

Making Hospital Patient Costs Comparable

MANITOBA CENTRE FOR HEALTH POLICY



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Depending on what hospital you go to in Manitoba, the cost of the care you receive may be higher than it would at another hospital. That was an important finding of three reports issued by the Manitoba Centre for Health Policy (MCHP) over the past seven years. This is valuable information for healthcare managers, because it shows that there may be opportunities to reduce costs while continuing to provide high quality hospital care.

Per-patient costs are determined by dividing a hospital's total spending on patients by the number of patients treated by that hospital. We obtained this information from two routinely-reported sources. Hospital spending information is in hospital financial reports, and hospital discharge records were used to find out how many patients had been treated.

In our previous reports, we made adjustments to these data sources to make sure that hospitals could be compared fairly. But this was a very time-consuming process—in the last report it took two years to produce results.

The question we have been studying in this report, at the request of Manitoba Health, is whether those adjustments were necessary. To put the question another way, is it necessary to adjust routinely-prepared hospital financial reports and discharge records in order for hospital per-patient costs to be comparable?

Overview of our previous research

Our research to date has focused on *inpatients*—patients who stay at least one night in a hospital. In our previous

reports, we have made adjustments to the total-inpatient-expenditures figure (the numerator) and the total-inpatients-treated figure (the denominator) to create apples-to-apples comparisons among hospitals.

We have had to make adjustments to total expenditure figures because hospitals have not reported them in a uniform fashion. If Hospital A treats the cost of employee fringe benefits, for example, as a non-patient expense while Hospital B treats it as a patient expense, Hospital B's numerator (total patient expenditures) will be inflated compared to Hospital A's.

We have had to make two types of adjustments to the total-inpatients-treated figure (the denominator). The first adjustment we make is for differences in the kind of care required by patients seen by Manitoba's hospitals. If Hospital A treats patients requiring complex and costly interventions (e.g., heart transplants, knee replacements, and burn victims) and Hospital B primarily treats patients with less complex treatment needs (e.g., appendectomy procedures, pneumonia), a comparison of the hospitals' per-patient costs is not very enlightening.

Once we've adjusted for differences in the complexity of care provided to patients, then we make the second adjustment to the denominator. This second adjustment accounts for the fact that costs do not necessarily match the patients being discharged in a given year, because of stays that overlap the beginning or end of the reporting period.

We discuss these three adjustments—one to the numerator and two to the denominator—in more detail in the next section.

Three adjustments to the routinely reported data

The only adjustment we have made to the total-inpatient-expenditure figures is for differences in the way hospitals treat their expenditures. We examined the financial reports that Manitoba’s 73 acute-care hospitals submitted to Manitoba Health for the Fiscal Year 1997/98, to see how well the reports complied with the Management Information System (MIS) Guidelines that should be followed in all hospitals. When we found items that needed further review, we asked the appropriate hospital or Regional Health Authority administrator to verify their reports, and if necessary, provide corrected information. Thirty-eight hospitals verified their reports, 35 did not.

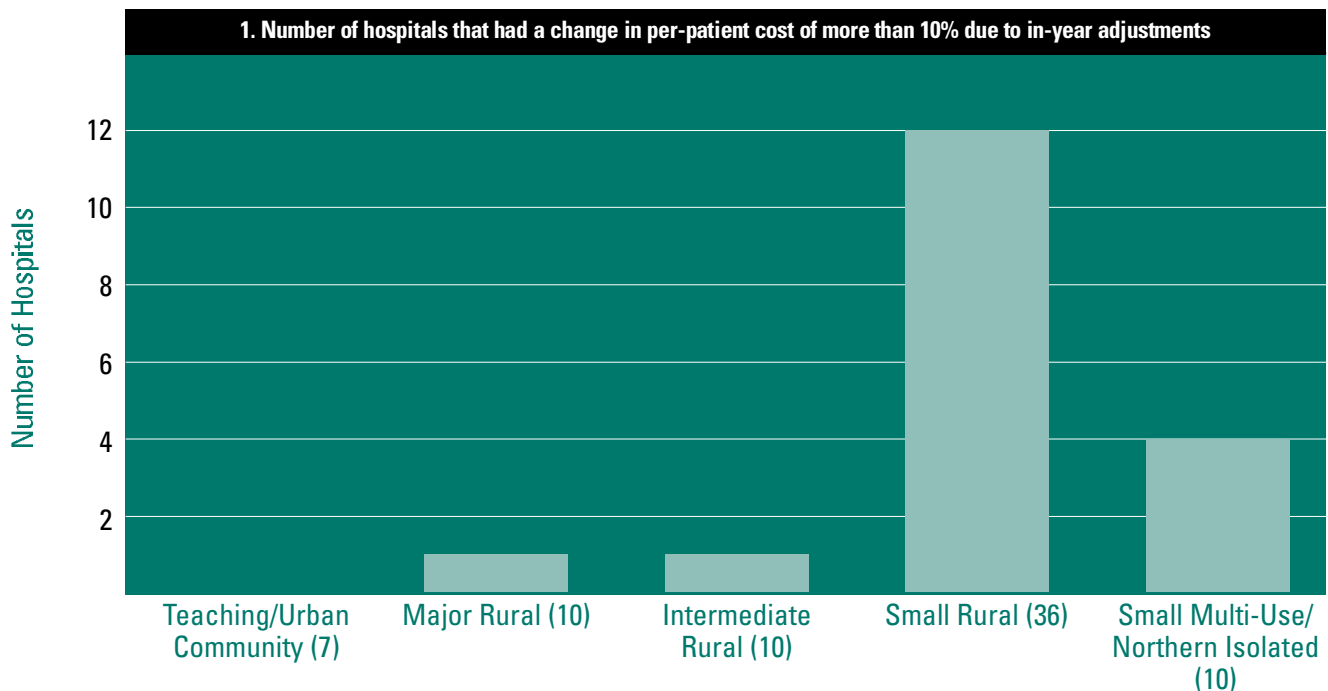
In our previous research, we have made two adjustments to the total-patients-treated figure. The raw, or unadjusted, total-patients-treated figure is derived simply by adding up the total number of patients discharged from the hospital in the year under study. The first adjustment is called the *case-mix* adjustment, and the second the *in-year* adjustment.

The first adjustment is done in order to address the fact that hospitals provide care to

patients with different needs for complex (and costly) interventions. This case-mix method assigns a weight to each patient who was discharged from a Manitoba hospital in the year under study, in this case, Fiscal Year 1997/98 (April 1, 1997 through March 31, 1998).

Patients with relatively minor and inexpensive needs are assigned low weights while patients with major and expensive needs are assigned high weights. (Weights are assigned by the Canadian Institute for Health Information.) This method allows us to establish the cost of care for a hypothetical *standardized patient*. The standardized patient is the same for all hospitals. If all hospitals provided similar care, and the cost of goods and services purchased by the hospitals was the same, the cost for the standardized patient would be the same at each hospital. (We found, however, that the cost for providing care to the standardized patient was not the same in all hospitals in Manitoba; these costs ranged from \$1,045 to \$13,272.)

Once all patients discharged in a given year have been converted by the case mix method into standardized patients, we then make a second adjustment—the *in-year* adjustment—to adjust for differences between hospitals in the number of patients who were discharged in the year under study but were admitted in a previous year. To illustrate why this is a prob-



lem, consider this hypothetical case. Imagine a patient, say an 80-year old woman with a broken hip in poor health, who is admitted to Hospital X on January 1, 1996 and discharged over one year later on June 5, 1997. If we used the raw total of patients discharged to determine how many patients Hospital X treated, we would allocate this patient to Hospital X's 1997/98 total and not to its 1996/97 total. And yet the great bulk of Hospital X's expenses on this patient occurred in 1996/97.

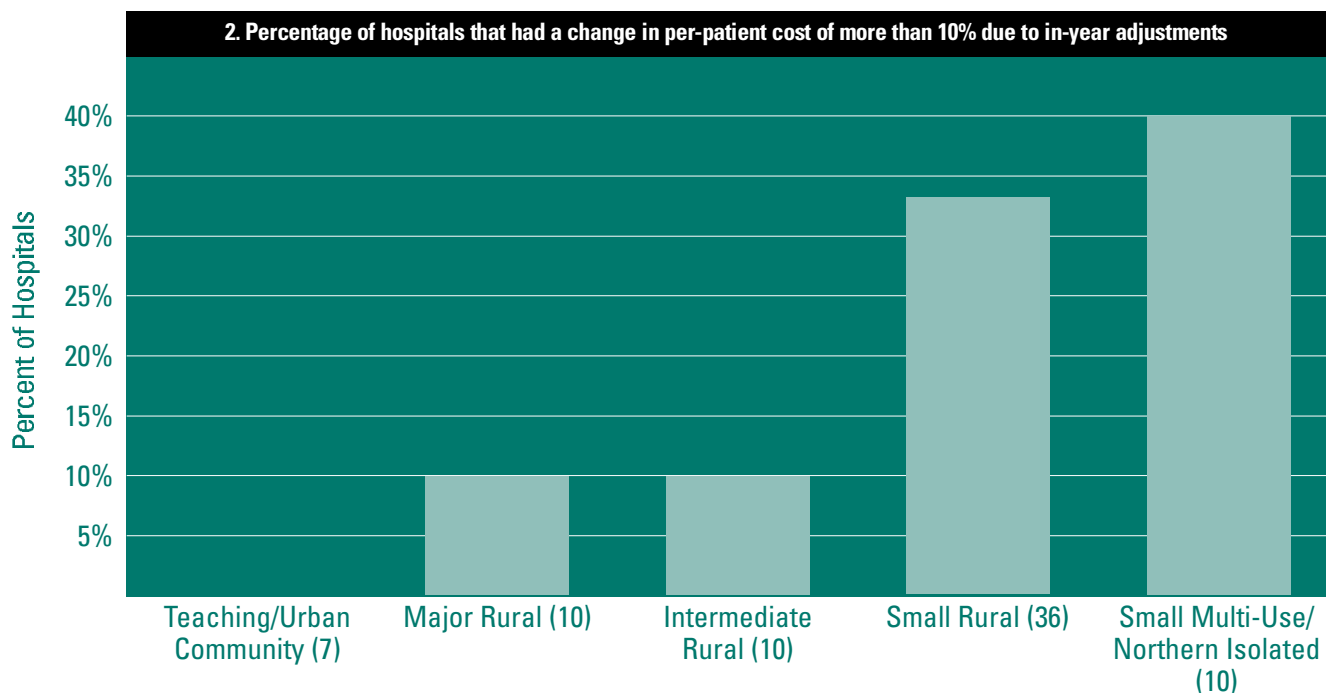
There is, of course, the mirror-image problem—the patient who is admitted in the year under study who is not discharged until the next year (or, in rare circumstances, several years later). For large hospitals, we have found that these two types of patients tend to offset each other. That is often not the case, however, for smaller hospitals. For small hospitals, one patient like the hypothetical 80-year-old woman who stayed in hospital for over a year can cause huge swings in its denominator (total patients treated).

In a report entitled *Using the Manitoba Hospital Management Information System: Comparing Average Cost per Weighted Case and Financial Ratios of Manitoba Hospitals*, which we released early in 2001, we recommended two solutions: (1) a process for making hospital expenditure reports more uniform to address the problem of hospitals using differ-

ent methods of reporting expenditures; and (2) the in-year adjustment method to address differences in the number of patients whose hospital stay extends outside of the study year. We identified several discrepancies in the way hospitals define patient-related expenses and we recommended a process for reducing these discrepancies. We also reported our work on the in-year adjustment method to adjust the number-of-patients-treated figure. However, it took us more than two years of work to make these two adjustments for all hospitals. Managers of our hospital system rely on these numbers to look for opportunities to improve the way services are provided. A delay of two years makes the comparisons we can give them outdated and less helpful for solving current problems.

Purpose and summary of this report

In this report, we ask the question, Do the two adjustments we recommended in our last report change the per-inpatient cost figures enough to warrant the two-year delay required to make the adjustments? We found that the answer is 'Yes,' because they make a significant difference for some hospitals. We also developed recommendations to minimize the time required to make the adjustments. A straightforward process of financial data checks will improve the consistency of the hospital patient



expenditure data. Because we have computerized the in-year adjustment—the process for making adjustments to the total-patients-treated number—we should be able to make these adjustments quickly in the future.

Findings

For most hospitals, the effect of correcting inconsistencies in patient expenditures (the numerator) was small. However, there were some notable exceptions. In three hospitals, the corrections we made (after discussion with the hospitals) resulted in changes in the cost per patient that were very large—two to eight times larger than we would have calculated without the adjustments. In all, of the 38 hospitals that checked over their financial information for us, seven (18%) reported errors that resulted in a change in our estimated cost per patient of more than 10%.

The adjustments we made to the denominator (total inpatients served) had a bigger impact, especially for small hospitals. The figures show what the effect of this adjustment was. The largest types of hospitals are on the left side of the chart, the smaller ones are on the right. These figures show the number and percentage of hospitals that had a per-patient cost change of greater than 10% resulting from the adjustment.

The number of hospitals in each category are in parentheses along the horizontal axes of the figures. None of the largest hospitals (teaching and urban community) were much affected by this adjustment. In the major rural and intermediate rural categories, only one in each category had a change in their cost per patient of greater than 10% (figure 1). However, 12 (or 33%) of the small rural hospitals had a change of more than 10% (figure 2). This shows that it is only critical that total-inpatients-served adjustments be made if analyses are to include smaller hospitals.

Conclusion

We did this study to answer the question, Do the adjustments to the numerator and denominator that we recommended in our previous research have a significant effect on per-

patient costs? We found they do. The impact of accounting corrections on the numerator (total expenditures on inpatients) and in-year adjustments to the denominator (total patients served) is modest for most hospitals. But for a sizable minority of hospitals, the total effects are too serious to ignore. For these hospitals, the effects are so substantial that the cost-per-standardized-patient figures would be unreliable without the adjustments.

The total-patients-served adjustments (the in-year adjustments) are not that costly to perform. But identifying adjustments to total inpatient expenditures was very time-consuming. The solution is to reduce the need to make these adjustments in the first place, in other words, to improve uniformity in the hospital's financial reports. To that end, we developed a list of three "checks" that hospitals, RHAs and Manitoba Health should do each month, as well as two that should be done at the end of the year. For example, our first recommendation is that hospitals ensure that employee benefits are being allocated to the hospital units ("functional centers," in accounting jargon) where employees work rather than entirely to one account, such as *administration and support*. Our proposed checklist does not address all the accounting mistakes that were found, but it does address those that had the biggest impact on per-patient costs.

If our recommendations are implemented, we believe the routinely reported MIS financial and hospital discharge data will permit the calculation, in a timely manner, of per-patient cost figures for Manitoba's hospitals that are comparable enough to be useful to hospital administrators. And if it works for Manitoba, it is likely that the same principles will be useful elsewhere.

Summary by Kip Sullivan and Greg Finlayson, based on the report A Comparison of Preliminary and Adjusted Cost per Weighted Case Determinations for Manitoba Hospitals: Impact for Evaluation and Report Cards, by Greg Finlayson, Philip Jacobs, Diane Watson and Bogdan Bogdanovic