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The Cost of Hospitalizations in Manitoba

MANITOBA CENTRE FOR HEALTH POLICY

Summary of the report:
*Cost List for Manitoba
Hospital Services,
2005/06*

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- This cost list provides valuable information for economic analyses and policy development.

- The provincial average direct cost per weighted case for 2005-06 was \$2,953.

- The 10 most common hospitalizations accounted for 20% of costs.

- The 10 most expensive hospitalizations accounted for 2% of costs.

- Volume drives total costs more than cost per case.

- Reporting of costing data has improved since the last cost list was done for 1993-95.

Have you ever wondered which type of hospitalization the Manitoba government spends the most on? If you were to guess, would you say hip or knee replacements? Heart attacks? Or perhaps treating people for pneumonia?

Fortunately, it is none of the above. Although we generally think of disease when we think of hospitals, the front-runner in the expense column is a very positive event – having a baby. We spent a little over \$11.3 million on hospitalizations for the 6,819 normal deliveries that took place in 2005-06.¹

Hospitalizations for knee replacements are second on the list, followed by simple pneumonia and then hip replacements. The hospital care for heart attacks comes in ninth.

We spend a lot of money on hospitals – over \$1.3 billion in Manitoba in 2005-06. What do we get for a billion dollars? The Manitoba Centre for Health Policy has just released a report that tells us exactly that. The report estimates direct costs associated with providing care to inpatients in Manitoba’s acute care facilities between April 1, 2005 and March 31, 2006. It answers questions such as:

- Which types of hospitalization have the highest total cost?
- What are the most expensive types of hospitalization?
- What are the most common types of hospitalization?
- Do we spend more on hospitalizing men or women?

- How do costs of hospitalization change as we age?
- How does the cost of providing care vary in different types of hospitals?

Most of the report is the actual cost list, showing the direct costs of 550 different categories of hospitalization and day procedures, from the insertion of a pacemaker to providing hospital care for frost bite or eating disorders or asthma.

The list gives the number of cases, average cost per case and total cost for each condition. For example, the cost list indicates there were just under 1,600 knee replacements in 2005-06 with direct costs of \$5,939 for an average case. This added up to almost \$9.5 million.

The list also breaks down costs by age group and complexity. So, we see that more than 90% of the knee replacements were at the lowest complexity level, costing about \$5,600 for someone between 18 and 69 years old, and \$250 more for older folks. If a patient had potentially life-threatening complications, it cost considerably more at \$12,300 per case. However, there were only 13 such patients, all over 70 years old. Perhaps not surprising, no one under age 18 had a knee replacement that year.

This kind of detail is provided for all 472 inpatient hospitalizations. So it’s possible to compare costs of different conditions. We can see that hips cost more than knees – \$821 more on average. We know that the cost of caring for underweight newborns goes up as their birth weight goes down. This report tells us by how much,

¹ Throughout this summary we report costs only for “typical” cases—those which follow a normal course of treatment. For information on “atypical” cases see the full report



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and how many are affected – with possible implications for care outside of the hospital.

The cost list provides valuable information that will allow health authorities and hospital administrators to compare costs and has the potential to highlight areas for improvement. Researchers, planners and others can use this information to do population-based hospitalization studies and to develop realistic health policy.

Things to Keep in Mind When Using the Cost List

The total direct cost of inpatient care in 2005-06 was \$587,678,491 (includes typical and atypical cases), which is close to half of the total cost for operating Manitoba hospitals. Obviously, not all costs of hospitalization are included in the direct cost estimates.

In this report **direct costs include only those that can be attributed to inpatients**, such as nursing services, medical supplies and diagnostic services.² Physician services are direct costs, but they are excluded because of

varying billing mechanisms. Indirect costs such as administrative and support services, research, training and hospitals' capital expenses are also excluded.

The emphasis on direct costs focuses attention on costs that are most relevant to health policy – the ones that can be influenced by health care processes and systems.

Costs are given for a “standardized” or average patient, although such a patient does not actually exist. Every hospitalization has unique features that will affect costs. For example, some patients require more pain medication after surgery, resulting in higher costs than estimated for that hospitalization. With large groups, this evens itself out for things like pain medication.

However, hospitals that treat a lot of the more complex conditions will have higher costs than other hospitals. To allow fair comparisons across hospitals, regions, provinces or years, the average cost per case is “weighted” so that the mix of cases being compared is always the same. In 2005-06, the provincial

Developing the Cost List

- Based on a modification of the CIHI/Hay Group benchmarking approach.
- Data are from the Management Information System (MIS) and the hospital discharge abstract database.
- Two years of data were needed to determine which patient-days fell in 2005-06.
- Regional health authorities reviewed reports for accuracy.

Average cost for a type of hospitalization:

Average cost per weighted case (CPWC) x Resource Intensity Weight (RIWTM).

- The CPWC: Total Direct Inpatient Costs ÷ Total Weighted Cases.
 - ◆ The Total Direct Inpatient Costs is the sum of all hospital departments' costs that can be directly attributed to inpatients based on the MIS data.
 - ◆ The Total Weighted Cases measures the total inpatient cases adjusted to reflect complexity. It is the sum of the weights for all cases discharged from each hospital. A weight (RIW) is given to each patient on discharge based on his/her Case Mix Group, a CIHI classification system that groups cases requiring similar resources.
- The RIW is a CIHI-assigned value that reflects the relative cost of care for each type of hospitalization. For most types of cases there are RIWs for four levels of complexity for each of three age groups.
- Provincial CPWC for 2005-06 was \$2,953. Multiplying this by the RIWs gives the average cost for different kinds of patients (young/old; with or without complications) for each type of hospitalization.
- Adding these costs for all patients gives the total amount spent on each type of hospitalization (e.g., \$6,888,157 for hip replacements). Dividing by the number of cases gives a weighted average cost per case for a type of hospitalization (e.g., \$6,760 for a new hip).

²Costs reported by Canadian Institute for Health Information (CIHI) are not comparable to the results presented here. CIHI includes both direct and indirect costs in their calculations.

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**Table 1: Top 10 Total Costs
Typical Cases, 2005-06**

Type of hospitalization	Total direct cost (\$)
Vaginal delivery	11,332,257
Knee replacement	9,484,218
Simple pneumonia and pleurisy	7,056,063
Hip replacement	6,888,157
Vaginal delivery with complicating diagnosis	6,565,295
Other admissions with surgery	6,341,070
Esophagitis, gastroenteritis and miscellaneous digestive disease	6,056,341
Major intestinal and rectal procedure	5,638,667
Heart failure	5,446,784
Neonates Weight > 2,500 grams (Normal Newborn)	5,119,161

average cost per weighted case (CPWC) was \$2,953. This would cover the direct costs of a hospital stay for this theoretical “standardized” patient.

The average cost for each type of hospitalization is calculated by multiplying this average cost (\$2,953) by a number reflecting the relative cost of care for each type of hospitalization – which is very logically called a Resource Intensity Weight or RIW.

The RIWs are needed because the cost associated with different conditions varies. If a particular condition costs double the standardized hospitalization, then its RIW would be 2. If it cost only half as much, its RIW would be 0.5. The Canadian Institute of Health Information (CIHI) assigns RIWs to each

type of hospitalization, and adjusts for factors such as older age or the presence of other diseases.

This makes comparisons between hospitals or regions fairer, but it also creates multiple classifications for something like a heart attack or a birth. Earlier we referred to the total direct cost of normal deliveries, but there are many other categories associated with child-birth, including care for the baby and different complications for moms and babies. When these are considered, the total direct cost of hospitalization for having a baby in Manitoba in 2005-06 added up to almost \$47.9 million.

See the text box for details about developing the cost list.

Cost List Allows Fair Comparisons

The cost list is based on standardized conditions, and so it is useful for comparing spending on different types of hospitalizations per case or overall.

Table 1 lists the 10 types of hospitalization that cost Manitobans the most. These are not the most expensive hospitalizations but the total cost is high because they occur often. This “Top 10” list accounted for 30% of the year’s hospitalizations and 23% of total direct costs.

By contrast, the 10 most expensive hospitalizations accounted for only 2% of the total costs. Although each individual case is expensive, none of them are on the Top 10 list of cases with the highest total costs. That’s

because they are rare events – there were only 153 cases, or 0.1% of hospitalizations, for the year. Four of these conditions had fewer than six cases all year, including the most expensive type of hospitalization – care of extremely underweight newborns at almost \$100,000 per case. There were only 10 cases of the second most expensive

**Table 2: Ten Most Common Hospitalizations
Typical Cases, 2005-06**

Type of hospitalization	Number of cases	Direct cost per case (\$)	Total direct cost (\$)
Neonates weight > 2500 grams (normal newborns)	9,743	525	5,119,161
Vaginal delivery	6,819	1,662	11,332,257
Esophagitis, gastroenteritis and miscellaneous digestive disease	3,697	1,636	6,056,341
Vaginal delivery with complicating diagnosis	3,278	2,003	6,565,295
Simple pneumonia and pleurisy	2,496	2,827	7,056,063
Neonates weight > 2500 grams with caesarean delivery	2,394	914	2,188,341
Heart failure	1,687	3,225	5,446,784
Major uterine and adnexal procedures without malignancy	1,629	2,685	4,373,175
Knee replacement	1,593	5,939	9,484,218
Aftercare following surgery or treatment	1,372	903	1,239,011

type of hospitalization – tracheostomies, at \$72,533 per average case. It is worth noting that tracheostomies are not really that expensive. The cost is high because people who need them are very sick and need to be cared for in an Intensive Care Unit.

It is not surprising that seven of the 10 most frequent hospitalizations (see Table 2) are also on the Top 10 list of cases with the highest total cost. This reinforces the importance of volume as well as cost per case in the overall picture, as we saw for normal deliveries.

The other three high-volume conditions had low price tags, which kept their total costs down. The most common hospitalization is one of the least expensive on the whole cost list. On average, it cost \$525 for hospital care of a normal newborn. Only cancelled procedures and some day procedures had a lower estimated cost per case.

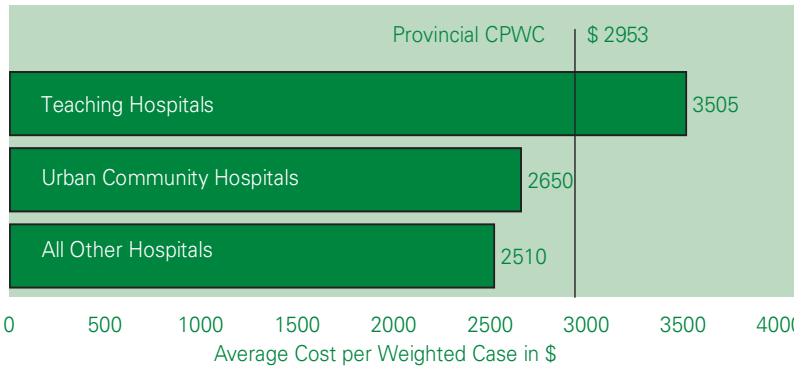
Volume and cost come together so that the 10 most common cases accounted for one-third of the discharges but only 20% of the direct costs of hospitalization.

The report also includes information on hospitalization costs for men and women at different ages, allowing gender comparisons across the lifespan. On average, it costs more for a man's hospital care than for a woman's at almost every age. Total costs, however, were higher for women during childbearing years, and again after about age 75 reflecting women's longer lives. Once more, this shows the influence of volume on total costs.

Comparing Hospitals

As mentioned above, the provincial average direct cost for a "standardized patient" in 2005-06 was \$2,953. The report also provides

Figure 1: Direct Cost of Hospitalization for Different Types of Hospitals, 2005-06



this information for three categories of hospital. As shown in Figure 1, it costs most to provide care in a teaching hospital – about \$1,000 more than in one of Manitoba's "non-urban"

hospitals and about \$855 more than in an urban community hospital. This comparison is reasonable as it is based on standardized patients, and costs directly related to research and teaching have been excluded.

There is no consensus on the cause of these higher costs, but we know that care in teaching hospitals in other provinces is more costly. Although not assessed in this report, there is evidence that the learning process of residents raises costs. For example, residents may order more tests than experienced physicians. And residents' lack of established relationship with their patients can result in longer hospital stays because they do not know as much about the person.

Although not included in the report, the average cost per weighted case can be worked out for individual hospitals or regions, too. The in-year adjusted total weighted cases for the 67 hospitals providing acute inpatient care in Manitoba are listed, so with the addition of each hospital's direct cost data, hospital-specific cost lists can be worked out.

Concluding Comments

This report updates the last cost list for services provided in Manitoba hospitals, which was published in 1999 based on 1993-95 data. The current information improves our ability to understand the cost of providing hospital care in Manitoba.

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