

Managing the System With the Management Information System



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THE MANITOBA CENTRE FOR HEALTH POLICY AND EVALUATION

Manitoba's 79 acute care hospitals spend approximately \$880 million providing health services. Government, Regional Health Authorities and hospital managers need tools to understand how these dollars are spent. The Management Information System (MIS), a nationally standardized classification system for financial and statistical records, was developed by the Canadian Institute for Health Information (CIHI) to help in doing this. Manitoba hospitals began using this reporting method in the 1995/96 fiscal year.

The Manitoba Centre for Health Policy and Evaluation (MCHPE) has conducted several studies looking at the cost of providing care in hospitals, and this project builds upon our earlier work. Given that MIS was a new province-wide system in 1995/96, we conducted a feasibility study to determine if MIS data could be used to:

- Estimate the cost of providing inpatient care to different types of patients, and;
- Estimate the average cost of providing care in different types of hospitals.

This project drew upon the expertise of a working group comprised of representatives from Manitoba hospitals and Manitoba Health. People with experience in managing health records or finance assisted us in identifying and resolving issues. In addition, we relied on individual hospitals to help address specific issues that were raised in the course of this study.

Historically, every hospital has developed an internal reporting system to help manage its operation. External reports (such as the HS-1 reports that were used in previous MCHPE costing projects) were prepared by summarizing the internal system. In 1995/96, for the first time hospitals were asked to submit detailed data using a standard chart of accounts.

Manitoba Health produced the Manitoba Facility Reporting System that describes the minimum reporting requirements. The detailed data submitted by hospitals show that reporting, although following acceptable accounting practices, can vary greatly from facility to facility, and that hospitals are not always following the Manitoba Facility Reporting System.

MIS: A National Financial and Statistical Reporting System

MIS is a national classification system designed to simplify the process of comparing facilities, regions and provinces. We were among the first researchers in Canada to see how MIS could be used for making comparisons between hospitals.

A preliminary review of the MIS data identified a large number of reporting inconsistencies between facilities. Smaller facilities were particularly problematic because we had difficulty separating inpatient and outpatient costs.

Consequently, we started by limiting our review to the 18 largest facilities in Manitoba. These included the teaching,

urban community and major rural hospitals. In addition, we noted that statistical data for outpatients were inconsistent or incomplete. Our review was further restricted to inpatient costs. The cost of care provided to outpatients was not reviewed in this project.

We reviewed the 1995/96 MIS data submitted by the hospitals to determine how these data could be used for making cost comparisons. This review has identified a number of issues that need to be resolved to permit accurate and fair comparisons between facilities.

The specific areas in which we have identified inconsistencies, or potential for making inaccurate comparisons, are:

- ❑ Employee benefits are not consistently reported in the functional centre that was used to record the wages or salaries. A functional centre is an identifiable unit within a hospital—a department, or part of a department that performs a specific function;
- ❑ Capital costs are handled in different ways, and capital items may be financed through leasing arrangements;
- ❑ Operating room costs may be distributed partially or not at all between inpatient and ambulatory care;
- ❑ Observation units that are part of the ambulatory care functional centre sometimes provide care to inpatients without these costs being attributed to inpatient care;
- ❑ Certain costs are not reported in hospitals' MIS such as: the cost for fee-for-service amounts paid to physicians, services provided by government-funded laboratory and imaging services that are independent from individual hospitals, and blood products provided to hospitals;
- ❑ Certain statistics that are critical to estimating costs were either inaccurate or inconsistently reported.

Earlier MCHPE projects used data that had similar problems, and adjustments were made to ensure accurate comparisons could be made. We also made adjustments for the

purpose of conducting this feasibility study. However, we are concerned that unadjusted data may be used by others for making comparisons between facilities. Our report, therefore, does not focus on how adjustments were made, or how types of facilities compare, but rather on the major issues that need to be addressed before MIS data can be used for comparative purposes.

A New Way of Classifying Hospital Care

In addition to using the new Management Information System, we use a classification system called Case Mix Groups (CMG™) with accompanying Resource Intensity Weights (RIW™) to describe the types of cases in the hospitals included in this study. CMG is a grouping method developed by the Canadian Institute for Health Information that classifies inpatient cases into one of 585 different groups. Each case is then assigned an RIW based on its CMG, and whether it is a “typical” or an “atypical” case. A case is classified as typical if it involved a complete course of treatment at a single institution, and *did not* end in death, signout, transfer or an unusually long hospital stay. All others are classified as atypical.

In the course of completing this project we noted some differences between the average length of stay of certain types of cases in Manitoba hospitals and those recorded in the CIHI database. The CIHI database contains approximately 2.2 million cases. Manitoba hospitals contribute about 3.5% of these—all of which originate from seven urban facilities in the city of Winnipeg. The CIHI database is used to determine the Resource Intensity Weight that is assigned to each Case Mix Group. The average length of stay for a CMG is an important factor in determining its RIW. In comparing the average length of stay for all typical Manitoba cases with the CIHI average for these cases, the results are similar. However, when looking at individual CMGs, the Manitoba average length of stay is often different from the CIHI length of stay. The

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average length of stay for some types of cases in Manitoba hospitals is much longer, and for some types it is much shorter.

These differences in length of stay are important for estimating the cost of providing care to different types of cases. Further research will be necessary to determine why these differences exist. There may be opportunities to manage the care of certain types of patients more efficiently, or alternatively, the way hospital care is organized in Manitoba may be fundamentally different from other places in Canada. We have not pursued this issue in this study, but recognize it as something that should be considered before making further comparisons between facilities and CMGs.

The Cost of Hospital Care in Manitoba

As this was a feasibility study, we have identified a number of areas that will require improvement or further investigation to ensure that accurate and fair comparisons are

made. Using the data we had available to us, we have developed some preliminary estimates of costs for different types of cases. Table 1 lists the ten CMGs with the highest cost per case.

For example, the estimated cost for hospital care for every newborn weighing less than 750 grams is approximately \$52,500. It is important to understand not only the individual types of cases that cost the most, but also the total cost to the health care system of providing certain types of hospital care. Table 2 shows the types of cases that have the highest overall cost for all cases. The hospital cost for a normal (vaginal) delivery is relatively low (\$1,307), but the large number of normal deliveries results in a total cost of over \$11 million. All of these values refer only to “typical” cases—that is cases that did not end in death, or as a signout, transfer or long stay outlier.

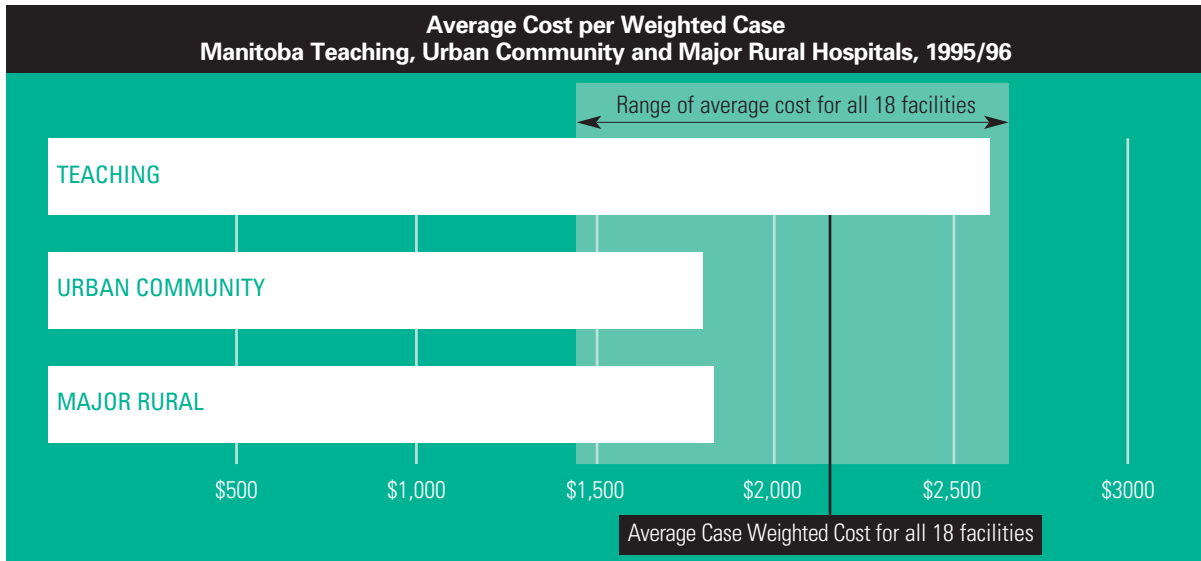
We have also developed a preliminary cost per weighted case for the three types of hospitals in the study—teaching, urban community

Table 1. Highest cost per case (1995/96)

Case Description	Estimated \$ per Case	Estimated \$ All Cases
Neonates, under 750 grams	52,484	682,282
Bone marrow transplant	44,182	751,094
Extensive burns with skin graft, wound debridement or other burn procedure	36,823	36,823
Neonate, weight 750 to 999 grams	34,518	552,288
Multiple significant trauma with craniotomy	29,128	29,128
Lung transplant	23,574	188,592
Tracheostomy and gastrostomy	22,295	624,260
Neonate, weight 1000 to 1499 grams, catastrophic diagnosis	19,375	58,125
Cardiac valve replacement with heart pump, with cardiac catheterization	18,517	444,408
Acute leukemia without major procedure, with complications and comorbidities	17,367	850,983

Table 2. Highest cost for all cases (1995/96)

Case Description	Estimated \$ per Case	Estimated \$ All Cases
Vaginal delivery	1,308	11,288,040
Knee replacement	7,652	4,606,504
Heart failure and shock	2,739	4,229,116
Neonate, over 2500 grams (normal newborn)	423	4,124,673
Major gynecological procedure, uterine/adnexal (no malignancies), age<50	2,356	3,882,688
Vaginal delivery with complicating diagnosis	1,688	3,693,344
Major intestinal/rectal procedure with complications and comorbidities	6,593	3,533,848
Specific cerebrovascular disorders except transient ischemic attack	4712	3,227,720
Other factors causing hospitalization	1,634	3,191,202
Hip replacement no complications or comorbidities	7,666	2,974,408



and major rural hospitals. For any hospital type, the “average cost per weighed case” is the total cost for providing inpatient care in all the hospitals in this study divided by the sum of the RIWs for all inpatient cases treated.

Excluded Costs

As in earlier case-mix costing projects, the average cost per weighted case excludes certain types of costs:

- all remuneration paid to physicians;
- all capital costs (e.g., buildings, land and major equipment);
- all costs for blood and blood products.

The exclusion of these costs presents a limitation in our ability to describe the “full costs” of hospital care. We have suggested that additional work be undertaken to permit the inclusion of these costs in future estimates of the cost of providing inpatient care.

Conclusions

The current project has successfully identified the key components required to estimate the cost per weighted case for Manitoba hospitals. The Management Information System that is in place in hospitals is structured to provide

the necessary financial and statistical data. A number of recommendations to improve the utility of MIS are included in the report. However, unless hospitals, health authorities and Manitoba Health take responsibility for ensuring adherence to the established standards, inconsistent reporting will make it difficult to make cross-facility comparisons. We also recommend that further study be done to determine the effect of using standard resource intensity weights for making comparisons between hospitals. Further, the development of a “Canadian Calibration Database” that records the cost of providing hospital care should be a priority. Currently, a charge-based database from the state of Maryland is used to calculate RIWs.

This project has helped us understand how MIS and hospital discharge data can be used to make inter-facility comparisons of average cost per weighted case.

Summary prepared by Greg Finlayson, based on the report: Hospital Case-Mix Costing Project: Using the Manitoba Management Information System, A First Step, by Greg Finlayson, Debbie Nowicki, Noralou Roos, Marian Shanahan and Charlynn Black.

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