



Hospital Funding Policies: Reporting Indicators from Vancouver Coastal Health Authority

BCHeaPR Study Data Bulletin #10 (November 2012)

In April 2010, an activity-based funding (ABF) program was launched in British Columbia (BC). The program provides partial funding to hospitals based on the characteristics of the patients that they treat and what occurs during the hospitalization. This approach to funding hospitals is common in many countries (1). Based on these experiences, it is assumed that ABF will impact four aspects of the health care system:

1. Volume of care (number of patients)
2. Efficiency
3. Quality
4. Ripple effects in health care activity unrelated to the funding program.

Other countries' experiences demonstrate that under ABF the volume of hospital care is expected to increase (2–4). The mechanism behind this outcome is the creation of financial incentives for hospitals to generate additional revenue by admitting more patients (volume) where the costs of care are expected to be less than the revenue generated by these patients.

It is also expected that ABF will introduce incentives to reduce the amount of alternative level of care (ALC) bed use in hospitals. ALC bed usage is considered inefficient because there are high fixed costs for operating acute care beds for patients who don't need the intensity of care offered by acute care hospitals. If effective, this decrease in inefficient use of hospital resources would be expected to enhance access to acute care services for other patients (5,6).

In addition, some have argued that the financial incentives created by ABF may motivate some hospitals to skimp on

What is this research about?

The CIHR-funded *BC Hospitals: examination and assessment of Payment Reform (BCHeaPR)* study examines the impact of activity-based funding on acute care hospitals and related services in BC. Over time, the study team will release analyses on the effects of the change in funding policies. Check www.healthcarefunding.ca for updates and policy implications.

needed services such that the quality of care is negatively affected. Currently, evidence from a number of countries does not support this argument, though this remains untested in Canada. Thus, the quality of hospital care should be carefully monitored during transitions from one funding model to another (4,7,8).

Funding hospitals using ABF may also induce ripple effects throughout other sectors of the health system. For example, hospitals' early discharge of patients may impact ambulatory care patterns or change the intensity of home care services required (9). One potential way to observe these second-hand effects is to monitor readmission rates, as the seven-day readmission rate can be used to trace possible differences in the quality of healthcare being provided (10).

This data bulletin looks at indicators previously examined in *Data Bulletin #7* for Vancouver Coastal Health (VCH), but with additional hospital-specific data. VCH represents the healthcare providers for 1 million people, about one quarter of the total population of BC, and VCH has six hospitals affected by the ABF funding policies.

Four indicators are presented for VCH, one in each dimension discussed above:

1. Volume is measured by the number of medical and surgical cases.
2. Efficiency is measured as the percentage of total inpatient days (medical and surgical) that were designated as alternative level of care (ALC).
3. Quality is measured by the 30-day in-hospital stroke mortality rate.
4. Health system effects are measured by the seven-day inpatient readmission rates for all conditions.

Impact of the Incentive to Date

Volume

Figure 1 illustrates the number of medical and surgical cases in VCH. The number of cases has been slowly increasing in all hospitals in VCH over time. The trend is long-term and does not seem to correspond to the introduction of ABF.

Efficiency

Figure 2 illustrates the percentage of ALC days relative to the total number of inpatient days. For most hospitals, ALC days have begun to decrease since about 2011. In Richmond Hospital, ALC days decreased from 13.5% to 11%. Lions Gate Hospital has seen a steady increase in ALC days, from a low of about 6% in late 2009 to 12.3% currently. These trends do not seem to be associated with the introduction of ABF. Vancouver General Hospital and St. Paul's Hospital have experienced less variability in ALC days.

Quality

Figure 3 illustrates the 30-day in-hospital mortality percentage rate for stroke. Only annual rates for in-hospital stroke mortality are shown, to reduce unwarranted variability in the underlying rate. The percentage has trended downwards in VCH since 2006, although most hospitals experienced a notable, if temporary, increase in 2010/11. This increase aligns with the introduction of ABF. Richmond and

Figure 1: Number of medical and surgical cases, 2006/07 to 2011/12, for VCH hospitals beginning activity-based funding in April 2010, smoothed

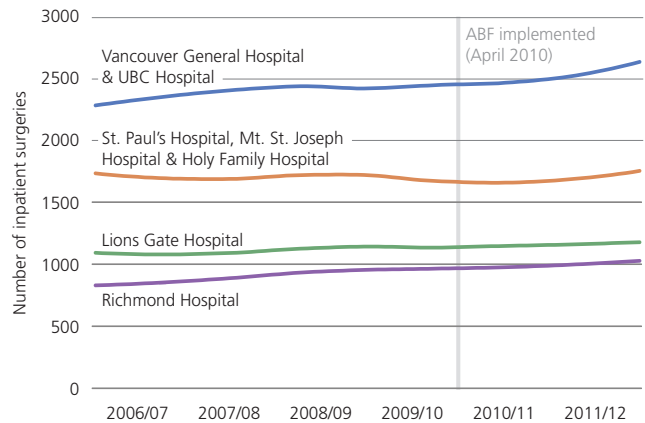


Figure 2: ALC days as a percent of total inpatient days, 2006/07 to 2011/12, for VCH hospitals beginning activity-based funding in April 2010, smoothed

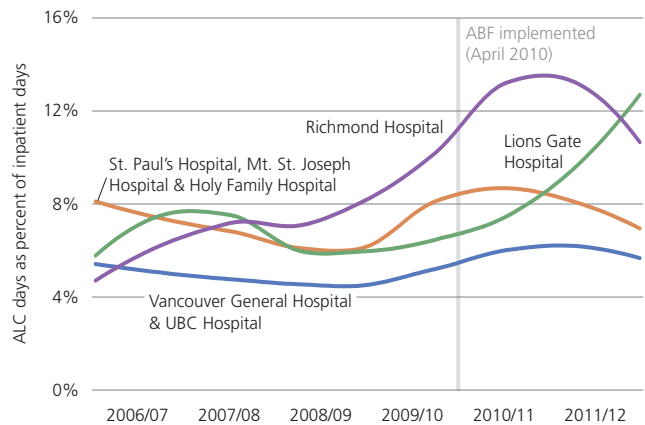
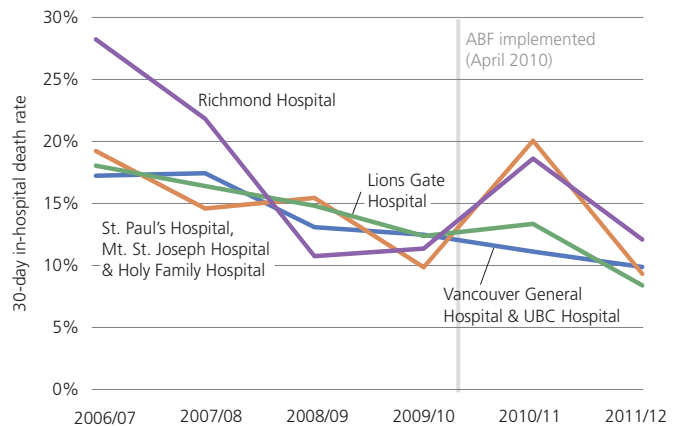


Figure 3: 30-day annual in-hospital death rate for stroke, 2006/07 to 2011/12, for VCH hospitals beginning activity-based funding in April 2010



St. Paul's hospital experienced the largest increase (11.3% to 18.8% and 9.8% to 20%, respectively). Vancouver General Hospital experienced no increase and Lions Gate Hospital experienced a small increase in 2010/11, and then drops from 13.3% to 8.3% in 2011/12.

Health System Effects

Figure 4 illustrates the seven-day readmission percentage rate for all inpatients. The rates among the different hospitals in VCH vary, with St. Paul's moving from a 2006 rate of 4.9%, to a high of 7.8% in 2008 and dropping to 7% currently. Vancouver General has a rate of 4.7%, Richmond 4%, and Lion's Gate 2.6%. All hospitals except for Lion's Gate experienced an increase in readmission rates that corresponds roughly to the introduction of ABF.

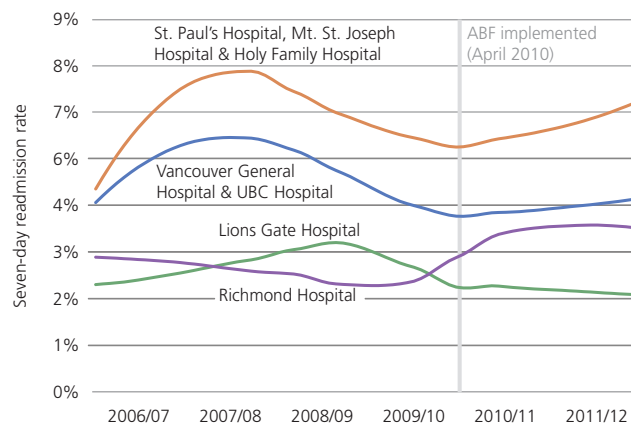
As Figures 1 and 4 show, hospitals in VCH are coping with increases in the number of patients and are experiencing a commensurate increase in readmission rates, suggesting more investigation is required to disentangle the relationship between volume and quality of care. A pattern among in-hospital stroke deaths is difficult to determine; while the overall downward trend suggests better quality, a more recent spike in death rates invites more investigation.

Figure 2 shows that, although volume is increasing, capacity to deal with patients after their acute care episode may still be lacking, potentially leading to the increasing percentage of ALC days.

Conclusion

The time series data presented in the figures above provide a high-level perspective regarding changes in important domains of the healthcare system in BC. However, we cannot definitively attribute hospitals' changes in performance in these four domains to changes in the methods used to fund hospitals. Nonetheless, this project will continue to calculate and report on indicators important to evaluate the effects of the introduction of ABF in BC hospitals.

Figure 4: Seven-day inpatient readmission rate, 2006/07 to 2011/12, for VCH hospitals beginning activity-based funding in April 2010, smoothed



Technical Notes

Data source: the BC version of the Discharge Abstract Database (DAD). The study population included BC residents, as well as non-residents who received health care services in BC. Only hospitals that were included in the HSPO's activity-based funding program are included. There are four ABF hospitals in VCH.

The volume of cases includes both medical cases and surgical cases.

Stroke cases were identified by the Most Responsible Diagnosis with ICD-10-CA Codes = 'I60' to 'I62' (Hemorrhagic type) and ICD-10_CA Codes = 'I63' to 'I64' (Thrombotic type). The study includes patients 16 to 95 years old. Only non-elective cases (urgent and emergency) are included. Admissions after March 1st 2012 were excluded to allow for 30-day follow-up.

The 30-Day In-Hospital Death Rate = $100 \times (\text{total number of stroke death within 30 in-hospital days in a fiscal year}) / (\text{total number of admissions in the same fiscal year})$.

A readmission is defined as an admission occurring within seven days following the previous discharge and readmitted in the same Major Clinical Category. To make the study cohort homogeneous, in-hospital deaths, and planned readmissions to the same hospital were excluded, and only patients 16 to 95 years old were included.

Transfers have been excluded to prevent them from being counted as readmissions. Only non-elective cases (urgent and emergency) are included. The readmission rates are unadjusted for factors known to affect re-hospitalizations.

The seven-day Overall Readmission Rate = (total number of readmission within seven days following hospital discharge in a period) / (total number of index-admission in the same period) *100.

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Contact: Nadya Repin
Centre for Health Services and Policy Research
University of British Columbia
nrepin@chspr.ubc.ca
www.healthcarefunding.ca | www.chspr.ubc.ca