



Canadian MIS
Database—Hospital
Financial Performance
Indicators, 1999–2000
to 2008–2009

Methodological Notes

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Canadian Institute
for Health Information

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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.

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Introduction

The Canadian MIS Database (CMDB) contains financial and statistical information from hospitals and limited data from health regions across Canada. The data is collected according to a standardized framework for collecting and reporting financial and statistical data on the day-to-day operations of health service organizations. The framework is known as the *Standards for Management Information Systems in Canadian Health Service Organizations* (MIS Standards).

Currently, most information in the CMDB is specific to hospitals. A hospital is broadly defined as an institution where patients are accommodated on the basis of medical need and are provided with continuing medical care and supporting diagnostic and therapeutic services and which is licensed or approved as a hospital by a provincial government or is operated by the government of Canada. This definition includes psychiatric hospitals. In provinces and territories where hospitals are part of a regional health authority, regional data is also submitted to the CMDB, providing a complete picture of health services for that region. Statistical data is also collected and includes such data elements as the number of earned hours, client visits and beds staffed and in operation.

In order to ensure the integrity and viability of its databases, the Canadian Institute for Health Information (CIHI) developed a data quality framework to provide all databases and registries with a common comprehensive strategy for evaluating and assessing data quality and identifying priorities for continuous quality improvement. The following information was extracted from the CMDB data quality evaluation and is designed to help external users of the data assess its utility for their specific analysis. Additional information is available by contacting the CMDB section by phone at 613-241-7860, by fax at 613-241-8120 or by email at cmdb@cihi.ca.

Concepts

Mandate/Purpose

The CMDB contains records of financial and statistical information based on a standardized chart of accounts, general accounting policies and procedures, workload measurement systems, service activity statistics and indicators that support management decision-making in health service organizations.

The information in the CMDB can be used to cost the activities of health service organizations and forms the basis of management reporting, including annual general purpose financial statements, financial ratio analysis and operational budgeting. CMDB data has also informed costing models and methodologies and has been used in several financial performance benchmarking/scorecard reports across Canada.

Population

The population of interest (the population for which information is wanted) for the CMDB is all health service organizations in all Canadian jurisdictions. The population of reference—that is, the population which CMDB analysis focuses on—is hospitals in all jurisdictions that provide financial and statistical data to the CMDB.

Presently, all jurisdictions in Canada provide data to the CMDB with the exception of Nunavut. Submitting jurisdictions provide data for virtually all public hospitals under their purview.

The CMDB has historically received submissions from some private hospitals in Canada. Certain specialized private hospitals are not included in the database.

Variables and Concepts

The variables and concepts used to capture information in the CMDB are based on the MIS Standards. The MIS Standards are a comprehensive set of standards used to report management information that is ultimately submitted to the CMDB and is related to staffing, costs, workload and provision of services. The MIS Standards are designed to apply across the continuum of services, ranging from hospitals to community-based health service organizations, providing a framework to generate, maintain and analyze information required for effective decision-making and accountability.

The main features of the MIS Standards are

- A chart of accounts—the coding structure for the data that is applicable across different service delivery settings;
- Accounting principles and procedures—rules that ensure consistency with generally accepted accounting principles contained in the handbook of the Canadian Institute of Chartered Accountants;
- Workload measurement systems—a time tracking management system that provides a standardized method of measuring output; and
- Indicators—standardized ratios that demonstrate how the data can be used for planning, control and performance measurement.

Hospitals and health regions are expected to submit MIS Standards–compliant financial and statistical data relating to hospital services to the CMDB. Health regions also submit data for other health service activities outside of hospitals. MIS-submitting jurisdictions generally provide their data to the CMDB through their respective ministries of health, which then submit the data to the CMDB.

The CMDB contains information about the health regions and hospitals that supply data. The information includes unique organization identifiers and the organization's name, address, size and ownership. The CMDB also contains data relating to the financial position (balance sheet) and operations (income statement) of reporting organizations. Financial and statistical data is recorded by functional centre and by type of expense and revenue source. The functional centres correspond to the core activities carried out in the health service organization and include administrative and support services, ambulatory care services, community and social services, diagnostic and therapeutic services, education, nursing inpatient and resident services, and research.

Revenues by source and expenses by type are also recorded in the CMDB. Broad groups of expenses include compensation, supplies and sundries, equipment, contracted-out services and buildings and grounds expenses. The CMDB also records statistical information, such as the number of hours worked by staff, the number of inpatient days reported in nursing wards and workload information that is used to measure the volume of activity provided by employees of a specific functional centre in terms of a standardized unit of time.

A list of definitions of commonly used terms in the MIS Standards can be found in Appendix A of this document.

Major Data Limitations

In 1995, CIHI began collecting financial and statistical data in the CMDB (previously known as the Annual Hospital Survey) for fiscal year 1995–1996. Prior to this time, a similar database was maintained by Statistics Canada. Historical data prior to 1995–1996 is not available in the CMDB but can be obtained from Statistics Canada.

For both 1995–1996 and 1996–1997, there was a very low response rate for data submissions. As a result, data for these years is incomplete. Subsequent fiscal years achieved response rates exceeding 90% of all Canadian hospitals. However, not all reporting hospitals provided a complete data set.

Other limitations that affect the comparability of reported data include the extent to which organizations apply the standards as they are described in the MIS Standards and the extent to which generally accepted accounting principles are applied to the data before it is reported to CIHI. For example, Quebec has not implemented the MIS Standards; hence its data is not submitted in the same format as that of other provinces, resulting in limited comparability of Quebec's data with data submitted from other jurisdictions.

Major Data Limitations and Estimated Impact or Resolution

As a result of the low response rates for 1995–1996 and 1996–1997, data for these years is considered to be incomplete. Users should be particularly cautious when interpreting results from these years or when comparing data from these years to other years.

From 1997–1998 onwards, the database had higher response rates, but not all organizations submitted a complete data set. For example, many organizations chose not to submit operating statistics. While the comprehensiveness of CMDB submissions improved over time, data for 1997–1998 to 2008–2009 should be viewed with care. Users are cautioned when interpreting results from analysis of this data.

Many of the problems caused by limited reporting are overcome through statistical analysis of indicator results. Once this analysis has been completed, organizations with incomplete data can be eliminated from further analysis for specific indicators. As well, organizations with indicator values that fall outside of predetermined upper or lower limits can be flagged for further analysis or eliminated from results prior to comparative analysis.

Another issue the CMDB is faced with is the limited extent to which some organizations follow the requirements of the MIS Standards. For example, health regions within a regionalized province or territory are not required by the province or territory to allocate regional administrative expenses and expenses for shared services to all of the facilities within the region. Where necessary, regional, centralized and shared services expenses were allocated on a systematic basis by CIHI before data was used to calculate performance indicators so as to ensure compliance with the MIS Standards.

The province of Quebec has not implemented the MIS Standards for hospital reporting. Historically, data reported to CIHI from Quebec was mapped from Quebec's provincial account codes to the MIS Standards chart of accounts. In cases where a mapping relationship could not be established, codes were mapped to a holding account. Holding accounts allow Quebec trial balance data to balance in the CMDB.

Changes to Quebec's provincial reporting standards necessitated a thorough review of this mapping. As a result, Quebec's data from 2006–2007 onwards is not included in this report.

Coverage

Canadian MIS Database Frame

"Frame" refers to a list of entities that should supply data to a database. The CMDB contains financial and statistical data from hospitals across the country. CIHI maintains a list of Canadian hospitals reporting to the CMDB, referred to as the CMDB list of hospitals. The CMDB does not yet request data from long-term care facilities, community health centres or home care agencies. Most regionalized provinces, however, do submit non-hospital data.

Frame Maintenance

Information in the CMDB frame is reviewed internally on a yearly basis to determine changes in the submitting organizations from one year to the next that may impact analysis. These include changes to hospital bed counts, hospital closures, mergers and amalgamations. Confirmation from jurisdictions is sought when the review yields contradictory or questionable results.

Collection and Non-Response

Data Collection

Financial and statistical data from hospitals is collected with the cooperation of provincial and territorial governments to ensure the submission of MIS Standards–compliant hospital or regional data. Submissions related to the most recently ended fiscal year are generally provided in text format to CIHI by the end of October of that year. Once the data is submitted, it is tested for compliance with the MIS Standards through an elaborate data quality monitoring methodology.

Principles of the CMDB Data Quality Monitoring Methodology

The data quality monitoring methodology is applied to hospital data and asks five questions of each provincial and territorial CMDB submission:

1. Where required, has the province or territory signed off on a table to map provincial or territorial primary and secondary accounts to the CMDB chart of accounts?
2. Was the submission received by the submission due date?
3. Does the submission use the CMDB minimum chart of accounts?
4. Does the submission include the reporting of minimum statistics required in the functional centre framework?
5. Does the financial and statistical data appear reasonable?

The answer to each question is quantified in a transparent and objective way on a scale from 0 to 100. With few exceptions, each question is asked of only that portion of the CMDB that passed previous evaluations in the methodology. For example, data quality is assessed for only valid primaries with the minimum statistics.

The overall data quality monitoring assessment score is based on multiplying the scores from each question. By doing so, one can interpret the overall score (for on-time submissions with mapping table sign-off) as an estimate of the percentage of the CMDB resources that are in valid primary and secondary accounts with minimum statistics that pass a basic test of reasonableness.

In addition to assessing and scoring each submission, the methodology produces detailed diagnostic reports that can and should be used to

- Illustrate all examples of non-compliant reporting;
- Identify issues with the provincial or territorial mapping tables that may be corrected in the future;

- Identify individual providers that may require additional focus and support to improve MIS reporting; and
- Identify issues that may be common across providers in a given jurisdiction and help prioritize future MIS reporting initiatives to improve future CMDB submissions.

CIHI endorses the use of this methodology as a means to gauge the general effectiveness of MIS reporting to the CMDB but acknowledges that, within the broad scope of MIS, there are many aspects and measures of data quality, including some that are not addressed by this methodology. CIHI will continue to explore ways to expand the data quality assessment tools so that other aspects may be addressed in the future.

Response

Response rates of data submissions to the CMDB steadily increased since 1995, when the database was transferred from Statistics Canada. In 2008–2009, 100% of all Canadian hospitals in submitting jurisdictions reported data to the CMDB. These hospitals represent 100% of all hospital beds in these jurisdictions. In contrast, only 51% of hospitals representing 56% of beds responded to the call for 1995–1996 data.

Major Changes

There have been no major changes to the data collection tools, standards or data providers (provinces and territories) since the inception of the CMDB in 1995.

Revision History

The 2008–2009 data used in this publication was current as of June 11, 2010.

Major Revisions

Four historical revisions were implemented in the data in this report:

- Financial performance indicators related to the Winnipeg Regional Health Authority in Manitoba were recalculated to properly reflect its CMDB reporting practices.
- The total margin indicator in Saskatchewan was restated for all years in light of that province's use of fund-type accounting. Only operating funds are used in the calculation of this indicator for Saskatchewan.
- The average age of equipment indicator for all organizations in 2007–2008 and 2008–2009 was recalculated to more accurately reflect the most recent technical specifications of this indicator.
- All weighted cases and indicators using weighted cases were restated using the most recent grouping methodology available at the time of publication (CMG+ 2010).

All related trim points, provincial averages and national averages were also recalculated as a result of these revisions.

Comparability

Geography

Facility postal codes are collected from all respondents. Information about hospitals can be compared by postal code if the postal code contains more than five hospitals. Generally, the smallest geographic area reportable from the CMDB is the health region. Regions in provinces other than Ontario are defined as health regions. In Ontario, grouping by local health integration network (LHIN) was used to approximate regions on a go-forward basis as of 2003–2004.

Information on Facilities

Facility-level information from the CMDB can be linked to clinical information from the Discharge Abstract Database (DAD) based on the facility codes that are unique to each facility. Even though hospitals may report to the DAD using multiple facility codes, these facility codes can be mapped to only one hospital reporting to the CMDB.

Time Period

All provinces and territories submit data on a fiscal year that covers April 1 through March 31 of the following year.

Information on Individuals

Information in the CMDB is collected at the organization level and does not contain personal health information. In certain circumstances, it may be possible to derive certain other information about individuals from the CMDB; however, CMDB staff developed data quality procedures to ensure that this information is properly suppressed or aggregated when used in any CMDB product.

Financial Performance Indicator Methodology

General Methods

The financial performance indicators used in this report were selected from a broader list of more than 40 measures drawn from research and literature. In 2001, an expert panel helped CIHI review and identify the most relevant indicators. Afterwards, CIHI's MIS Technical Working Group (a group of provincial and territorial MIS coordinators) was asked to provide comments on the MIS definitions of the indicators. CIHI incorporated the feedback provided by this group in the development of the indicators. This group has also been consulted about modifications to these indicators since 2001.

The following is intended as a general overview of the methods applied to calculate the financial performance indicators in this report. More detailed information can be obtained by contacting the Canadian MIS Database section by phone at 613-241-7860, by fax at 613-241-8120 or by email at cmdb@cihi.ca.

Unit of Analysis

Hospitals in Canada operate under a variety of legal organizations. In some provinces hospitals are included under the legal umbrella of a health authority; in other provinces the hospital itself is the legal entity.

Indicators calculated using the legal entity as the unit of analysis are total margin, current ratio, administrative support expense as a percentage of total expense, information systems expense as a percentage of total expense and average age of equipment.

Indicators that are calculated using individual hospitals, regardless of the legal entity, are unit-producing personnel (UPP) worked hours for patient care functional centres as a percentage of total worked hours, cost per weighted case, nursing inpatient services UPP worked hours per weighted case, diagnostic services UPP worked hours per weighted case, clinical laboratory UPP worked hours per weighted case and pharmacy UPP worked hours per weighted case.

2008–2009 Indicator Methodology

1. **Total margin:** total margin is an indicator measuring financial viability. It is strongly influenced by positive financial outcomes on a yearly basis. A positive value indicates that the legal entity had revenues in excess of expenses (a surplus), while a negative value indicates that the legal entity had expenses in excess of revenues (a deficit).

$$\frac{\text{Total Revenue} - \text{Total Expenses}}{\text{Revenue, Excluding Internal Recoveries}}$$

MIS account codes used in the numerator include all fund types, primary accounts 7* and 8* and secondary financial accounts 1* and 3* to 9*.

MIS account codes used in the denominator include all fund types, primary accounts 7* and 8* and secondary financial accounts 1*, excluding 1 21 and 1 22.

2. **Current ratio:** current ratio is an indicator of a hospital's liquidity that measures how current assets and liabilities are managed. The inability to meet short-term obligations can hinder the delivery of quality patient care services. A current ratio value less than one indicates that the legal entity did not have sufficient short-term assets to meet its short-term debts.

$$\frac{\text{Current Assets} + \text{Debit Current Liability Balances,} \\ \text{Excluding Current Portion of Deferred Contributions}}{\text{Current Liabilities, Excluding Current Portion of Deferred Contributions} + \\ \text{Credit Current Assets, Except Current Asset Contra Accounts}}$$

MIS account codes used in the numerator include primary accounts 1* plus debit balances in primary accounts 4*, excluding 4* 8.

MIS account codes used in the denominator include primary accounts 4*, excluding 4* 8, plus credit balances in primary accounts 1*, except 1* 4.

Note: Data is adjusted for amounts not re-allocated on the trial balance to be consistent with financial statement reporting (for example, only a net credit position across current cash accounts would be added to the denominator).

This indicator includes deferred revenue (MIS primary account 4* 6 Unearned Contributions) but excludes the current portion of deferred capital contributions (MIS primary account 4* 8). The current portion of deferred capital contributions represents the next year's amortization of grants received for capital purposes. Since the next year's amortization expenses of assets that directly relate to the deferred capital contributions are not included as a current asset, the inclusion of the current portion of deferred capital contributions is unwarranted.

3. **Administrative services expense as a percentage of total expense:** administrative expense is a measure of a hospital's efficiency. It represents the percentage of the legal entity's total expenses that were spent in administrative departments, such as finance and human resources.

$$\frac{\text{General Administration, Finance, Human Resources and Communication Expenses, Net of Recoveries}}{\text{Total Expenses, Net of Recoveries}}$$

MIS account codes used in the numerator include primary accounts 7* 1 10, 7* 1 15, 7* 1 20 and 7* 1 30 and secondary financial accounts 1 2* and 3* to 9*.

MIS account codes used in the denominator include primary accounts 7* and 8* and secondary financial accounts 1 2* and 3* to 9*.

4. **Information systems expense as a percentage of total expense:** this is an indicator that examines a legal entity's expenditures on information services relative to its total expenditures.

$$\frac{\text{Systems Support, Net of Recoveries}}{\text{Total Expenses, Net of Recoveries}}$$

MIS account codes used in the numerator include primary accounts 7* 1 25 and secondary financial accounts 1 2* and 3* to 9*.

MIS account codes used in the denominator include primary accounts 7* and 8* and secondary financial accounts 1 2* and 3* to 9*.

5. **Unit-producing personnel (UPP) worked hours for patient care functional centres as a percent of total worked hours:** this indicator measures the percentage of the total worked hours of a hospital's patient care functional centres (excluding medical personnel) that were worked by unit-producing personnel (that is, those personnel whose primary function is to carry out activities that directly contribute to the fulfillment of the mandate of the functional centre in which they work).

$$\frac{\text{UPP Inpatient Nursing, Ambulatory Care and Diagnostic and Therapeutic Worked and Purchased Hours}}{\text{Total Worked Hours, Excluding Medical Compensation Hours}}$$

MIS account codes used in the numerator include primary accounts 7* 2, 7* 3 and 7* 4 and secondary statistical accounts 3 50 10 and 3 50 90.

MIS account codes used in the denominator include all fund types for primary accounts 7* and 8*, excluding primary account 7* 5, and secondary statistical accounts 3 10 10, 3 10 90, 3 50 10 and 3 50 90.

6. **Nursing inpatient services unit-producing personnel (UPP) worked hours per weighted case:** this indicator measures the number of worked hours required from unit-producing personnel in hospital nursing units to produce a weighted case.

$$\frac{\text{UPP Inpatient Nursing Worked and Purchased Hours} \\ (\text{Excluding Long-Term/Chronic Care})}{\text{Total Inpatient Weighted Cases}}$$

MIS account codes used in the numerator include primary accounts 7* 2 (excluding 71 2 95) and secondary statistical accounts 3 50 10 and 3 50 90.

The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

7. **Diagnostic services unit-producing personnel (UPP) worked hours per weighted case:** this indicator measures the number of worked hours required from unit-producing personnel working in hospital diagnostic units to produce a weighted case.

$$\frac{\text{UPP Diagnostic Services Worked and Purchased Hours} \\ (\text{Adjusted for Inpatient Activity})}{\text{Total Inpatient Weighted Cases}}$$

MIS account codes used in the numerator include primary accounts 71 4 05, 71 4 15, 71 4 25 and 71 4 30 and secondary statistical accounts 3 50 10 and 3 50 90. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics as outlined in the cost per weighted case methodology below.

The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

8. **Clinical laboratory unit-producing personnel (UPP) worked hours per weighted case:** this indicator measures the number of worked hours required from unit-producing personnel working in hospital laboratory units to produce a weighted case.

$$\frac{\text{UPP Laboratory Services Worked and Purchased Hours} \\ (\text{Adjusted for Inpatient Activity})}{\text{Total Inpatient Weighted Cases}}$$

MIS account codes used in the numerator include primary accounts 71 4 10 and secondary statistical accounts 3 50 10 and 3 50 90. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics as outlined in the cost per weighted case methodology below.

The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

9. **Pharmacy unit-producing personnel (UPP) worked hours per weighted case:** this indicator measures the number of worked hours required from unit-producing personnel working in hospital pharmacy functional centres to produce a weighted case.

$$\frac{\text{UPP Pharmacy Worked and Purchased Hours} \\ (\text{Adjusted for Inpatient Activity})}{\text{Total Inpatient Weighted Cases}}$$

MIS account codes used in the numerator include primary accounts 71 4 40 and secondary statistical accounts 3 50 10 and 3 50 90. The numerator is adjusted for the proportion of inpatient activity determined by workload/activity statistics as outlined in the cost per weighted case methodology below.

The denominator includes total acute inpatient weighted cases (obtained from the DAD), excluding day procedures.

10. **Average age of equipment:** this is a measure of capital that examines the relationship between yearly equipment amortization expenses of a legal entity and its total accumulated amortization for equipment assets.

$$\frac{\text{Accumulated Equipment Amortization (Distributed/Undistributed)}}{\text{Equipment Amortization Expense (Distributed/Undistributed)}}$$

MIS account codes used in the numerator include primary accounts 3* 8 53 and 3* 8 63.

MIS account codes used in the denominator include primary accounts 7* and 8* and secondary financial accounts 9 50 80 and 7 50.

11. **Cost per weighted case:** cost per weighted case (CPWC) is an indicator that measures the relative cost-efficiency of a hospital's ability to provide acute inpatient care. This indicator compares a hospital's total acute inpatient care expenses to the number of acute inpatient weighted cases related to the inpatients that it provided care for. The result is the organization's full cost of treating the average acute inpatient.

CPWC can differ due to greater intensity of relative resource use or higher average cost per weighted case. As a result, it can be a useful comparative measure. For example, it can be used to compare the relative cost-efficiency of similar hospitals or health regions.

CPWC can also be used in conjunction with Resource Intensity Weight (RIW) to estimate the cost of an acute inpatient hospital stay for a specific Case Mix Group (CMG) or patient.

When interpreting the CPWC indicator, users should take note of several caveats. Caution is recommended when attempting to compare facilities across jurisdictions, as labour costs, a relatively large component of the CPWC numerator, can vary greatly between jurisdictions. Note also that costs tend to vary by institution type. A large teaching hospital, for example, may be more costly than a smaller facility for an average acute inpatient stay.

Generally, CPWC is not recommended for trending. As the CMG methodology is not consistent across years, the CPWC denominator is not directly comparable in a time series.

The following outlines CIHI's methodology for calculating the CPWC. The financial data used is from the 2008–2009 CMDB. Weighted cases are obtained from the DAD. They are grouped using CMG+ 2010, CIHI's redeveloped case mix grouping methodology. Day procedure cases are excluded. The CPWC calculation is performed for facilities that reported both financial and clinical data.

Cost per Weighted Case Methodology

Determining Full Costs

The goal is to determine the full inpatient cost for each individual hospital that reports data to the CMDB. The following steps are used:

1. Make the following cost adjustments to the hospital's submitted functional and accounting centre data.

Secondary Financial Account	Description	Action
1 20 1 21 1 22	Recoveries From External Sources Recoveries Within Legal Entity Recoveries—Interdepartmental	Net against expenses
3 10 85	Compensation—Management and Operational Support Personnel—Other Termination Benefits	Exclude
3 50 85	Compensation—Unit-Producing Personnel— Other Termination Benefits	
3 90	Compensation—Medical Personnel	Exclude
9 50 20	Amortization—Undistributed Land Improvements ⁱ	Exclude
9 50 40	Amortization—Undistributed Buildings ⁱ	Exclude
9 50 60	Amortization—Undistributed Building Service Equipment ⁱ	Exclude
9 55	Interest on Long-Term Liabilities	Exclude

i. Undistributed amortization is sometimes incorrectly reported rolled up as secondary financial account 9 50 00, so the portion applicable to land improvements, buildings and building service equipment cannot be ascertained. Nationally, CIHI has determined that 70% of the reported undistributed amortization applies to these types of assets, so this percentage is excluded and thus only the costs associated with major equipment amortization—undistributed will remain for allocation purposes.

2. Take the functional centres reported for each individual organization, roll them up to level 3 and begin establishing three costs pools.

Account Number	Functional Centre Description
Inpatient Cost Pool	
71 2 05	Nursing Inpatient/Resident Administration ⁱⁱ
71 2 07	Nursing Inpatient/Resident Medical Resources ⁱⁱ
71 2 10	Medical Nursing Unit
71 2 20	Surgical Nursing Unit
71 2 30	Combined Medical/Surgical Nursing Unit
71 2 40	Intensive Care Nursing Unit
71 2 50	Obstetrics Nursing Unit
71 2 70	Pediatric Nursing Unit
71 2 75	Psychiatric/Addiction Nursing Inpatient Unit
71 2 76	Psychiatric Long-Term Care Nursing Resident Unit
71 2 80	Physical Rehabilitation Nursing Unit
71 2 90	Palliative Nursing Inpatient/Resident Unit
71 2 96	Combined Services—Surgical Inpatient
Client Cost Pool	
71 3	Ambulatory Care Services
Residual Cost Pool	
71 2 95	Long-Term Care Resident Unit
71 2 97	Combined Services—Long-Term Care
71 5	Community and Social Services
71 7	Research
71 8	Education (excluding 71 8 40 In-Service Education)
71 9	Undistributed

3. Set costs aside for the following functional centres, as these will be allocated to the various cost pools later.

Account Number	Functional Centre Description
71 1	Administrative and Support Services
71 2 60	Operating Room (OR)
71 2 65	Post-Anesthetic Recovery Room (PARR)
71 4	Diagnostic and Therapeutic Services
71 8 40	In-Service Education
81 9	Accounting Centres
	Regional Shared/Centralized Services

ii. These functional centres should have been cleared prior to the hospital's CMDB data submission. If they were not cleared, the methodology will treat them in the same manner as other inpatient functional centres.

4. Allocate costs for the functional centres to the applicable inpatient and client cost pools based on the methodologies noted in the table below. These are listed in order of preference.

Rationale for the Adjustment	Account	Functional Centre	Allocation Base
Costs for inpatient and client surgical services reported in the OR need to be allocated to the inpatient and client cost pools	71 2 60	Operating Room	1. Service-recipient workload units 2. Surgical visits—inpatient to client ratio 3:1 ⁱⁱⁱ 3. If workload units or surgical visits are not reported, all costs are assigned to the inpatient cost pool
Costs for inpatient and client surgical services reported in the PARR need to be allocated to the inpatient and client cost pools	71 2 65	Post-Anesthetic Recovery Room	1. Service-recipient workload units 2. Surgical visits—inpatient to client ratio 3:1 ⁱⁱⁱ 3. If workload units or surgical visits are not reported, all costs are assigned to the inpatient cost pool
Costs for client visits—face-to-face (or referred-in visits—face-to-face) reported in an inpatient/resident unit need to be moved to the ambulatory care cost pool	71 2 10 71 2 20 71 2 30 71 2 40 71 2 50 71 2 70 71 2 75 71 2 76 71 2 80 71 2 90 71 2 96	Medical Nursing Unit Surgical Nursing Unit Combined Medical/ Surgical Nursing Unit Intensive Care Nursing Unit Obstetrics Nursing Unit Pediatric Nursing Unit Psychiatric/Addiction Nursing Inpatient Unit Psychiatric Long-Term Care Resident Unit Physical Rehabilitation Nursing Unit Palliative Nursing Inpatient/Resident Unit Combined Services— Surgical Inpatient	1. Service-recipient workload units 2. National average cost per client visit ^{iv} for each type of hospital ^v
Costs for inpatient days reported in emergency need to be moved to the inpatient cost pool	71 3 10	Emergency	1. Service-recipient workload units 2. Average inpatient cost per day determined using 71 2 10 Medical Nursing Unit, 71 2 20 Surgical Nursing Unit, 71 2 30 Combined Medical/Surgical Nursing Unit, 71 2 70 Pediatric Nursing Unit, 71 2 75 Psychiatric/Addiction Nursing Unit and 71 2 90 Palliative Nursing Inpatient/Resident Unit 3. If no inpatient days are reported, then 100% of costs are allocated to the client cost pool
Costs for inpatient visits—face-to-face reported in emergency need to be moved to the inpatient cost pool	71 3 10 after the costs for inpatient days are removed	Emergency	1. Service-recipient workload units ^{vi} 2. Visits—face-to-face 3. If no inpatient visits are reported, then 100% of costs are allocated to the client cost pool
Costs for inpatient visits—face-to-face reported under ambulatory care services other than emergency need to be moved to the inpatient cost pool	71 3 40 71 3 50 71 3 55	Specialty Day/Night Care Specialty Clinics Private Clinics	1. Service-recipient workload units 2. Visits—face-to-face

iii. If there are 100 inpatient surgical visits and 50 client surgical visits, the total weighted surgical visits would be 300 (100 x a weighting of 3) for inpatients plus 50 for clients = 350.

iv. The national cost per visit is determined using data from those hospitals that report client visits and workload in any inpatient/resident functional centres. Using workload, the percentage of each functional centre's costs applicable to clients is ascertained and this figure is divided by the functional centre's visits.

v. Small (fewer than 50 beds), non-teaching and teaching.

vi. Allocating costs using workload includes the costs of both inpatient days and inpatient visits—face-to-face.

5. Allocate costs for the following functional centres to the inpatient and client cost pools based on the methodologies noted in the table below. These are listed in order of preference.

Account	Functional Centre	Allocation Base
71 4 10 71 4 20 71 4 35 71 4 65	Clinical Laboratory Radiation Oncology Respiratory Services Rehabilitation Engineering	1. Service-recipient workload units 2. Procedures 3. National workload average by functional centre and type of hospital
71 4 15 ^{vii} 71 4 25 71 4 30	Diagnostic Imaging Electrodiagnostic Laboratories Non-Invasive Cardiology and Vascular Laboratories	1. Service-recipient workload units 2. Exams 3. National workload average by functional centre and type of hospital
71 4 40 71 4 45 71 4 50 ^{viii} 71 4 55 71 4 60 71 4 70 71 4 75 71 4 80 71 4 85 71 4 90	Pharmacy Clinical Nutrition Physiotherapy Occupational Therapy Audiology and Speech-Language Pathology Social Work Psychology Pastoral Care Recreation Child Life	1. Service-recipient workload units 2. Attendance days—face-to-face 3. National workload average by functional centre and type of hospital

6. Allocate the diagnostic and therapeutic costs assigned to the inpatient cost pool to each of the hospital's individual inpatient/resident nursing units based on its percentage of the total nursing inpatient/resident unit costs. This step ensures that diagnostic and therapeutic costs are associated with each inpatient functional centre.
7. Total the inpatient, client and residual cost pools.

^{vii}. In the 2006–2007 methodology, account 71 4 05 Diagnostic and Therapeutic Nursing is allocated based first on service-recipient workload and secondly using exams. The expected service activity statistic for this functional centre is visits; therefore, is it unlikely that exams would be reported.

^{viii}. Account 71 4 49 Rehabilitation Administration should have been cleared prior to the hospital's CMDB data submission. If it was not cleared, the methodology will treat it in the same manner as other therapeutic functional centres (such as 71 4 50).

8. If required, make these regional shared/centralized service cost adjustments.^{ix}

Rationale for the Adjustment	Functional Centre	Allocation Base
One or more regional services (such as finance, material management and clinical laboratory) are centralized and these services are provided to all health service organizations in the region (such as hospitals, home care and public health).	Applicable functional centres	Using the hospital and non-hospital information supplied to the CMDB by the provinces and territories, separate the regional shared/centralized service costs into hospital and non-hospital portions. Next allocate the hospital portion to each hospital in the region based on each hospital's percentage of the region's direct costs. Set the hospital's costs aside for later allocation.
One or more regional services (such as finance, material management and clinical laboratory) are centralized and these services are provided to only the hospitals in the region.	Applicable functional centres	Allocate to each hospital based on the hospital's percentage of the direct costs for all hospitals in the region. Set the hospital's costs aside for later allocation.

9. Allocate the hospital's share of regional shared/centralized diagnostic and therapeutic services to the inpatient and client cost pools based on their percentage of the total accumulated costs for each pool.^x

10. Allocate accounting centre costs^{xi} that were set aside earlier to

- All functional centres in the inpatient, client and residual cost pools; and
- Functional centres and costs that were set aside (that is, 71 1 Administrative and Support Services, 71 8 40 In-Service Education and the hospital's share of regional shared/centralized administrative and support expenses)

based on each functional centre's percentage of the total accumulated costs.

11. Allocate accumulated 71 1 Administrative and Support costs, including the hospital's share of regional shared/centralized administrative and support expenses that were set aside earlier, to

- All functional centres in the inpatient, client and residual cost pools; and
- 71 8 40 In-Service Education

based on each functional centre's percentage of the total accumulated costs.

^{ix.} If shared/centralized service allocations are not performed by the reporting health service organization before the data is submitted to the CMDB, cost adjustments are required so that some of these costs can be assigned to the inpatient cost pool.

^{x.} Once the inpatient portion of regional diagnostic and therapeutic services is determined, this portion is allocated to the functional centres within the inpatient cost pool.

^{xi.} Negative balances resulting from the netting of recoveries are not distributed, except in the case of accounting centres. Allocations for absorbing functional centres are therefore restricted to a minimum account value of zero.

12. Allocate accumulated 71 8 40 In-Service Education costs to
 - All functional centres in the inpatient and client cost pools;
 - 71 2 95 Long-Term Care Resident Unit in the residual cost pool; and
 - 71 2 97 Combined Services—Long-Term Care in the residual cost poolbased on their percentage of the total accumulated costs.
13. Move the 71 2 75 Psychiatric/Addiction Nursing Inpatient Unit's and the 71 2 76 Psychiatric Long-Term Care Nursing Resident Unit's total costs (that is, direct costs and allocations from diagnostic and therapeutic services, accounting centres, administration and support, and in-service education) to the residual cost pool for those hospitals that are reporting patient information data on psychiatric patients/residents to the DAD using an institution number that is unique for these inpatients.
14. Move the 71 2 80 Physical Rehabilitation Nursing Unit's total costs (that is, direct costs and allocations from diagnostic and therapeutic services, accounting centres, administration and support, and in-service education) to the residual cost pool for those hospitals that are reporting patient information data on physical rehabilitation patients to the National Rehabilitation Reporting System (NRS) or to the DAD using an institution number that is unique for these inpatients
15. Total the costs in the inpatient cost pool and use this figure to determine the cost per weighted case.

Determining Weighted Cases

1. Obtain the hospital's total acute, rehabilitation and mental health inpatient weighted cases from health records (that were calculated by CIHI using data from the DAD).
2. Remove the inpatient weighted cases for psychiatric inpatients for those hospitals that do not have matching calculated inpatients costs (that is, those that are reporting psychiatric inpatient data to the DAD using an institution number that is unique for psychiatric patients). Please note that this removal should be performed immediately after Step 13: Determining Full Costs.
3. Remove the inpatient weighted cases for rehabilitation inpatients for those hospitals that do not have matching calculated inpatients costs (that is, those that are reporting rehabilitation patient data to the NRS or are reporting rehabilitation patient data to the DAD using an institution number that is unique for rehabilitation patients). Please note that this removal should be performed immediately after Step 14: Determining Full Costs.

Calculating the Cost per Weighted Case

1. Match the inpatient cost and weighted case data for each hospital.
2. Calculate the cost per weighted case:

$$\text{Cost per Weighted Case} = \frac{\text{Total Inpatient Costs}}{\text{Total Weighted Cases}}$$

Performance Indicator Weighted Average Methodology

All of the indicators reported in *Canadian MIS Database—Hospital Financial Performance Indicators, 1999–2000 to 2008–2009* are weighted averages. Weighting is applied by calculating the indicator value based on the sum of all the numerators divided by the sum of all the denominators.

Provincial indicator values are calculated as the sum of all provincial organizations' numerators divided by the sum of all provincial organizations' denominators, excluding outliers. National indicator values are calculated as the sum of all organizations' numerators divided by the sum of all organizations' denominators, excluding outliers.

Suppression of Provincial Results

Provincial averages of hospital-specific indicators (worked hours and weighted cases indicators) are suppressed if, after the removal of outliers, they represent less than 75% of the total hospital expenses of the province.

Provincial averages of region-specific indicators (current ratio, total margin, administrative expenses, etc.) are suppressed if, after the removal of outliers, they represent less than 75% of the total regional expenses of the province.

National averages use all untrimmed results in Canada, regardless of the suppression of provincial results.

Methodology for Identifying Outliers

An outlier is defined as an indicator value that is greater than or less than a pre-determined range of acceptable indicator values. For this report, the range of acceptable values is

$$\begin{aligned} & \text{1st quartile (25th percentile) minus } 1.5 \times \text{IQR to 3rd quartile (75th percentile) plus} \\ & 1.5 \times \text{IQR} \end{aligned}$$

where IQR stands for the inter-quartile range.

Any indicator that falls outside this acceptable range is carefully reviewed. Unless there is a compelling reason for retaining the value, it is removed, or “trimmed,” from further analysis.

Trim Rules for National and Provincial Averages

For all provincial and national averages that are published throughout the report:

- For hospital-specific indicators (worked hours and weighted cases indicators), hospital values are trimmed if they are beyond the range of acceptable values.
- For regional-specific indicators (current ratio, total margin, administrative expenses, etc.), regional values (including the aggregate regional values in Ontario and Quebec) are trimmed if they are beyond the range of acceptable values.

Trim Rules for Regional Indicator Values

For all regional averages that will be published in the appendix:

- For hospital-specific indicators (worked hours and weighted cases indicators), hospital values are trimmed if they are beyond the range of acceptable values.
- For regional-specific indicators (current ratio, total margin, administrative expenses, etc.), regional values (including the aggregate regional values in Ontario and Quebec) are trimmed if they are beyond the range of acceptable values.

Decile Ranking of Regional Indicators

Regional decile ranking was determined by sorting the values for all regions in order within a given year and assigning rankings depending on the context of the indicator. For example, in the case of an indicator with results in ascending order, the lowest 10% (least favourable) of the regional values receives a decile rank of 1, the second 10% receives a decile ranking of 2 and so on to the highest 10% (most favourable), which receives a decile ranking of 10.

Appendix A—MIS Definitions

Administrative services—the functional centre framework section established to record expenses, statistics and revenues, if any, of functional centres that generally support administering the health service organization. They include administration, finance, human resources and communications.

Ambulatory care services—the functional centre framework section pertaining to specialized diagnostic, consultative, treatment and teaching services provided primarily for registered clients and their significant others. Access to these services is generally with a referral from a primary care practitioner or a specialist. These services are generally provided in a hospital setting.

Excludes:

- Services provided to ambulatory care patients by personnel who are accountable to and charged to nursing inpatient/resident or diagnostic and therapeutic services;
- OR
- Primary care and supportive services (for example, public health clinics, home care programs and health promotion/education) provided to clients of community and social services.

Ambulatory care services visits (MIS primary account 71 3* and MIS secondary statistical accounts 4 50* and 4 51*)—all visits by or to service recipients, arranged with or without prior appointment or through a formal scheduling system, to the ambulatory care service functional centre.

Beds staffed and in operation (MIS secondary statistical account 8 25*)—the beds and cribs available and staffed to provide services to inpatients/residents at the required type and level of service, at the beginning of the fiscal year. Includes bassinets set up outside the nursery and used for infants other than newborns.

Chart of accounts—a list of the account numbers and designations in a ledger.

Client—an individual

- Who has been officially accepted by a health service organization and receives one or more health services without being admitted as an inpatient or a resident;
- Whose person-identifiable data is recorded in the registration or information system of the organization and to whom a unique identifier is assigned to record and track services; and

- Who is not referred in from another health service organization. Examples include individuals receiving services in ambulatory clinics, primary care clinics, in their homes and through day/night and outreach programs.

Client visits—the visits by or to service recipients, arranged with or without prior appointment or through a formal scheduling system, excluding inpatients and residents.

Community and social services—the functional centre framework section pertaining to the provision of health (for example, primary care, prevention, wellness) and social services on an ambulatory/outreach basis to individuals, groups and/or communities. Access to these services is typically self-determined. These services are considered the first level of contact for individuals, families and communities with the health system.

Includes:

- Curative, restorative, supportive, disease prevention and health promotion/education services.

Excludes:

- Specialty services that are generally provided in an ambulatory care functional centre.

Compensation expense—compensation expense is the sum of gross salaries expense, benefit contribution expense, purchased compensation expense and fee-for-service expense arising from the remuneration of management and operational support personnel, unit-producing personnel and medical personnel employed by or under contract to the health service organization.

Community health service organizations—organizations primarily engaged in providing health care services directly to clients in the community who do not require inpatient services. This includes organizations specializing in day treatment programs and in the delivery of home care services.

Diagnostic and therapeutic services—the functional centre framework section pertaining to diagnostic and therapeutic services includes professional and technical services which assist in the clinical investigation of inpatients, residents or clients, either to detect the presence of disease, disability or injury or to assess the severity of known disease, disability or injury.

Therapeutic services include professional and technical services provided to inpatients, residents or clients, which assist in the alleviation or cure of the causes, symptoms and/or sequelae of disease, disability or injury.

Excludes:

- Professional and technical services provided by personnel who are accountable and charged to nursing inpatient/resident services in the functional centre framework.

Education—the functional centre framework section pertaining to the provision of in-service education programs to the health service organization's personnel, as well as formal education programs to undergraduate and post-graduate technical, professional and medical students/trainees.

Emergency visits (MIS primary account 71 3 10* and MIS secondary statistical accounts 4 50* and 4 51*)—the visits by or to service recipients, arranged with or without prior appointment or through a formal scheduling system, to the emergency department, excluding client surgical day/night care.

Functional centre—a subdivision of an organization used in a functional accounting system to record the budget and actual direct expenses, statistics and/or revenues, if any, which pertain to the function or activity being carried out.

Global funding (MIS financial secondary account 1 10 10)—the revenue arising from the provision of patient services, which are the responsibility of the ministry of health.

Health service organization—health care providers, including community health service organizations, hospitals, public health organizations, residential care facilities and social service program organizations.

Hospital—an institution where patients are accommodated on the basis of medical need and are provided with continuing medical care and supporting diagnostic and therapeutic services. Hospitals are licensed or approved as hospitals by a provincial/territorial government or are operated by the government of Canada and include those providing acute care, extended and chronic care, rehabilitation and convalescent care, and psychiatric care.

Hospital types in the CMDB are specified as follows:

Type of Hospital	Description
General Hospital	A hospital which provides primarily for the diagnosis and short-term treatment of inpatients and clients with a wide range of diseases or injuries. The services of a general hospital are not restricted to a specific age group or sex.
Pediatric Hospital	A specialty hospital, or a group of beds or rooms, or a separate wing or building for pediatrics, which is recognized as a distinct and separate treatment unit of the hospital, which provides exclusively for the diagnosis and short-term treatment of pediatric inpatients and clients who are generally 18 years of age or younger.
Cancer Treatment Hospital	A specialty hospital, or a group of beds or rooms, or a separate wing or building, which is recognized as a distinct and separate treatment unit of the hospital, that provides exclusively for the diagnosis and treatment of inpatients and clients with neoplastic tumours/diseases.
Psychiatric and Substance Abuse Hospital	A hospital, or a group of beds or rooms, or a separate wing or building, which provides exclusively for the assessment and treatment of inpatients/clients/residents with short- and/or long-term psychiatric and substance abuse disorders, and which is recognized as a distinct and separate treatment unit of the hospital.
Other Specialty Hospital	A specialty hospital, or a group of beds or rooms, or a separate wing or building for a specialty that is not elsewhere classified, which is recognized as a distinct and separate treatment unit of the hospital, that provides exclusively for the diagnosis and treatment of inpatients and/or clients receiving specialty care that is not elsewhere classified (for example, obstetrical, orthopedic).
Rehabilitation Hospital	A specialty hospital, or a group of beds or rooms, or a separate wing or building, which is recognized as a distinct and separate treatment unit of the hospital, that provides exclusively for the continuing assessment and treatment of inpatients and clients whose condition is expected to improve significantly through the provision of physical medicine and other rehabilitative services.
Extended Care Hospital (Including Chronic)	A specialty hospital, or a group of beds or rooms, or a separate wing or building for long-term care, which is recognized as a distinct and separate treatment unit of the hospital, which provides exclusively for the continuing treatment of service recipients with long-term illness or with a low potential for recovery and who require regular medical assessment and continuing nursing care.

Inpatient days (MIS statistical secondary account 4 03*)—the days during which services are provided to an inpatient, between the census-taking hours on successive days. The day of admission is counted as an inpatient day, but the day of separation is not an inpatient day. When the service recipient is admitted and separated (discharged or died) on the same day, one inpatient day is counted.

Inpatient admissions (MIS statistical secondary account 4 01*)—the official acceptance into the health service organization of an adult/child/newborn/postnatal newborn who requires medical and/or health services on a time-limited basis. The admission procedure involves the assignment of a bed, bassinet or incubator. Admission of a newborn is deemed to occur at the time of birth or, in the case of postnatal newborns, at the time of admission of the mother to the health service organization.

Nursing inpatient/resident services—the functional centre framework section pertaining to the nursing services provided to inpatients/residents and their significant others to meet their physical and psychosocial needs.

Includes:

- Ambulatory care clients receiving services in inpatient nursing units if separate ambulatory care functional centres have not been established for these services.
- Direct expense data for physicians contracted by the health service organization to provide services within a specific level 3, 4 or 5 nursing inpatient and resident functional centre.

Public health organizations—organizations that administrate and provide public health programs such as health promotion and protection.

Research—the functional centre framework section pertaining to formally organized research.

Residential care facilities—include homes for the aged (including nursing homes), facilities for persons with physical disabilities, developmental delays, psychiatric disabilities, and alcohol and drug problems and facilities for emotionally disturbed children. Facilities solely of a custodial or domiciliary nature and facilities for transients or delinquents are excluded.

Revenue (MIS financial secondary account 1*)—the gross proceeds from taxes, licenses, duties, user fees, transfer payments and sources other than borrowing.

Social services program organizations—organizations that administer and provide programs of a social service nature.

Specialty day/night care visits (MIS primary account 71 3 40* and MIS statistical secondary accounts 4 50* and 4 51*)—the visits by or to service recipients, arranged with or without prior appointment or through a formal scheduling system, to the specialized day/night care functional centre (registered persons who attend for 3 to 12 hours on average, typically as the result of a referral from a primary care practitioner).

Teaching status—in the CMDDB, a hospital is considered a teaching hospital if it provides medical education programs approved by the appropriate authorities for major clinical instruction in at least the medical disciplines of internal medicine and general surgery to undergraduate medical students in their final two years.

Total long-term debt (MIS primary accounts 5* 2, excluding 5* 24 *)—liabilities of the health service organization's fund that are due more than one year from the balance sheet date, excluding amounts owing by the health service organization on account of bonds issued by it for funding purposes, not due within one year of the balance sheet date.

Unit-producing personnel (UPP)—those personnel whose primary function is to carry out activities that directly contribute to the fulfillment of the service mandate. Examples include RNs, RNAs, laboratory technologists, accounts payable clerks, pharmacists, housekeepers, home care workers and public health officers. Excluded are practising physicians, medical residents, interns and students and, in most cases, diagnostic, therapeutic, nursing and support services students.

Worked hours—hours spent carrying out the mandate of the functional centre. They include regular scheduled hours, overtime, call back, coffee breaks and worked statutory holiday hours. Worked hours do not include the lunch hour and standby hours.

Workload measurement system—a tool for measuring the volume of activity provided by a specific functional centre in terms of a standard unit of time.

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