–2010 within the population of reference. Abstracts (excluding stillbirths and cadaveric donors) are categorized by Analytical Institution Type Code. There were 2,401,225 acute abstracts (74.27% of the population of reference) and 832,092 day surgery abstracts (25.73% of the population of reference) as defined by the Analytical Institution Type Code.

Table 7: Number of Abstracts Submitted to the DAD, 2009–2010, by Province/Territory and Analytical Institution Type Code* for Population of Reference†

| Submitting Province | Acute Care | Day Surgery | Total |
|---|---|---|---|
| **N.L.** | 55,597 | 74,076 | **129,673** |
| **P.E.I.** | 15,991 | 12,081 | **28,072** |
| **N.S.** | 92,868 | 108,242 | **201,110** |
| **N.B.** | 89,774 | 46,578 | **136,352** |
| **Que.** | N/A | N/A | **N/A** |
| **Ont.** | 1,089,783 | 0 | **1,089,783** |
| **Man.** | 135,115 | 101,972 | **237,087** |
| **Sask.** | 137,225 | 107,891 | **245,116** |
| **Alta.** | 362,314 | 0 | **362,314** |
| **B.C.** | 411,444 | 375,499 | **786,943** |
| **N.W.T.** | 5,745 | 3,177 | **8,922** |
| **Nun.** | 2,141 | 678 | **2,819** |
| **Y.T.** | 3,228 | 1,898 | **5,126** |
| **Total** | **2,401,225** | **832,092** | **3,233,317** |

**Notes**

* The level of care of an institution, as defined by the Analytical Institution Type Code, may change over time due to hospital mergers, closures or when CIHI validation processes or analyses determine that it was incorrectly assigned. The totals reported in this table reflect the level of care recorded in the DAD at the time of closure.

† The population of reference includes acute inpatient and day surgery abstracts (identified using the Analytical Institution Type Code), excluding stillbirths and cadaveric donors.

N/A: not applicable (Quebec data is not part of the DAD frame).

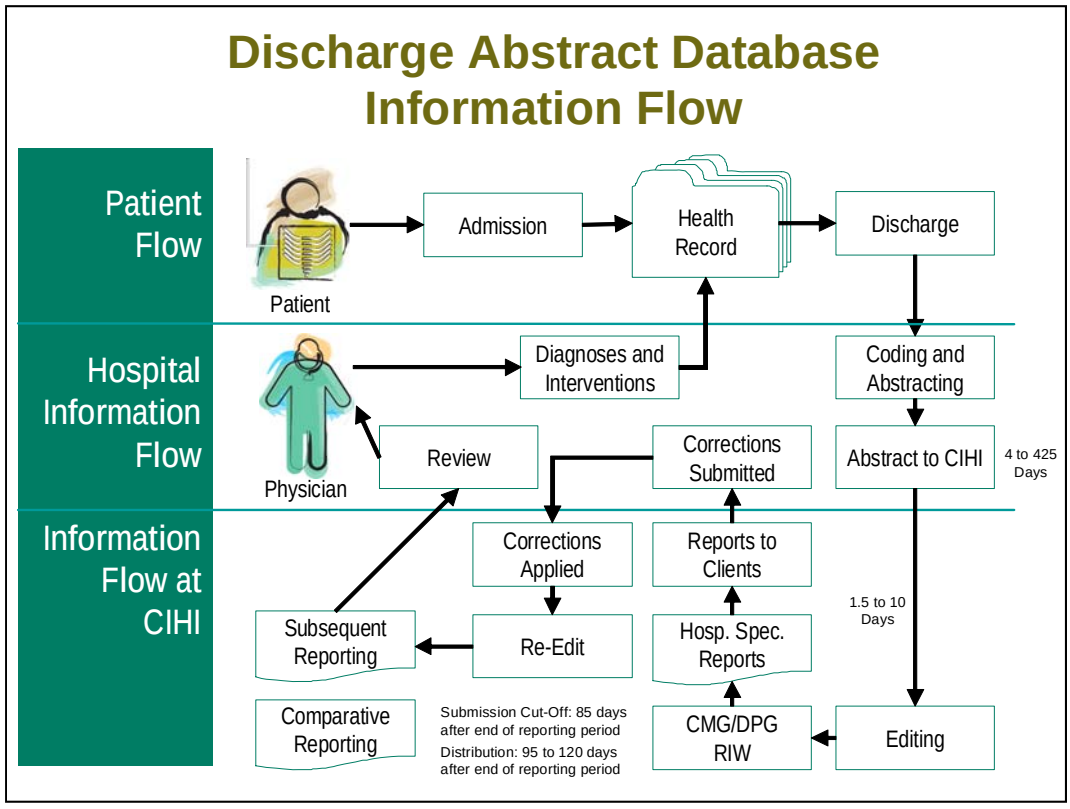
**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

# 3 Collection and Response

## 3.1 Data Collection

The following diagram summarizes the three stages of information flow in the DAD. Patient flow (stage one) into a health care facility leads to information flow at the institution level (stage two). Information at the institution level then feeds into information flow at CIHI (stage three).



## Abstracting and Data Submission

The DAD abstract is a record of hospital activity that is completed for each instance of a hospital separation (discharge, death, sign-out or transfer of the patient to another facility). The data collected on each abstract includes coded diagnostic, intervention and patient demographic and administrative information. The format of the DAD abstract was changed in 2001–2002 to accommodate the adoption of the ICD-10-CA/CCI classification systems in some provinces and territories. ICD-10-CA is an enhanced version of ICD-10 developed by CIHI for morbidity classification in Canada. The Canadian Classification of Health Interventions (CCI) is the Canadian standard for classifying health care interventions. Since 2004–2005, all provinces and territories have submitted data to the DAD using the ICD-10 abstract. In 2007, the DAD abstract and the standard suite of reports were modified to support the new Case Mix Group methodology, CMG+. This methodology is designed to aggregate acute care inpatient cases with shared clinical and resource-utilization characteristics and was designed to take advantage of the increased clinical specificity of ICD-10-CA and CCI. Section 4.1 describes these classification systems in detail.

*The DAD Abstracting Manual*[1] (available in PDF version on the CIHI website) provides data element definitions, data collection guidelines, data validation rules, error message descriptions and valid code values. It is made available to clients prior to the beginning of each fiscal year. The Core section of the manual provides the data collection requirements that are applicable at a national level for acute and day surgery abstracts. A section on provincial variations identifies province-/territory-specific guidelines for abstracting certain data elements. Appendix C shows the format and coding classifications used for the DAD from 1994–1995 to 2009–2010.

Ministries of health mandate the submission of data to CIHI databases from institutions in all provinces and territories except Ontario, where institutions purchase services directly from CIHI. Data collection is facilitated through the service package called the Core Plan (CIHI's products and services contract). Under this plan, institutions may access CIHI's national data holdings and services related to data quality and processing, client education and support, data access, national health information standards and select publications and reports. When clients submit data files to the DAD, the DAD Submission Reports and eHSR reports are made available to them immediately after the records are processed. Clients may also take advantage of electronic Comparison of Hospital Activity Program (eCHAP) and eManagement reports and the CIHI eQuery tool for client support.

All hospitals that submit data to the DAD must use abstracting software that meets CIHI's specifications. CIHI outsources the development of abstracting software to vendors in the private sector. These vendors incorporate CIHI submission specifications into proprietary software systems, which also provide data quality control measures, such as data capture edit checks, cross–data element logic checks and interactive warning messages, to be presented to clients as data is collected. Data files are submitted to CIHI electronically through a secure, web-based application.

### Completeness of Data Submission

The CIHI Management Report, produced after each data processing session and distributed monthly to provincial and territorial ministries of health, shows the number of abstracts in the database for institutions in each province and territory for each of the 12 report periods (13 in British Columbia) and the total number of abstracts in the database. This report is used to monitor data submission throughout the year. The DAD team at CIHI monitors the Management Reports regularly and follows up with facilities or provincial/territorial representatives when an unusually high or low number of abstracts is submitted for any period.

### Data Submission Timeline

All data must be submitted to the DAD prior to the year-end deadline. The published submission deadline for 2009–2010 was July 31, 2010.

## 3.2 Data Quality Control

Extensive quality control measures support the collection of high-quality data in the DAD. These include processes for requiring software vendors to test their abstracting software before data is submitted for each fiscal year, the CIHI education program, CIHI's production system edits and correction process, client support and special data quality studies. These are described below.

### Abstracting Software Development and Testing

CIHI maintains data capture quality control measures through the Vendor Relations and Production Systems sections of its Information Technology department. These areas offer vendor support, coordinate the annual release of vendor system specifications and assist with vendor system testing. CIHI requires vendors to test their software annually. They must submit a specified number and type of test abstracts, which are then processed in a testing environment to ensure that the format and content of the files meet the submission requirements for the fiscal year. Facilities are also required to submit test submissions after their vendor has passed an annual test.

## CIHI Education Program

Through the CIHI education program, instructional sessions are provided to clients on coding and abstracting, how to manage submission errors and corrections, Case Mix Group methodology and other related topics. These sessions are one mechanism to ensure standardized data collection coding practices and adherence to CIHI's data submission and collection requirements.

CIHI's eQuery application allows clients to submit questions to a variety of program areas from a single place. With this shared knowledge base, clients can view answers to questions that have previously been asked about DAD abstracting, data quality, report interpretation and other topics. Clients can also submit new questions that are not already resolved in the knowledge base.

## CIHI Production System Edits and Correction Process

More than 800 data element edits are applied to each abstract as it is processed at CIHI, to ensure that the data in each field is in the expected format, within a specific range of values and has a logical relationship to other data elements. For most data elements, when errors are detected a standard default value of Z is substituted into the data field (for hard errors) or the field is flagged with a warning message. For some data elements, blanks or numeric values are used to represent missing or invalid data. The client receives an electronic report and is asked to submit corrections for abstracts and fields that have been defaulted to Z or flagged as an error. The correction and editing steps are repeated until either the client successfully corrects the abstracts or the database closes at the year-end deadline. Before the end of the fiscal year, clients can submit previously missing abstracts or delete duplicate abstracts. Any uncorrected hard errors that remain in the database can be identified by the standard default value of Z.

In addition to verifying individual data elements, the editing process checks a number of inter-relationships. Clients may receive an error message in a field when the reported value is valid but violates certain logical relationships with the data in other fields.

To ensure relevance and consistency, edits are reviewed and updated each year as new data elements are added and changes are made to the database. Test cases and specifications are created according to internal guidelines so that new edits will function correctly.

## Client Services Representatives

CIHI assigns specific client services representatives to provide support for data collectors in each of the provinces and territories. The client services representatives answer questions related to DAD products, assist in the development and delivery of education programs, provide data quality expertise and build relationships with provincial/territorial data consultants, health organizations and data users.

## Special Studies

CIHI's Data Quality department evaluates coding and abstracting accuracy in the DAD via reabstraction studies. Reabstraction involves returning to the original source of information (a patient chart) and comparing it with information in the DAD. The studies focus on data used to calculate specific health indicators, select administrative clinical data and diagnosis and intervention coding. CIHI has conducted studies using DAD data as far back as 1999–2000. These earlier studies can be found on CIHI's website and include the following:

- *Discharge Abstract Database Data Quality Re-Abstraction Study—Combined Findings for Fiscal Years 1999/2000 and 2000/2001*[2]
- *Discharge Abstract Database CMG/Plx Data Quality Re-Abstraction Study*[3]
- *Data Quality of the Discharge Abstract Database Following the First-Year Implementation of ICD-10-CA/CCI*[4]
- *Reabstraction Study of the Ontario Case-Costing Facilities for 2002–2003 and 2003–2004*[5]

More recently the Data Quality department at CIHI implemented a five-year plan for ongoing reabstraction studies, beginning with DAD 2005–2006 data and ending with DAD 2009–2010 data. The purpose of these studies is to evaluate the overall quality of clinical and non-clinical information and to identify issues associated with coding and abstracting variations. Each study year may also incorporate specific focus topics that are of interest to stakeholders. Upon completion of a study year, results are released to all institutions and provinces/territories that participated in the study, and a summary report is made available on CIHI's website.

The 2005–2006 study included results from all provinces/territories in Canada. The focus of the study was on selected health conditions and interventions, such as ambulatory care sensitive conditions, hip replacements and percutaneous coronary interventions. The results were released in winter 2008, and a summary report is available on CIHI's website as of August 2009.[6]

The 2006–2007 study focused on data that is included in the CMG+ grouping methodology, such as flagged interventions and out-of-hospital interventions. Facilities in British Columbia, Alberta and Ontario were targeted. The results were released in summer 2009, and a summary report was made available on CIHI's website in November 2009.[7]

The 2007–2008 study included all of the provinces and territories across Canada. The focus of the study was on selected health conditions. The results were released in winter 2010, and a summary report is available on CIHI's website as of May 2010.[8]

The 2008–2009 study included facilities from British Columbia, Alberta, Nova Scotia, Manitoba, Saskatchewan and Ontario. The data collection study was completed in the fall of 2009. This study focused on the quality of coding for stroke patients, as well as the quality of coding for the administration of thrombolytic therapy to stroke patients. The facility reports were distributed to facilities, and the provincial release and summary reports were available in September 2010.

See the References at the end of this document for links to the studies.

## 3.3 Data Element Changes

Requests for refinements and suggested enhancements to data elements in the DAD are communicated to CIHI in several ways, including

- Input from advisory committees;
- Routine communication from clients to DAD support services representatives; and
- Formal submissions for data element additions or deletions from stakeholders.

The National Clinical Administrative Databases (NCAD) Steering Committee provides input to CIHI about these suggestions and advice about whether a proposed data element is appropriate for inclusion in the database as a mandatory (to ensure national comparability) or optional data element. Please refer to Appendix A for the collection status of various data elements in the 2009–2010 DAD.

# 4 Major Changes to the DAD

## 4.1 Historical Changes

### Classification Systems

Classification systems in health care provide a standard mechanism for the capture and coding of diagnoses and interventions. ICD-10-CA, the enhanced Canadian version of the 10th revision of the International Statistical Classification of Diseases and Related Health Conditions, replaced the earlier ICD-9 and ICD-9-CM classifications. CCI, the Canadian Classification of Health Interventions, was developed and is maintained by CIHI. It contains a comprehensive list of diagnostic, therapeutic and support interventions and replaced the CCP and ICD-9-CM intervention codes.

The ICD-10-CA and CCI classification systems were first implemented in 2001–2002 in British Columbia, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, the Yukon and parts of Saskatchewan. The systems were implemented in all jurisdictions except Quebec in 2004–2005, when Manitoba made the transition from ICD-9-CM. Appendix C shows when each province and territory adopted ICD-10-CA and CCI.

ICD-10-CA and CCI codes are reviewed regularly. Codes may be added or deactivated as requirements in the field dictate. In March 2009, a new version of ICD-10-CA/CCI was introduced, including a large number of new diagnosis and intervention codes. Further information, including a description of these changes and an indication of when the changes occurred, may be found in the CIHI publication *Evolution Tables for ICD-10-CA and CCI*.

The ICD-10-CA and CCI coding standards are also reviewed, amended and enhanced annually by a pan-Canadian committee representing the provinces and territories. The *Canadian Coding Standards for ICD-10-CA and CCI*[9] for 2006 through 2009 are available on the CIHI website and may be downloaded free of charge.

*Data Quality of the Discharge Abstract Database Following the First-Year Implementation of ICD-10-CA/CCI*[4] was published to provide users of the data with accurate and timely information on the implementation of the system and the accuracy of the data. It offered an initial assessment of the quality of coded diagnostic and intervention data from the first-year implementation of the new ICD-10-CA and CCI classification system. The complete document is available on the CIHI website.

The Data Quality department at CIHI continues to evaluate the coding and abstracting accuracy in the DAD via reabstraction studies. Please see Special Studies in Section 3.2 for more information.

### Case Mix Grouping

The CIHI Case Mix Group uses the data to derive Case Mix Groups (CMGs), Day Procedure Groups (DPGs), expected length of stay (ELOS) and Resource Intensity Weights (RIWs). CMGs categorize patients into statistically and clinically homogeneous groups based on clinical characteristics and resource use. Adjustments for patients of different levels of acuity form the basis for comparisons between health care organizations and Case Mix–adjusted resource utilization. Over the years, these grouping methodologies and their accompanying indicators have been used by health care facilities to plan, monitor and manage the services they provide.

All acute care inpatient data in the DAD for 2009–2010 has been grouped to CMG+. Formerly named CMG/Plx, the CMG+ methodology is designed to aggregate acute care inpatient cases with similar clinical and resource-utilization characteristics and to take advantage of the increased clinical specificity of ICD-10-CA and CCI. Redevelopment of the CMG/Plx and relative cost weighting methodologies included an extensive review of the CMG/Plx grouper logic, complexity methodology and age groupings. More information on CMG+ can be found on the CIHI website.

## 4.2 Historical References

The following products are useful references for users of DAD data. Users should consider both the fiscal year and classification scheme when referring to DAD documentation.

- *DAD Abstracting Manual (Core Section)*[10] (see Appendix C for format and coding classifications over time)
- *DAD Abstracting Manual (Provincial/Territorial Variations)*[11]
- *Quality Assurance Processes Applied to the Discharge Abstract and Hospital Morbidity Databases*[12]
- *CMG+ Directory*[13] (ICD-10-CA and ICD-9-CM available)
- *DAD Resource Intensity Weights and Expected Length of Stay*[14]

# 5 Comparability

Comparability refers to the extent to which databases are consistent over time and use standard conventions (such as data elements or reporting periods), which make them similar to other databases.

## 5.1 Geography

Postal Code is a common variable in almost all CIHI databases. If it is used along with the Postal Code Conversion File (PCCF) from Statistics Canada, any standard geographical classification can be located, and the information in databases can be compared. The forward sortation area—that is, the first three digits of a postal code—is typically the lowest level of aggregation available to external users under CIHI's Privacy and Confidentiality Policy. The release of information for small geographical areas may also be restricted to ensure confidentiality. Special requests must be approved by the CIHI Privacy and Legal Services (PLS) Secretariat. Note that for rural areas that use post office box numbers, postal code data does not necessarily provide an accurate picture of patient residence. This is because box numbers can be located in a region different from the place of residence. In addition, when rural postal codes include more than one enumeration area, it becomes difficult to determine a specific place of residence.

## 5.2 Institution

A standard code assigned by provinces and territories is used for the unique identification of institutions in the DAD and other CIHI databases, with some minor alterations. In the DAD, a province/territory prefix is added to the Institution Code to make it unique. Institution-identifying information is not released externally without approval from the CIHI PLS Secretariat.

## 5.3 Time

DAD data is grouped by fiscal year (April 1 to March 31), based on the discharge date on the abstract. Admission dates collected on each abstract enable data users to group data within and across fiscal years, depending on the need of the study.

## 5.4 Person

Patient names and street addresses are not part of the DAD. Health Care Numbers (HCNs) are assigned to individuals by provincial ministries of health and territorial governments. CIHI receives a complete HCN on the DAD abstract and applies a standard algorithm to scramble this number. Because the numbers are unique only within each province and territory, DAD captures a variable representing the province or territory that issued the HCN. Combining the HCN and the Province/Territory Issuing Health Care Number with other relevant person fields, such as Birthdate, Gender and Postal Code, unique individuals can be identified within the DAD, while they remain anonymous.

The HCN, Birthdate and full Postal Code of persons are not normally made available to external users. Access to these and other restricted data elements and the use of DAD data for data linkage studies require prior approval by the CIHI PLS Secretariat.

# 6 General Data Limitations

Data limitations are detected and investigated through data processing and editing, as well as through data quality activities within the DAD program area. The CIHI Data Quality Framework,[15] implemented in 2000–2001 and revised in 2009, provides a common strategy for assessing data quality across CIHI databases and registries. It is built upon five dimensions of quality:

- Accuracy;
- Comparability;
- Timeliness;
- Usability; and
- Relevance.

The data limitations discussed below focus on accuracy (coverage, non-response, measurement error and response bias) and comparability (equivalency, linkage, standardization and historical comparability). Analyses were conducted using the Analytical Institution Type Code unless otherwise specified. For further information on the CIHI Data Quality Framework, please refer to the CIHI website.[15]

## 6.1 Accuracy

Accuracy refers to how well information in or derived from the database or registry reflects the reality it was designed to measure.

## Coverage

The DAD frame is effectively validated by the provinces and territories, since they determine in advance which institutions must submit data to the DAD. Data submissions are monitored continually, and CIHI staff follow up with facilities or with ministries/departments of health when there are gaps in submissions or if there is a significant change in the total volume of abstracts received.

**Over-coverage** at the institution level occurs when units that are not part of the population of reference are included in the frame, potentially skewing the result of analyses performed on the population of reference. The population of reference in the DAD is acute inpatient and day surgery abstracts, excluding stillbirth and cadaveric donors. In addition, however, institutions have occasionally used the DAD to abstract data from other levels of care, including chronic care, rehabilitation and psychiatry. Any such non-acute data that appears in the DAD does not constitute over-coverage since the reference population can still be studied if these records are isolated. **Users are advised to use Analytical Institution Type Codes to identify acute care and day surgery abstracts.**

Over-coverage may occur at the record level when an institution creates multiple abstracts for the same discharge. These abstracts are referred to as "potential extra abstracts" as they are not confirmed as true extras by the respective provincial/territorial ministry or department of health. **In 2009–2010, there were 34 potential extra abstracts (20 acute care abstracts and 14 day surgery abstracts)** based on the population of reference.

**Under-coverage** occurs when part of the population of reference is not included in the frame. This, too, can affect analyses of the population of reference. There was no source of under-coverage in the DAD in 2009–2010, since acute care institutions are mandated by their provincial/territorial ministry/department of health to submit to the DAD. Submission of day surgery data is also mandated in all provinces except Ontario and Alberta.

One acute care institution in the Yukon fits the criteria of an institution that should report to the DAD. However, it has not submitted data to the DAD in any fiscal year due to resource shortages and is not anticipated to submit data in the coming years. On average, this institution has approximately 400 separations per year. This Institution Number is not on the DAD frame because Yukon Health and Social Services does not require it to submit data; therefore, it is not reported in this document as a data quality issue of under-coverage. At the national level, the missing data from this institution has a very minimal impact.

There are a number of coverage issues to be aware of when using 2009–2010 data:

- **The 2009–2010 DAD does not include Quebec data:** The population of reference for the 2009–2010 DAD includes all separations (discharges, deaths, sign-outs and transfers of patients) from acute inpatient and day surgery institutions in all provinces and territories except Quebec between April 1, 2009, and March 31, 2010.
- **The 2009–2010 DAD does not contain complete day surgery data:** Day surgery data from facilities in Ontario is not submitted to the DAD but to the National Ambulatory Care Reporting System (NACRS). Alberta submits day surgery abstracts to CIHI, but the data is not stored in the DAD. Three institutions in Nova Scotia submit day surgery data to NACRS. Two of these institutions have been submitting data to NACRS since 2003 and one since 2005.
- **Changes in institutions submitting to the DAD:** Throughout the fiscal year there are openings, closures and mergers of institutions. Of the institution numbers reported in 2008–2009, six were no longer valid in 2009–2010. Some facilities closed, some changed status (changed names, merged with other institutions or submitted data under a different level of care) and others were no longer part of the frame at some point during the year. One was from Nova Scotia, one was from New Brunswick and four were from British Columbia. There were also four new Institution Numbers in 2009–2010 that did not exist in 2008–2009, because a facility either opened or changed status (changed names, merged with other institutions or submitted data under a different level of care) at some point during the year. Of the new Institution Numbers in 2009–2010, one was from New Brunswick, two were from Manitoba and one was from Saskatchewan.
- **Potential extra abstracts:** In order to identify potential extra abstracts in the DAD, CIHI looks for abstracts with identical values within a combination of select data elements, including Province Code, Institution Code, Health Care Number, Birthdate, Gender, Postal Code, Admission Date/Time, Discharge Date/Time, Most Responsible Diagnosis (MRDx), Principal Intervention Code and Weight. CIHI is unable to identify true extra abstracts definitively without confirmation by agencies of the provincial and territorial governments. In 2009–2010, there were **38** potential extra abstracts submitted to the DAD for the population of interest; **34** of these abstracts were for the population of reference.

## Non-Response

### Item Non-Response

Item non-response (or partial non-response, as it is sometimes known) occurs when a record is received with some data missing. The item response rate for the DAD depends largely on whether the data element is mandatory or optional. No missing data is allowed for mandatory variables. For most mandatory data elements, if data is missing or contains invalid values, it is converted to Z. For non-mandatory fields missing values are left blank, but in some cases they may trigger a warning message on the Submission Detailed Error File.

Table 8 lists the number of acute and day surgery abstracts with missing or invalid values in selected data fields and shows this number as a percentage of total acute and day surgery records.

Table 8: Number of Acute Care and Day Surgery Abstracts* Submitted to the DAD, 2009–2010, With Missing or Invalid Values in Selected Mandatory Data Elements for the Population of Reference†

| Data Element | Number of Acute and Day Surgery Abstracts With Missing/Invalid Values | Percentage of Acute and Day Surgery Abstracts With Missing/Invalid Values |
|---|---|---|
| **Gender Code** | 3 | 0.0001 |
| **Postal Code** | 50 | 0.0015 |
| **Birthdate** | 2 | 0.0001 |
| **Admission Date** | 0 | 0 |
| **Admission Time** | 0 | 0 |
| **Discharge Date** | 15 | 0.0005 |
| **Discharge Time** | 6 | 0.0002 |
| **Discharge Disposition** | 0 | 0 |
| **Admission Category** | 2 | 0.0001 |
| **Entry Code** | 1 | 0.0000 |
| **Most Responsible Diagnosis** | 27 | 0.0008 |
| **Principal Intervention** | 4 | 0.0001 |

**Notes**

* Acute and day surgery abstracts are identified using the Analytical Institution Type Code variable.

† The population of reference includes acute inpatient and day surgery abstracts, excluding stillbirths and cadaveric donors.

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

To protect patient anonymity in the analytical environment, CIHI removes the original HCN from the analytic (SAS) data sets and replaces it with a scrambled HCN. Since the scrambling process is done consistently, the scrambled HCN can be used to link records across fiscal years within the DAD and across CIHI data holdings. Access to the unscrambled HCN has always been restricted from external data users and is now restricted from internal CIHI data users as well.

As a result of this process, HCNs with valid values (including the valid values 0 and 1, which are used to indicate that the patient has an HCN but it is unavailable at the time of data collection) can no longer be distinguished from those with invalid values (such as Z), as they are now all reassigned to the same value of 000000000000. From the point of view of data quality, invalidly formatted HCNs differ from those with 0 and 1 values, even though neither value can be used to link records for analysis. In the 2009–2010 DAD, only **97** abstracts of the **31,341** that scrambled to 000000000000 were related to HCNs with an invalid value of Z.

Table 9: Number of Acute Care and Day Surgery Abstracts* Submitted to the DAD, 2009–2010, With Scrambled Health Care Number Equal to 000000000000, for the Population of Reference†

| Scrambled Health Care Number | Number and Percent of Acute and Day Surgery Abstracts |
|---|---|
| 000000000000 | 31,341 (0.96%) |

**Notes**

* Acute and day surgery abstracts are identified using the Analytical Institution Type Code.

† The population of reference includes acute inpatient and day surgery abstracts, excluding stillbirths and cadaveric donors.

**Source**

Discharge Abstract Database, 2009–2010, Canadian Institute for Health Information.

### Unit Non-Response

Unit non-response can occur at either the institution level (the frame unit) or the record level (the unit of analysis).

Record-level unit non-response occurs when an entire record is missing. The unit response rate, which is the complement of the unit non-response rate, is usually computed by CIHI rather than the unit non-response rate.

Although every institution is required to submit 12 full periods of data (13 in British Columbia), some institutions may not have any separations (discharges) for one or more periods. They are required to submit data files indicating zero separations (discharges) for such periods so that the institutions are not recorded as a failure to report. CIHI received data files indicating zero discharges from nine institutions that did not have any separations to report in any fiscal period for 2009–2010. These “no separations” data files do not constitute record-level unit non-response, as they confirm that the number of discharges for each period was zero.

Institution-level unit non-response occurs when an institution listed on the database frame does not submit any data file for the entire fiscal year. Institution-level unit non-response is not likely to occur in the DAD since all institutions on the frame are mandated to submit data to the DAD. However, two valid institutions from Ontario did not submit any data to CIHI in 2009–2010 due to staff shortages. A total of 335 abstracts were not reported to CIHI. The missing data from these two institutions constitutes institution-level unit non-response as no data files were submitted for the entire fiscal year. The unit non-response rate at the institution level in the DAD for 2009–2010 was 0.23%.

## Measurement Error

Measurement error assesses the degree to which the values reported match the values that should have been reported.

- **Underestimated or overestimated Wait Time in the Emergency Department (ED):** Starting with 2007–2008, the Decision to Admit Date/Time data element was no longer captured. The data element captured is Date/Time Patient Left the Emergency Department, but this data element is not mandatory in all provinces/territories. Wait Time in the Emergency Department is a derived field calculated as the time between the Admit Date/Time and the Date/Time Patient Left the ED. A wait time in the ED that is greater than 168 hours is considered excessive. However, this is not necessarily a data quality error because there are patients that spend their entire stay in the ED, although they are admitted as inpatients. In the 2009–2010 DAD, there were 217 abstracts with a Wait Time in the ED value greater than 168 hours. The majority of cases (123 abstracts) came from British Columbia.
- **Intervention Date repeated for multiple interventions undertaken in one operative episode and vendor event count differs from CIHI:** According to the guideline provided in the *DAD Abstracting Manual*,[1] when more than one CCI code is required to capture the interventions performed in a single operative episode, the Intervention Episode Start Date should be recorded only once with the first CCI code; the dates for the other CCI codes for the same episode should be blank. This is important for processing the abstract on the DAD mainframe, as the episode sequence ID is increased for each date entered. Repeated capture of the Intervention Date for multiple interventions undertaken during the same episode results in the Episode Sequence ID being erroneously increased for each code. This means that the number of operative episodes identified may be inflated.

  Some abstracting software has functionality that allows users to identify intervention episodes using numbers. If the user forgets to also identify the intervention episode using the Intervention Episode Start Date, the Episode Sequence ID will not be increased for the episode. CIHI will, therefore, undercount the number of intervention episodes and the vendor-assigned intervention event count will differ from the intervention event count calculated by CIHI.

Some acute care facilities reported cases where the Intervention Episode Start Date was missing for an intervention episode and the abstracting software did not flag the record as being incomplete. These cases were corrected, and the vendor has implemented an edit in the abstracting system that flags when the Intervention Episode Start Date is not recorded. CIHI will continue to work with vendors and facilities to ensure these types of issues are addressed. Users are advised to exercise judgment as to whether these issues will affect their analyses.

- **Multiple out-of-hospital (OOH) interventions recorded on the same date in one abstract:** The OOH field is a flag used to indicate that an intervention episode was performed in the ambulatory care setting of another facility during the current inpatient stay in the reporting facility. Usually, due to medical, administration or traffic reasons, only one episode of OOH procedures is performed within one day. There were 80 abstracts with more than two episodes of OOH procedures within one day. This number indicates that the coders may over-assign the Intervention Episode Start Date for the OOH procedures, as the episode count is increased for each Intervention Episode Start Date entered.
- **OOH Indicator Flag not recorded on each intervention within the same episode:** The OOH Indicator Flag is set to Y (Yes) when an intervention is performed outside the reporting facility. When multiple interventions are performed in an episode, the OOH Indicator Flag must be recorded for each intervention in the episode. In 2009–2010, there were cases where the OOH Indicator Flag was not recorded on all the interventions in the episode. Although the volume is low, data users should be aware so they don't undercount the number of OOH interventions. In 2010–2011, CIHI will provide new instructions in the *DAD Abstracting Manual*[1] on how to record OOH interventions to address this issue.
- **Newborn live born code Z38– is not consistent with Newborn Entry Code:** An Entry Code of N (Newborn) is used to indicate live births that occur within the reporting institution. Newborn live born codes Z38.1–, Z38.4– and/or Z38.7– are assigned when the newborn is delivered outside of the hospital. If a newborn abstract has Entry Code N, its live born Z38– code should not be one of the above out-of-hospital Z38– codes. In 2008–2009, approximately 100 Entry Code N newborn abstracts were found to have one of the out-of-hospital Z38– codes. A new edit was implemented in 2009–2010 that defaults the live born code to Z when the Entry Code is N and a Diagnosis Code Z38 for birth outside of the facility is recorded.

- **Readmission Codes when Admission Category is Elective:** The Readmission Code identifies all new admissions and subsequent visits to the same health care facility by the same patient. The Admission Category is the patient classification on admission to a health care facility. Both data elements can capture whether the admission was planned/elective or unplanned. However, for 155 abstracts, the Readmission Code and the Admission Category did not consistently indicate whether the admission was planned or unplanned. The Admission Category was Elective, but the Readmission Codes indicated an Unplanned Admission. These records generated a warning message, but these combinations can be entered into the abstracting system. These findings reflect a variation in the usage and interpretation of the Readmission Code data element across facilities in Canada. CIHI will be investigating this issue to better understand the conditions under which the terms “elective” and “unplanned” are combined, and will clarify the data element definitions.
- **Inconsistency in Discharge Disposition when Institution To field is Acute Care:** If the Discharge Disposition on an abstract indicates that the patient was discharged to another acute care facility (Discharge Disposition = 01), then there should be an acute care Institution Number in the Institution To field, and vice versa. There is an edit that defaults the Institution To field to Z if the Discharge Disposition is 01 and the Institution To number is not an acute care Institution Number. There were 15 abstracts for the population of reference with the Institution To field defaulted to Z. For 2009–2010, there was a reverse edit that defaults the Institution To field to Z if an acute care number was recorded in the Institution To field with a Discharge Disposition value other than 01. As of 2008–2009, all abstracts with an acute care number in the Institution To field indicated a transfer to acute care in the Discharge Disposition field. Additional, clearer instructions were implemented in 2009–2010 to improve the consistency in these two fields. Provincial-/territorial-specific DAD abstracting manuals (except for P.E.I.) were updated to include Discharge Disposition tables that indicate which specific types of institutions in each province/territory would be associated with each specific Discharge Disposition code.
- **Change in alternate level of care (ALC) data reported to CIHI:** Since April 2008, Whitehorse General Hospital in the Yukon is once again collecting and reporting ALC data to CIHI. This institution did not collect ALC data between 2004–2005 and 2007–2008. Users are advised that ALC data for this institution as of 2008–2009 may not be comparable to the ALC data between 2004–2005 and 2007–2008.

- **J09 code used to identify H1N1 influenza:** After the H1N1 influenza outbreak in early 2009, CIHI, the World Health Organization (WHO) and the International Update and Revision Committee of the ICD-10 (URC) decided to use the code J09 *Influenza due to identified avian influenza virus* to identify H1N1 influenza until a unique code could be developed, as there had been no confirmed cases of avian flu in Canada. The J09 code was a new ICD-10-CA code for 2006–2007. A data quality audit performed by CIHI in May 2009 to confirm if the J09 code had been used in the DAD for 2006–2007, 2007–2008 and 2008–2009 revealed that the J09 code had been used by some facilities. The DAD program area followed up with these facilities and all cases submitted prior to the new coding directive were confirmed as coding errors. As the closed years of DAD data (2006–2007 and 2007–2008) cannot be corrected, the DAD program area will record this data quality issue in the DAD data quality documentation for these two years. In the 2008–2009 DAD, all the errors were corrected.

  In 2009–2010, the J09 code was still used to identify H1N1 influenza, as the new, unique H1N1 code had not yet been implemented. There were approximately 8,000 cases in 2009–2010.

- **Discharge Disposition Died (07) recorded twice for the same HCN:** The DAD program area identified 20 instances where a Discharge Disposition of Died (07) was recorded more than once for the same HCN in the 2009–2010 DAD. This duplicate death issue has also been identified when linking records by the same HCN across the DAD and NACRS databases. There were 33 abstracts that had Discharge Disposition of Died in the DAD and Visit Disposition of Death in NACRS with the same HCN. CIHI will update the *DAD Abstracting Manual*,[1] where necessary, to ensure that the collection guidelines are clearer in order to prevent this in the future.

- **Variations on the use of Discharge Disposition for Patients who do not return from a pass:** In the 2008–2009 DAD, a new value of 12 (Patients who did not return from a pass) was added to the Discharge Disposition data element. The DAD program area identified instances where facilities used Discharge Disposition 05 (Discharge home), 06 (Signed out), 07 (Died) or 12 (Patients who did not return from a pass) if the patient did not return from a pass. For example, some facilities used the value 12 if a patient died while out on pass while other facilities used the value 07. It was determined that more clarity is needed in the *DAD Abstracting Manual*[1] for 2009–2010 about how/when to use the new value, as facilities were inconsistently coding Discharge Disposition in 2008–2009. This issue was discussed with jurisdictions, and final decisions were made and communicated in 2009–2010. As these decisions were made after the 2009–2010 *DAD Abstracting Manual*[1] was published, the new instructions were added to the 2010–2011 *DAD Abstracting Manual*.[1]

- **Diagnosis Cluster, post-intervention condition and drug-resistant microorganism issues:** The Diagnosis Cluster is a new DAD data element introduced in 2009–2010, and is mandatory for post-intervention conditions and drug-resistant microorganisms. The Diagnosis Cluster is used to link the ICD-10-CA codes 3 on the abstract using the same Diagnosis Cluster value. All post-intervention conditions must have at least two codes: the **primary code** (T-code—T80 to T88, PP-code—post-procedural disorder code at the end of the body system chapter, or regular code—all codes other than T-codes or PP-codes) and an **external cause code** (Y60 to Y84), and the codes must be linked using the same Diagnosis Cluster value.

  See Appendix E for a list of post-procedural disorder codes.

  The mandatory status of this data element is not enforced by edits; hence the following data quality issues were discovered in the 2009–2010 data:

  – There are abstracts where a Diagnosis Cluster is assigned with only one Diagnosis Code.
  – There are abstracts where a post-intervention condition code (T80 to T88, PP-code), external cause code (Y60 to Y84) or drug-resistant microorganism code (U82 to U85) are assigned without a Diagnosis Cluster.
  – There are abstracts where post-intervention condition codes (T80 to T88, PP code) are assigned without a corresponding external cause code (Y60 to Y84).

  **Note:** Given that this is a new data element, the DAD team anticipated implementation problems with the Diagnosis Cluster and followed up with facilities. Although many of the errors were corrected, users are advised to use this data element with caution. CIHI will provide more instructions via coding tips, etc. and will consider creating edits.

- **Palliative care Diagnosis Code Z51.5 assigned to Type 2 or 3:** A Diagnosis Type 2 (Post-Admit Comorbidity) or a Diagnosis Type 3 (Secondary Diagnosis) should not be assigned to Diagnosis Code Z51.5. Because palliative care is not a condition per se, but rather a service provided to the patient, the diagnosis typing definitions do not fit nicely with Z51.5. The coding standard *Palliative Care* provides specific direction for Diagnosis Type assignment in certain circumstances. There were 1,410 abstracts with Diagnosis Code Z51.5 assigned with a Diagnosis Type 2 or Diagnosis Type 3.

- **Diagnosis Prefix 8 not assigned to Diagnosis Code Z51.5 *Palliative Care*:** As of 2009–2010, new definitions were assigned to Diagnosis Prefix 8 in the *DAD Abstracting Manual*.[1] The Diagnosis Prefix 8 is assigned with Diagnosis Code Z51.5 when palliative care is documented as a known component of the patient's care prior to arrival at the facility. There were 133 abstracts with Diagnosis Prefix 8 assigned with other Diagnosis Codes.

- **Multiple births coded as a single birth:** According to the coding standard, every newborn abstract must include a live born Z38.– code to indicate the plurality of the newborn; a singleton should have a live born code in the

range of Z38.0– to Z38.2–, and twins, triplets or other multiple births should have a live born code in the range of Z38.3– to Z38.8–.

More than 200 multiple birth newborn records had a singleton live born code rather than a multiple live born code.

For the purpose of identifying multiple births in the data, a multiple birth is defined as more than one baby delivered by the same mother during the same delivery episode in the same institution (that is, newborn records with the same Institution Number, Maternal/Newborn Chart Number and Admission Date).

**Note:** It is possible for the multiple births to occur on different dates. The mother may deliver one baby close to midnight and the other baby after midnight, or there may be complications necessitating the delivery of one baby several days (or even weeks) following the birth of the first baby. Multiple births can also occur in different facilities in cases of transfers, where the mother delivers one baby at the one facility and is subsequently transferred to deliver the other baby (or babies) at a second facility. Also, one baby may be born en route (such as in an ambulance) prior to admission to hospital. Cases where there is a stillborn or selective fetal reduction may also result in a multiple birth. However, these situations are uncommon and are excluded from this analysis. Data users can perform further analysis, if required.

- **Diagnosis Prefixes 5 and 6:** New definitions for Diagnosis Prefixes 5 and 6 were implemented starting in 2009–2010. The new definitions mandate the recording of Diagnosis Prefixes 5 and 6 accordingly:

  Diagnosis Prefix 5 is recorded for a post-admit comorbidity (Diagnosis Type 2) that arose after admission and before the first intervention episode occurring in

  - The Main OR (01) for any intervention; or
  - The Cardiac Catheterization Room (08) for any intervention; or
  - Another facility (out-of-hospital [OOH]) for select cardiac interventions (3.IP.10.^ ^,1.IJ.50.^ ^ and 1.IJ.57.^ ^).

  Diagnosis Prefix 6 is recorded for a post-admit comorbidity (Diagnosis Type 2) that arose after admission and during or after the first intervention episode occurring in

  - The Main OR (01) for any intervention; or
  - The Cardiac Catheterization Room (08) for any intervention; or
  - Another facility (out-of-hospital [OOH]) for select cardiac interventions (3.IP.10.^ ^, 1.IJ.50.^ ^ and 1.IJ.57.^ ^).

The following data quality issues with this data element were discovered:

- Post-admit comorbidities were not assigned Diagnosis Prefix 5 or 6 when an intervention was performed in the Main OR or Cardiac Catheterization Room.
- Post-admit comorbidities were assigned Diagnosis Prefix 5 or 6 but the intervention was not performed in the Main OR or Cardiac Catheterization Room or was not one of the three selected OOH interventions (3.IP.10.^ ^, 1.IJ.50.^ ^ and 1.IJ.57.^ ^).
- Post-admit comorbidities were assigned Diagnosis Prefix 5 or 6 but no interventions were performed.
- Diagnosis Prefix 5 or 6 was recorded with a Diagnosis Type other than 2.
- Diagnosis Prefix 5 or 6 was recorded on day surgery records.
- Diagnosis Prefix 5 or 6 was recorded on abstracts with obstetrical codes in the range of O00 to O99.

**Note:** As these definitions for Diagnosis Prefixes 5 and 6 were new this year, implementation problems were expected. Users are advised to use Diagnosis Prefixes 5 and 6 with caution. The DAD program area will revisit the instructions provided in the *DAD Abstracting Manual*[1] and is considering creating new edits.

- **Intervention Pre-Admit Flag recorded with an intervention not on the list of selected flagged interventions:** The Intervention Pre-Admit Flag is a mandatory data element introduced in 2009–2010. The Intervention Pre-Admit Flag is mandatory to record as Y (Yes) when the following interventions are initiated prior to admission:
  - Certain flagged interventions when they continue into the inpatient stay—see Appendix D, Table 1;
  - Thrombolytic therapy—see Appendix D, Table 2, and *Canadian Coding Standards for ICD-10-CA and CCI 2009*;[9] and
  - Induction of labour—see Appendix D, Table 2, and *Canadian Coding Standards for ICD-10-CA and CCI 2009*.[9]

  Flagged interventions are used to identify patients who are more complex and resource intensive than similar patients who do not require these interventions. While the interventions may not necessarily be expensive on their own, they are indicative of patients with higher expected resource use and therefore are used to adjust the CMG+ resource indicators. There were many abstracts that had the Intervention Pre-Admit Flag set to Y whose interventions recorded were not one of the flagged interventions on the list in Appendix D. Because the Intervention Pre-Admit Flag is a new data element, implementation problems were expected. Users are advised to use this data element with caution. CIHI will provide more instructions in the *DAD Abstracting Manual*.[1]

- **Interventions performed on males in Intervention Location 05 (Therapeutic Abortion Unit) and 10 (Obstetrics Case Room/Delivery Room/OR):** The Intervention Location Code records the physical area in the health care facility where an intervention was performed. Intervention Location 05 is the therapeutic abortion unit and Intervention Location 10 is the obstetrics case room/delivery room/OR. There were 51 records in the 2009–2010 DAD where male interventions were performed in locations 05 and 10. These records do not include newborn males who had circumcision and phototherapy interventions. This is not necessarily a data quality issue as it may be related to hospital resource usage. However, users should be aware of the records.

### Response Bias

While measurement error occurs when a data element is coded incorrectly, response bias occurs when the errors occur in a systematic way.

The Data Quality department at CIHI has implemented a five-year plan for ongoing reabstraction studies, starting with DAD 2005–2006 data and ending with DAD 2009–2010 data. Studies were also conducted as far back as 1999–2000. The purpose of these studies is to evaluate the overall quality of clinical and non-clinical information and to identify issues associated with coding and abstracting variations. The studies found areas of response bias.

See the References at the end of this document for links to the studies.

## 6.2 Comparability

Comparability is defined as the extent to which databases are consistent over time and use standard conventions (such as data elements or reporting periods) that make them similar to other databases).

### Equivalency

Fiscal year 2004–2005 marked the first year of full adoption of the ICD-10-CA and CCI classification system for provinces and territories that submitted data to the DAD. The classification scheme change since 2001–2002 resulted in a number of challenges for users wishing to trend data over time. For details, see *Coping With the Introduction of ICD-10-CA and CCI: Impact of New Classification Systems on the Assignment of Case Mix Groups/Day Procedure Groups*,[17] based on 2001–2002 and 2002–2003 data, on the CIHI website. Appendix C shows the coding classifications used by provinces and territories in different fiscal years. **Users are strongly advised to analyze data using the classification scheme in which the data was collected.**

## Linkage

- **Health Care Number (HCN) systems are evolving:** Provincial standards, edits and procedures regarding HCNs have changed over the years. British Columbia, Alberta, Ontario, Saskatchewan and the Northwest Territories have revised their health care numbering systems (for example, from family to individual-based) and have issued new HCNs. Because CIHI information does not link the old and the new numbering systems, users must exercise caution when using HCNs for linkage purposes. Note that, under its Privacy and Confidentiality Policy, CIHI releases only scrambled HCNs to external users.
- **Version codes on Ontario HCNs:** Some HCNs in Ontario may include a version code. Where present (in HCNs of more than 10 bytes), it appears after the 10-digit HCN. Version codes were introduced to uniquely identify a health card and to verify the status of the health card. Some cards do not have a version code, and version codes are not always recorded on DAD abstracts. When new Ontario health cards are issued or a replacement card is issued, the 10-digit numeric portion of the HCN remains the same but the version code changes. Linkage over time therefore can only be accomplished by using the first 10 digits of either the HCN or the scrambled HCN.
- **Scrambled Health Care Number:** CIHI's use of consistently scrambled HCNs makes it possible to link data within and across years. One caveat is that invalid and missing HCNs are converted to 000000000000 and so should be excluded before data is linked.
- **Patient postal codes do not necessarily provide an accurate picture of patient residence:** The post office box numbers used by some rural residents may point to a region different from the place of residence. In addition, when rural postal codes map to more than one enumeration area, it becomes difficult to determine a specific place of residence. The forward sortation area (first three digits of the postal code) is typically the lowest level of aggregation available to external users under CIHI's Privacy and Confidentiality Policy. The release of information for small geographical areas may also be restricted to ensure patient privacy and confidentiality of patient information.

- **Discrepancy in patient residence as identified by the Postal Code and Health Care Number:** Among the acute care abstracts in the 2009–2010 DAD, approximately 20.64% of out-of-province records (abstracts where the Province Issuing Health Care Number code did not match the Submitting Province code) had a postal code from the reporting province or territory. This may be for a variety of reasons—for example, a patient who has relocated may have sought care using the HCN issued by the original province and territory and the postal code in the current province or territory. Users need to exercise judgment as to which data element is best suited to identify patient residence. For data elements like Postal Code, Health Care Number and Provider Number, CIHI's edit system can only check for format, not actual values. Therefore, incorrect HCNs or retired Postal Codes may be included in the database as long as they have the valid formats. DAD analysts conduct testing during the open year to assess and address these cases.
- **Incomplete linkage between mothers and babies:** The Maternal/Newborn Chart Number and Chart Number are the data elements used to link mothers and babies. A mother's Chart Number is placed on the baby's abstract in the Maternal/Newborn Chart Number field, and the baby's Chart Number is placed on the mother's abstract in the Maternal/Newborn Chart Number field. Users should be aware that mother-and-baby linkages may be incomplete because some institutions have not adhered to CIHI's guidelines for coding these fields; for example, some institutions added special characters (B, N, H) or leading zeros to the front of Chart Numbers. Other reasons for incomplete linkage include the following:
  - The manual entry of the Maternal/Newborn Chart Number in most facilities' registration system may result in typing errors.
  - The mother and baby might be discharged in different fiscal years. For example, the 2009–2010 DAD contains abstracts with discharges from April 1, 2009, to March 31, 2010. If a mother was discharged in 2009–2010 and her baby was discharged in 2010–2011, for medical or other reasons, it is not possible to link both of them within one fiscal year.
- **Multiple linkages of newborn Chart Numbers to a mother's Chart Number:** Newborn abstracts may appear to link to more than one mother, as CIHI has found examples of the same newborn's Chart Number on more than one mother's abstract. CIHI monitored these cases during the open year and contacted institutions to have these abstracts corrected and resubmitted to the DAD.
- **Incomplete HCNs for newborns:** The provinces and territories have different guidelines for coding HCNs for newborns. Some systematically code 0, 1 or the mother's HCN on the newborn abstract. In other jurisdictions, newborns receive a valid HCN before leaving the institution. For example, New Brunswick, Nova Scotia, P.E.I., Alberta and the Northwest Territories instruct facilities to record the mother's HCN on the baby's chart. When a newborn has not been assigned a valid HCN before leaving the institution or the HCN is 0 or 1, the HCN is defaulted to 000000000000 in the DAD. This prevents future linkages to the newborn's record.

## Standardization

- **Provincial/territorial variation in DAD data collection:** The collection of a DAD data element within a province or territory can be mandatory, optional or vary in definition, depending on the decisions made by the provincial/territorial ministries of health. Response rates are typically low for non-mandatory fields. Users should be aware of these variations when conducting data analyses. Appendix A lists the key provincial abstracting differences for the 2009–2010 DAD. Please refer to the *DAD Abstracting Manual*[1] for details.
- **Incomplete non-acute care data in the DAD:** Comprehensiveness of non-acute care data (such as rehab or chronic care) collected in the DAD varies by province/territory. Users of the data should be aware that comprehensiveness and requirements for data collection from non-acute institutions via the DAD vary over time, and that institution types also change over the years. For specific details of these changes, contact CIHI.
- **Lack of standardized definitions for levels of care across Canada:** Currently there are no standardized definitions for levels of care. To minimize the differences between definitions for levels of care across all jurisdictions and to facilitate national comparison, the Analytical Institution Type Code was introduced in the DAD in 2004–2005. It is a CIHI-defined data element that is assigned when the Institution Type assigned to an Institution Number is known to differ from the type of care that is provided. Before assigning this value, CIHI consults and confirms the level of care with the institutions and provincial/territorial health agencies. The provincially/territorially assigned Institution Type remains in the database under the Institution Type Code field. Users are advised to use the Analytical Institution Type Code when performing analysis on acute care data.

## Historical Comparability

- **Health Care Number (HCN) systems are evolving:** Provincial standards, edits and procedures regarding HCNs have changed over the years. British Columbia, Alberta, Ontario, Saskatchewan and the Northwest Territories have revised their HCN systems (for example, from family to individual based) and have issued new HCNs. Because CIHI information does not link the old and the new numbering systems, users must exercise caution when using HCNs for linkage purposes. Note that CIHI releases only scrambled HCNs to external users under its Privacy and Confidentiality Policy.

- **Version codes on Ontario HCNs:** HCNs in Ontario may include a version code. Where present (in HCNs of more than 10 bytes), it appears after the 10-digit HCN. Version codes were introduced to uniquely identify a health card and for verifying the status of the health card. Some health cards do not have a version code, and version codes are not always recorded on DAD abstracts. When new Ontario health cards are issued or a replacement card is issued, the 10-digit numeric portion of the HCN remains the same but the version code changes. Linkage over time therefore can only be accomplished by using the first 10 digits of either the HCN or scrambled HCN.
- **Scrambled Health Care Number:** CIHI's use of consistently scrambled HCNs makes it possible to link data within and across years. One caveat is that the invalid and missing HCNs are converted to 000000000000 and so should be excluded before data is linked.
- **Institution Number is not standardized over time:** Institution Numbers are assigned by provincial and territorial ministries or departments of health. One facility can be assigned different numbers as facilities merge or close or as the type of care provided in the facility changes. Longitudinal records of Institution Number changes are well maintained in most provinces and territories; however, linkages by Institution Number over time can be challenging, especially in Ontario.

# Appendix A

## 2009–2010 Mandatory DAD Data Elements ICD-10-CA Submitting Provinces Inpatient

This document is intended for use in conjunction with the *DAD Abstracting Manual*[1] available on the CIHI website. Please refer to the *DAD Abstracting Manual*[1] for details on provincial variations.

| Legend | |
|---|---|
| **M** | Mandatory data element |
| **Blank** | Optional data element |
| **Shading** | Not submitting in ICD-10-CA |

| Group and Field Number | Data Element | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Y.T. | Nun. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **01 01** | **Institution Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 03** | **Batch Year** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 04** | **Batch Period** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 05** | **Batch Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 06** | **Abstract Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 08** | **Coder Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 09** | **Chart Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **01 10** | **Register Number** | M | | M | M | | M | | | | | | M | |
| **01 11** | **Second Chart/Register Number** | | | | | | | | | | | | | |
| **01 12** | **Maternal/ Newborn Chart Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 01** | **Health Care Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 02** | **Postal Code** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 03** | **Residence Code** | M | | M | M | | M | | | M | | M | | M |
| **03 04** | **Gender** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 05** | **Province/Territory Issuing HCN** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 06** | **Responsibility for Payment (RFP)** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 08** | **Birthdate** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 09** | **Birthdate Is Estimated** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **03 11–27** | **Province/Territory Ancillary Data** | | | M | | | | | M | M | M | | | |

| Group and Field Number | Data Element | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Y.T. | Nun. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 01 | Admit Date | M | M | M | M | | M | M | M | M | M | M | M | M |
| 04 02 | Admit Hour | M | M | M | M | | M | M | M | M | M | M | M | M |
| 04 04 | Institution From | M | M | M | M | | M | M | M | M | M | M | M | M |
| 04 05 | Admit Category | M | M | M | M | | M | M | M | M | M | M | M | M |
| 04 06 | Entry Code | M | M | M | M | | M | M | M | M | M | M | M | M |
| 04 07 | Admit by Ambulance | M | M | M | M | | M | M | M | M | M | M | M | M |
| 04 08 | Readmission Code | M | M | M | M | | M | | M | | M | M | | M |
| 04 13 | Date Patient Left ED | M | | M | | | M | M | M | M | M | | | |
| 04 14 | Time Patient Left ED | M | | M | | | M | M | M | M | M | | | |
| 05 01 | Discharge Date | M | M | M | M | | M | M | M | M | M | M | M | M |
| 05 02 | Discharge Time | M | M | M | M | | M | M | M | M | M | M | M | M |
| 05 04 | Institution To | M | M | M | M | | M | M | M | M | M | M | M | M |
| 05 05 | Discharge Disposition | M | M | M | M | | M | M | M | M | M | M | M | M |
| 07 01 | Main Patient Service | M | M | M | M | | M | M | M | M | M | M | M | M |
| 07 02 | Subservice | | | M | M | | | | | | | | | |
| 07 03 | Weight (0 to 29 days on admission) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 07 04 | Abstract Overflow | | | | | | | | | | | | | |
| 08 01 | Service Transfer (3 occurrences) | | | | M | | M | M | M | M | M | | | |
| 08 01 | Alternate Level of Care (ALC) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 08 02 | Subservice | | | | M | | | | M | M | | | | |
| 08 03 | Service Transfer Days (if Service Transfer coded) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 09 01 | Provider Type (8 occurrences) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 09 02 | Provider Number | M | M | M | M | | M | M | M | M | M | M | M | M |
| 09 03 | Provider Service | M | M | M | M | | M | M | M | M | M | M | M | M |
| 10 01 | Diagnosis Prefix (25 occurrences) Prefixes 5, 6 and 8 mandatory when applicable | M | M | M | M | | M | M | M | M | M | M | M | M |
| 10 02 | Diagnosis Code (ICD-10-CA) (25 occurrences) | M | M | M | M | | M | M | M | M | M | M | M | M |

| Group and Field Number | Data Element | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Y.T. | Nun. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 03 | Diagnosis Cluster (25 occurrences) Mandatory for drug-resistant microorganisms and post-intervention conditions | M | M | M | M | | M | M | M | M | M | M | M | M |
| 10 04 | Diagnosis Type | M | M | M | M | | M | M | M | M | M | M | M | M |
| 10 05 | Cancer Staging—Clinical Tumour | | | | | | | | | | | | | |
| 10 06 | Cancer Staging—Clinical Node | | | | | | | | | | | | | |
| 10 07 | Cancer Staging—Clinical Metastasis | | | | | | | | | | | | | |
| 10 08 | Cancer Staging—Pathology Tumour | | | | | | | | | | | | | |
| 10 09 | Cancer Staging—Pathology Node | | | | | | | | | | | | | |
| 10 10 | Cancer Staging—Pathology Metastasis | | | | | | | | | | | | | |
| 10 11 | Cancer Staging—Summary Staging | | | | | | | | | | | | | |
| 11 01 | Intervention Episode Start Date (formerly called Intervention Date) (20 occurrences) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 11 02 | Intervention Code (CCI) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 11 03 | Status Attribute (if mandatory for CCI code) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 11 04 | Location Attribute (if mandatory for CCI code) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 11 05 | Extent Attribute (if mandatory for CCI code) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 11 06 | Intervention Provider | M | | M | M | | | M | M | | M | M | M | M |
| 11 07 | Intervention Provider Service | M | | M | M | | | M | M | | M | M | M | M |
| 11 08 | Tissue Code | | | | | | | | | | | | | |
| 11 10 | Intervention Location (All) | M | | M | M | | M | M | M | | | | | |
| 11 10 | Intervention Location (01 and 08) | M | M | M | M | | M | M | M | M | M | M | M | M |
| 11 11 | Anaesthetist | M | | | M | | M | M | | | M | M | | |

| Group and Field Number | Data Element | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Y.T. | Nun. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **11 12** | **Anaesthetist Technique** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **11 13** | **OOH Indicator** | M | M | M | M | | M | M | M | M | M | M | M | |
| **11 14** | **OOH Institution Number** | M | M | M | M | | M | M | M | M | M | M | M | |
| **11 15** | **Unplanned Return to OR** | M | | | | | | | M | M | M | | | |
| **11 16** | **Died in OR** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **11 17** | **Intervention Episode Start Time (mandatory for intervention episodes performed in Main OR or Cardiac Catheterization Room)** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **11 18** | **Intervention Episode End Date (mandatory for intervention episodes performed in Main OR or Cardiac Catheterization Room)** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **11 19** | **Intervention Episode End Time (mandatory for intervention episodes performed in Main OR or Cardiac Catheterization Room)** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **11 20** | **Intervention Pre-Admit Flag (mandatory for specific interventions)** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 01** | **SCU Death Indicator (6 occurrences)** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 02** | **SCU Unit Number** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 03** | **SCU Admit Date** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 04** | **SCU Admit Time** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 05** | **SCU Discharge Date** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 06** | **SCU Discharge Time** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **13 09** | **Glasgow Coma Scale** | M | M | M | M | | M | M | M | M | M | M | M | M |

| Group and Field Number | Data Element | N.L. | P.E.I. | N.S. | N.B. | Que. | Ont. | Man. | Sask. | Alta. | B.C. | N.W.T. | Y.T. | Nun. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **14 01–19** | **Basic Options** | M | | | | | | | | | | | | |
| **15 02–14** | **Mental Health** | M | | | M | | M | M | | | | | | |
| **16 01–18** | **Project Information (5 occurrences)** | M | | M | M | | M | | | M | M | | | |
| **17 01–07** | **Blood Information** | M | M | M | M | | M | M | M | M | | M | M | M |
| **18 01–09** | **Reproductive Care Information** | M | M | M | M | | M | M | M | M | M | M | M | M |
| **19 01–14** | **Licensed Vendor Assigned Values** | | | M | M | | | M | | | | | | |
| **19 15** | **Abstract Vendor ID Number** | M | M | M | M | | M | M | M | M | M | M | M | M |

**Note**

Quebec does not submit DAD data to CIHI at this time.

# Appendix B

## Evolution of DAD Data Elements 1995–1996 to 2009–2010

This document must be referenced when performing trending analysis on DAD data and is intended for use in conjunction with the *DAD Abstracting Manual*.[1] Please refer to the *DAD Abstracting Manual*[1] or contact CIHI for details behind these changes.

| Legend | |
|---|---|
| * | No change to existing field |
| C | Change in data element definition |
| F | Change in data element format |
| D | Deleted data element |
| N | New data element |
| O | Field did not exist that year |
| | Modified ICD-9 abstract |
| | New abstract (ICD-10-CA/CCI) |

| | | ICD-9 Abstract | | | | | | ICD-10 Abstract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group and Field Number | Data Element | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 | 2009–2010 |
| 01 01 | Province | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 01 02 | Institution Number | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 01 01 | Institution Number | O | O | O | O | O | O | F | * | * | * | * | * | * | * | * |
| 01 03 | Batch Year | * | * | * | * | F | * | * | * | * | * | * | * | * | * | * |
| 01 04 | Batch Period | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 01 05 | Batch Number | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 01 06 | Abstract Number | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 01 08 | Coder Number | * | * | * | * | * | * | * | * | * | * | * | * | * | * | F |
| 01 09 | Chart Number | * | * | * | * | F | * | * | * | * | * | * | * | * | * | * |
| 01 10 | Register Number | * | * | * | * | * | * | F | * | * | * | * | * | * | * | * |
| 01 11 | Second Chart/ Register Number | * | * | * | * | F | * | * | * | * | * | * | * | * | * | * |
| 01 12 | Maternal/ Newborn Chart/ Register Number | O | O | O | O | O | O | N | * | * | * | C | * | * | * | * |
| 02 01 | Manual Length of Stay | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |

| | | ICD-9 Abstract | | | | | | ICD-10 Abstract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group and Field Number | Data Element | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 | 2009–2010 |
| 03 01 | Health Care Number | * | * | * | * | C | * | F | * | * | * | * | * | F | C, F | C |
| 03 02 | Postal Code | * | * | * | * | C | * | C | * | * | * | * | * | C | * | * |
| 03 03 | Residence Code | * | * | * | * | F | * | * | * | * | * | * | * | * | * | * |
| 03 04 | Sex | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |
| 03 04 | Gender | O | O | O | O | N | * | C | * | * | * | * | * | * | * | * |
| 03 05 | Province/ Territory Issuing HCN | O | O | O | O | N | * | C | * | * | * | * | * | * | C | C |
| 03 06 | Responsibility for Payment | O | O | O | O | N | * | C | * | * | * | * | * | * | * | * |
| 03 07 | Marital Status | O | O | O | O | N | * | D | O | O | O | O | O | O | O | O |
| 03 08 | Birthdate | * | * | * | * | F | * | * | * | * | * | * | * | * | * | * |
| 03 09 | Age >99 Years | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |
| 03 09 | Birthdate Is Estimated | * | * | * | * | C | * | * | * | * | * | * | * | * | * | * |
| 03 10 | Age Is Unknown | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |
| 03 11–27 | Provincial/ Territorial Ancillary Data | * | * | * | * | * | * | F | * | * | * | * | * | * | * | * |
| 04 01 | Admit Date | * | * | * | * | F | * | * | * | * | * | * | * | * | * | * |
| 04 02 | Admit Time | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 04 04 | Institution From | * | * | * | * | * | * | F | * | * | * | * | * | C | * | * |
| 04 05 | Admission Category | * | * | * | * | * | * | C | * | C | * | * | * | * | C | * |
| 04 06 | Entry Code | * | * | * | * | * | C | * | * | * | * | * | * | * | * | * |
| 04 07 | Admit by Ambulance | * | * | * | * | C | * | * | * | * | * | F | C, F | * | * | * |
| 04 08 | Readmission Code | * | * | * | * | * | * | C | * | * | * | C | * | * | C | * |
| 04 09 | Unplanned Readmission | O | O | O | O | N | C | D | O | O | O | O | O | O | O | O |
| 04 10 | Wait Time in ER (in minutes) | O | O | O | O | N | * | D | O | O | O | O | O | O | O | O |
| 04 11 | ER Decision to Admit Date | O | O | O | O | O | O | N | * | * | * | * | * | D | O | O |
| 04 12 | ER Decision to Admit Time | O | O | O | O | O | O | N | * | * | * | * | * | D | O | O |
| 04 13 | Date Patient Left ER | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 04 14 | Time Patient Left ER | O | O | O | O | O | O | N | * | * | * | F | * | * | * | C |
| 05 01 | Discharge Date | * | * | * | * | F | * | * | * | * | * | * | C | * | C | * |

| | | ICD-9 Abstract | | | | | | ICD-10 Abstract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group and Field Number | Data Element | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 | 2009–2010 |
| 05 02 | Discharge Time | * | * | * | * | * | * | * | * | * | * | * | C | * | C | * |
| 05 04 | Institution To | * | * | * | * | * | * | F | * | * | * | * | * | * | * | * |
| 05 05 | Date Ready for Discharge | * | * | * | * | F | * | D | O | O | O | O | O | O | O | O |
| 05 05 | Discharge Disposition | O | O | O | O | O | O | N | * | C | * | * | * | * | C, F | * |
| 05 06 | Reserved | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 06 01 | Exit Alive | * | * | * | * | C | * | D | O | O | O | O | O | O | O | O |
| 06 02 | Autopsy | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 06 03 | Coroner/ Medical Examiner | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 06 04–11 | Death Codes | * | * | * | * | C | * | D | O | O | O | O | O | O | O | O |
| 07 01 | Main Patient Service | * | * | C | * | * | * | * | * | * | * | * | C | * | * | * |
| 07 02 | Patient Subservice | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 07 03 | Weight | * | * | * | * | * | * | C | * | * | * | * | * | * | * | * |
| 07 04 | Abstract Overflow | * | * | * | * | C | * | * | * | * | * | * | * | * | * | * |
| 08 01 | Service Transfer | * | * | C | * | * | * | * | * | * | * | * | C | * | * | * |
| 08 02 | Transfer Subservice | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 08 03 | Service Transfer Days | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 09 01 | Doctor/ Provider Type | * | * | * | * | * | * | C | C | * | * | * | * | * | C, F | C |
| 09 02 | Doctor/ Provider Number | * | * | * | * | * | * | F | * | * | * | * | * | * | * | * |
| 09 03 | Doctor/ Provider Service | * | * | C | * | * | * | F | C | * | * | F | * | C | F | C |
| 10 01 | Diagnosis Prefix | * | * | * | * | * | * | C | * | * | * | * | * | * | F | C |
| 10 02 | Diagnosis Code | * | * | * | * | * | * | C | * | * | * | C | * | * | * | * |
| 10 03 | Diagnosis Suffix | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 10 03 | Diagnosis Cluster | O | O | O | O | O | O | O | O | O | O | O | O | O | O | N |
| 10 04 | Diagnosis Type | * | * | * | * | * | * | C | * | C | C | F | * | C | C | * |
| 10 05–11 | Cancer Staging | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 11 01 | Procedure/ Intervention Date | * | * | * | * | F | * | * | * | * | * | * | * | C | C | O |

| | | ICD-9 Abstract | | | | | | ICD-10 Abstract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group and Field Number | Data Element | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 | 2009–2010 |
| **11 01** | **Intervention Episode Start Date** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N |
| **11 02** | **Procedure/ Intervention Code** | * | * | * | * | * | * | C | * | * | * | * | * | * | C | * |
| **11 03** | **Procedure Suffix** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 04** | **Procedure Doctor Number** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 05** | **Procedure Doctor Service** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 06** | **Tissue Code** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 07** | **Procedure Time** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 08** | **Operating Room** | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |
| **11 08** | **Intervention Location** | O | O | O | O | N | * | D | O | O | O | O | O | O | O | O |
| **11 09** | **Anaesthetist** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 10** | **Anaesthetic Technique** | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| **11 11** | **Out of Hospital Institution Number** | O | O | O | O | N | * | D | O | O | O | O | O | O | O | O |
| **11 12** | **Unplanned Return to OR** | O | O | O | O | N | * | D | O | O | O | O | O | O | O | O |
| **11 03/05** | **Intervention Attributes** | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| **11 06** | **Intervention Provider Number** | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| **11 07** | **Intervention Provider Service** | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| **11 08** | **Tissue Code** | O | O | O | O | O | O | N | C | * | * | * | * | * | * | * |
| **11 09** | **Intervention Time** | O | O | O | O | O | O | N | * | F | * | * | * | * | * | D |
| **11 10** | **Intervention Location** | O | O | O | O | O | O | N | * | * | * | * | * | * | C | C |
| **11 11** | **Anaesthetist** | O | O | O | O | O | O | N | * | * | * | * | C | * | * | * |
| **11 12** | **Anaesthetic Technique** | O | O | O | O | O | O | N | C | C | * | F | * | * | C | C |
| **11 13** | **Out-of-Hospital Indicator** | O | O | O | O | O | O | N | * | * | * | * | * | * | C | C |

| | | ICD-9 Abstract | | | | | | ICD-10 Abstract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group and Field Number | Data Element | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 | 2009–2010 |
| 11 14 | Out-of-Hospital Institution Number | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 11 15 | Unplanned Return to OR | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 11 16 | Died in OR | O | O | O | O | O | O | N | * | * | * | * | * | * | C | C |
| 11 17 | Intervention Episode Start Time | O | O | O | O | O | O | O | O | O | O | O | O | O | O | N |
| 11 18 | Intervention Episode End Date | O | O | O | O | O | O | O | O | O | O | O | O | O | O | N |
| 11 19 | Intervention Episode End Time | O | O | O | O | O | O | O | O | O | O | O | O | O | O | N |
| 11 20 | Intervention Pre-Admit Flag | O | O | O | O | O | O | O | O | O | O | O | O | O | O | N |
| 12 01–06 | Therapies | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 12 07 | Discharge Planning | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 12 08 | Social Services | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 12 09 | Preadmission Workup | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 13 01 | SCU Death Indicator | * | * | * | * | * | * | C | * | * | * | * | * | * | * | * |
| 13 02 | SCU Unit Number | * | * | * | * | * | * | C | * | * | * | * | * | * | F | C |
| 13 03 | SCU Days | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 13 03 | SCU Admit Date | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 13 04 | SCU Admit Time | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 13 05 | SCU Discharge Date | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 13 06 | SCU Discharge Time | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 13 09 | Glasgow Coma Scale | O | O | O | O | O | O | N | * | * | * | * | * | * | * | * |
| 14 01–19 | Basic Options | * | * | * | * | * | * | C | * | * | * | * | * | F | * | * |
| 14 18 | Basic Option R—Ventilator Days | * | * | * | * | * | * | D | O | O | O | O | O | O | O | O |
| 15 01 | Reserved | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |
| 15 02–14 | Mental Health Information | O | O | O | O | N | * | * | * | * | * | * | * | * | C | * |

| | | ICD-9 Abstract | | | | | | ICD-10 Abstract | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group and Field Number | Data Element | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 | 2005–2006 | 2006–2007 | 2007–2008 | 2008–2009 | 2009–2010 |
| **16 01–18** | **Project Information** | * | * | * | * | * | * | * | * | * | * | * | C | F | * | * |
| **16 01–06** | **Blood Information #302** | * | * | * | * | D | O | O | O | O | O | O | O | O | O | O |
| **17 01–07** | **Blood Information** | O | O | O | O | N | * | * | * | * | * | * | * | * | * | * |
| **18 01–12** | **Reproductive Care—OBS/TA** | O | O | O | O | O | O | N | * | * | * | * | C | * | * | * |
| **18 01–05** | **Therapeutic Abortion Info** | O | O | O | O | N | * | D | O | O | O | O | O | O | O | O |
| **19 01–15** | **Vendor-Assigned Values** | O | O | O | O | O | O | N | * | * | * | * | * | F | * | * |

# Appendix C

## Format and Coding Classifications Used in the *DAD Abstracting Manual*,[1] 1994–1995 to 2009–2010

| Province/ Territory | 1994–1995 | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 | 2000–2001 | 2001–2002 | 2002–2003 | 2003–2004 | 2004–2005 to 2009–2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **N.L.** | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP *(paper)* | I-9-CCP *(paper)* | I-10-CCI *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **P.E.I.** | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-10-CCI *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **N.S.** | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **N.B.** | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **Que.** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **Ont.** | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **Man.** | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(online)* |
| **Sask.** | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CM/ I-10-CCI *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **Alta.** | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **B.C.** | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-9-CCP and I-9-CM *(paper)* | I-10-CCI *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **Y.T.** | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **N.W.T.** | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |
| **Nun.** | | | | | | I-9-CM *(paper)* | I-9-CM *(paper)* | I-9-CM *(paper)* | I-10-CCI *(online)* | I-10-CCI *(online)* | I-10-CCI *(online)* |

**Note**

N/A: not applicable (Quebec data is not part of the DAD frame).

# Appendix D

## *DAD Abstracting Manual*,[1] 2009–2010

Table 1

| Selected Flagged Interventions List | |
|---|---|
| **Tracheostomy** | |
| **1GJ77LA** | Bypass with exteriorization, trachea using open approach |
| **1GJ77LALG** | Bypass with exteriorization, trachea using open approach and temporary implant |
| **1GJ77QB** | Bypass with exteriorization, trachea using mediastinal approach |
| **Pleurocentesis** | |
| **1GV52HAHE** | Drainage pleura using percutaneous catheter (intracostal) with underwater seal drainage system |
| **1GV52HATK** | Drainage pleura using percutaneous catheter with suction pump, (underwater seal or negative pressure) |
| **Mechanical Ventilation** | |
| **1GZ31CAND** | Ventilation, respiratory system invasive per orifice approach by endotracheal intubation length of time not applicable **(all extent attributes)** |
| **1GZ31CRND** | Ventilation, respiratory system invasive per orifice with incision approach for intubation through tracheostomy length of time not applicable **(all extent attributes)** |
| **1GZ31GPND** | Ventilation, respiratory system invasive percutaneous transluminal approach (e.g. transtracheal jet) through needle length of time not applicable **(all extent attributes)** |
| **Vascular Access Device** | |
| **1IS53GRLF** | Vascular access device with external lumen using percutaneous transluminal venous approach (e.g. peripherally inserted central catheter [PICC]) |
| **1IS53HNLF** | Vascular access device using percutaneous tunnelling technique (e.g. Hickman) |
| **1IS53LALF** | Totally implanted venous access device (with injection port) [e.g. Port-a-cath] using open approach |
| **Parenteral Nutrition** | |
| **1LZ35HHC6** | Percutaneous infusion approach of parenteral nutrition |
| **1LZ35HRC6** | Percutaneous transcatheter interosseous approach of parenteral nutrition |
| **Feeding Tube** | |
| **1NF53BTQB** | Implantation of (gastric) valved tube using per orifice endoscopic approach with percutaneous incision |
| **1NF53BTTS** | Implantation of (gastric) tube using per orifice endoscopic approach with percutaneous incision |
| **1NF53DAQB** | Implantation of (gastric) valved tube using endoscopic (laparoscopic) approach |
| **1NF53DATS** | Implantation of (gastric) tube using endoscopic (laparoscopic) approach |
| **1NF53HATS** | Implantation of (gastric) tube using percutaneous approach |
| **1NF53LAQB** | Implantation of (gastric) valved tube using open (laparotomy) approach |
| **1NF53LATS** | Implantation of (gastric) tube using open (laparotomy) approach |
| **1NK53BTTS** | Implantation of feeding tube [jejunal] using endoscopic per orifice approach with percutaneous incision |
| **1NK53CATS** | Implantation of feeding tube [jejunal] using per orifice approach [e.g. naso intestinal] |
| **1NK53DATS** | Implantation of feeding tube [jejunal] using endoscopic (laparoscopic) |
| **1NK53LAQB** | Implantation of valved tube using open approach |

| Selected Flagged Interventions List | |
|---|---|
| **1NK53LATS** | Implantation of feeding tube [jejunal] using open approach |
| **1NK53TGTS** | Implantation of feeding tube [jejunal] using open approach and formation of mucous fistula |
| **Paracentesis** | |
| **1OT52HATS** | Drainage, abdominal cavity using percutaneous (needle) approach and leaving drainage tube in situ |
| **1OT52HHD1** | Drainage, abdominal cavity using percutaneous transcatheter approach and anti infective irrigating solution |
| **1OT52HHD2** | Drainage, abdominal cavity using percutaneous transcatheter approach and salt irrigating solution |
| **1OT52HHD3** | Drainage, abdominal cavity using percutaneous transcatheter approach and other irrigating solution |

## Table 2

| Thrombolytic Therapy and Induction of Labour | |
|---|---|
| **Thrombolytic Therapy** | |
| **1ZZ35HA1C** | Pharmacotherapy, total body, intravenous, using thrombolytic agent |
| **1^^35HA1C** | Pharmacotherapy, local, using thrombolytic agent |
| **Induction of Labour** | |
| **5AC30^^** | Induction of labour |

# Appendix E

| Post-Procedural Disorders Codes | |
|---|---|
| **E890** | Postprocedural hypothyroidism |
| **E891** | Postprocedural hypoinsulinaemia |
| **E892** | Postprocedural hypoparathyroidism |
| **E893** | Postprocedural hypopituitarism |
| **E894** | Postprocedural ovarian failure |
| **E895** | Postprocedural testicular hypofunction |
| **E896** | Postprocedural adrenocortical (-medullary) hypofunction |
| **E898** | Other postprocedural endocrine and metabolic disorders |
| **E899** | Postprocedural endocrine and metabolic disorder, unspecified |
| **G971** | Other reaction to spinal and lumbar puncture |
| **G972** | Intracranial hypotension following ventricular shunting |
| **G978** | Other postprocedural disorders of nervous system |
| **G979** | Postprocedural disorder of nervous system, unspecified |
| **H590** | Keratopathy (bullous aphakic) following cataract surgery |
| **H5980** | Cataract (lens) fragments in eye following cataract surgery |
| **H5981** | Cystoid macular oedema following cataract surgery |
| **H5988** | Other postprocedural disorders of eye and adnexa |
| **H599** | Postprocedural disorder of eye and adnexa, unspecified |
| **H950** | Recurrent cholesteatoma of postmastoidectomy cavity |
| **H951** | Other disorders following mastoidectomy |
| **H958** | Other postprocedural disorders of ear and mastoid process |
| **H959** | Postprocedural disorder of ear and mastoid process, unspecified |
| **I970** | Postcardiotomy syndrome |
| **I971** | Other functional disturbances following cardiac surgery |
| **I972** | Postmastectomy lymphoedema syndrome |
| **I978** | Other postprocedural disorders of circulatory system, not elsewhere classified |
| **I979** | Postprocedural disorder of circulatory system, unspecified |
| **J9500** | Haemorrhage from tracheostomy stoma |
| **J9501** | Infection of tracheostomy stoma |
| **J9502** | Malfunction of tracheostomy stoma |
| **J9503** | Tracheo-esophageal fistula following tracheostomy |
| **J9508** | Other tracheostomy complication |
| **J951** | Acute pulmonary insufficiency following thoracic surgery |
| **J952** | Acute pulmonary insufficiency following nonthoracic surgery |
| **J953** | Chronic pulmonary insufficiency following surgery |
| **J954** | Mendelson’s syndrome |
| **J955** | Postprocedural subglottic stenosis |
| **J9580** | Postprocedural pneumothorax |
| **J9581** | Transfusion related acute lung injury (TRALI) |
| **J9588** | Other postprocedural respiratory disorders |
| **J959** | Postprocedural respiratory disorder, unspecified |
| **K910** | Vomiting following gastrointestinal surgery |

| Post-Procedural Disorders Codes | |
|---|---|
| **K911** | Postgastric surgery syndromes |
| **K912** | Postsurgical malabsorption, not elsewhere classified |
| **K913** | Postoperative intestinal obstruction |
| **K9140** | Haemorrhage from colostomy stoma |
| **K9141** | Infection of colostomy stoma |
| **K9142** | Malfunction of colostomy stoma, not elsewhere classified |
| **K9143** | Haemorrhage from enterostomy stoma |
| **K9144** | Infection of enterostomy stoma |
| **K9145** | Enterostomy malfunction, not elsewhere classified |
| **K915** | Postcholecystectomy syndrome |
| **K9160** | Haemorrhage from gastrostomy stoma |
| **K9161** | Infection of gastrostomy stoma |
| **K9162** | Gastrostomy malfunction, not elsewhere classified |
| **K918** | Other postprocedural disorders of digestive system, not elsewhere classified |
| **K919** | Postprocedural disorder of digestive system, unspecified |
| **M960** | Pseudarthrosis after fusion or arthrodesis |
| **M961** | Postlaminectomy syndrome, not elsewhere classified |
| **M962** | Postradiation kyphosis |
| **M963** | Postlaminectomy kyphosis |
| **M964** | Postsurgical lordosis |
| **M965** | Postradiation scoliosis |
| **M966** | Fracture of bone following insertion of orthopaedic implant, joint prosthesis, or bone plate |
| **M968** | Other postprocedural musculoskeletal disorders |
| **M969** | Postprocedural musculoskeletal disorder, unspecified |
| **N990** | Postprocedural renal failure |
| **N991** | Postprocedural urethral stricture |
| **N992** | Postoperative adhesions of vagina |
| **N993** | Prolapse of vaginal vault after hysterectomy |
| **N994** | Postprocedural pelvic peritoneal adhesions |
| **N9950** | Haemorrhage from external stoma of urinary tract |
| **N9951** | Infection of external stoma of urinary tract |
| **N9952** | Other malfunction of external stoma of urinary tract, NEC |
| **N998** | Other postprocedural disorders of genitourinary system |
| **N999** | Postprocedural disorder of genitourinary system, unspecified |

# References


1. Canadian Institute for Health Information, *DAD Abstracting Manual*, last modified September 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=RC_57_E&cw_topic=57>.

2. Canadian Institute for Health Information, *Discharge Abstract Database Data Quality Re-Abstraction Study: Combined Findings for Fiscal Years 1999/2000 and 2000/2001*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

3. Canadian Institute for Health Information, *Discharge Abstract Database (DAD) CMG/Plx Data Quality Re-Abstraction Study*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

4. Canadian Institute for Health Information, *Data Quality of the Discharge Abstract Database Following the First-Year Implementation of ICD-10-CA/CCI*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

5. Canadian Institute for Health Information, *Re-Abstraction Study of the Ontario Case-Costing Facilities for 2002–2003 and 2003–2004*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

6. Canadian Institute for Health Information, *CIHI Data Quality Study of the 2005–2006 Discharge Abstract Database*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

7. Canadian Institute for Health Information, *CIHI Data Quality Study of the 2006–2007 Discharge Abstract Database*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

8. Canadian Institute for Health Information, *CIHI Data Quality Study of the 2007–2008 Discharge Abstract Database*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1107_E&cw_topic=1107>.

9. Canadian Institute for Health Information, *Canadian Coding Standards for ICD-10-CA and CCI*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=RC_382_E&cw_topic=382>.

10. Canadian Institute for Health Information, *DAD Abstracting Manual (Core Section)*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=RC_57_E&cw_topic=57>.

11. Canadian Institute for Health Information, *DAD Abstracting Manual (Provincial/Territorial Variations)*, last modified September 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=RC_57_E&cw_topic=57>.

12. Canadian Institute for Health Information, *Quality Assurance Processes Applied to the Discharge Abstract and Hospital Morbidity Databases*, last modified January 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=quality_e>.

13. Canadian Institute for Health Information, *CMG+ Directory*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=casemix_e>.

14. Canadian Institute for Health Information, *DAD Resource Intensity Weights and Expected Length of Stay*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=RC_68_E&cw_topic=68>.

15. Canadian Institute for Health Information, *CIHI Data Quality Framework*, last modified January 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=quality_e>.

16. Canadian Institute for Health Information, *Coding Variations in the Discharge Abstract Database Data*, last modified August 2010, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_1002_E>.

17. Canadian Institute for Health Information, *Coping With the Introduction of ICD-10-CA and CCI: Impact of New Classification Systems on the Assignment of Case Mix Groups/Day Procedure Groups*, last modified April 2004, accessed September 2010, from <http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=casemix_ICDimpact_e>.

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