



Hospital Funding Policies: Indicators from Vancouver Coastal Health and Fraser Health Authorities

BCHeaPR Study Data Bulletin #7 (August 2012)

In April 2010, an activity-based funding (ABF) program was launched in British Columbia (BC), under the direction of the Health Services Purchasing Organization (HSPO). The program provides partial funding to hospitals based on the characteristics of the patients that they treat and what occurs during the hospitalization.

ABF is a common approach to funding hospitals in other countries. 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, using ABF, the volume of care is expected to increase (1–3). The mechanism behind this outcome is the creation of financial incentives for hospitals to generate additional revenue by admitting more patients (volume) and by changing the setting of patients' care from inpatient to day care (where safe to do so).

Another common finding among countries using ABF methods is increases in efficiency (1,3,4). An example is the change in alternate level of care (ALC) bed utilization. ALC bed usage is considered to be inefficient because there are high fixed costs for operating acute care beds; meanwhile, these patients could safely be cared for in the community at a much lower cost per patient if settings could be arranged. When effective, this decrease in inefficient use of hospital resources enhances access to acute care services for other patients (5,6).

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.

It has been argued that the financial incentives created by ABF could potentially motivate some hospitals to 'skimp' on services such that the quality of care is negatively affected. Currently, evidence does not support this argument, though quality of hospital care should be carefully monitored (3,7,8).

Funding hospitals using ABF approaches may also induce 'ripple' effects throughout other sectors of the health system. For example, early discharge of patients from hospital 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 health care provided (11).

This Data Bulletin examines hospitals in the two largest health authorities in BC, Vancouver Coastal Health (VCH) and Fraser Health (FH). These health authorities represent the health care providers for 2.6 million people, over half the population of BC, and they cover 15 of the 23 hospitals eligible to receive ABF.

For these health authorities, we present four indicators, one in each dimension discussed above. **Volume** is measured by the total number of inpatient surgery cases, **efficiency** is measured as the percentage of total inpatient days (medical and surgical) that were designated as alternative level of care (ALC), **quality** is measured by the 30-day in-hospital stroke mortality rate, and **health system effects** are measured by the seven-day inpatient readmission rate for all conditions.

Many of these aspects have been analyzed in previous data bulletins (available at www.healthcarefunding.ca), although this is the first time we compare such a wide variety of indicators across a subset of health authorities.

Activity-Based Funding: Impact of the Incentive

Volume

Figure 1 illustrates the number of inpatient surgeries in VCH and FH. The number of surgeries has been increasing in both VCH and FH. Surgeries in VCH have increased by 11%, from 5,994 in the first 30-day period in 2006/07 to 6,643 in the last 30-day period in 2011/12. In FH surgeries increased by 26% over the same period, from 3,612 to 4,552. The trend is long-term and does not seem to correspond to the introduction of ABF.

Efficiency

Figure 2 illustrates the number of ALC days as a percent of the total number of inpatient days. VCH has seen a sharp increase in ALC days, beginning in about 2008/09, going from an average of 5.5% in 2008/09 to a high of 8.1% in the last periods of 2011 and the first periods of 2012. Recently, ALC days have dropped, to 7.6% in the last period of 2011/12. FH has seen a slower but steady increase in ALC days, from an average of 5.7% in 2006/07 to 8.0% in 2011/12. The growth rate slowed through 2010 and 2011; while not conclusive, this slowing may be associated with the introduction of ABF, although it does not seem to have been sustained.

Quality

Figure 3 illustrates the 30-day in-hospital mortality rate for stroke. The rate has trended downwards in both VCH

Figure 1: Number of inpatient surgeries, 2006/07 to 2010/11, for VCH and selected FH hospitals beginning activity-based funding in April 2010

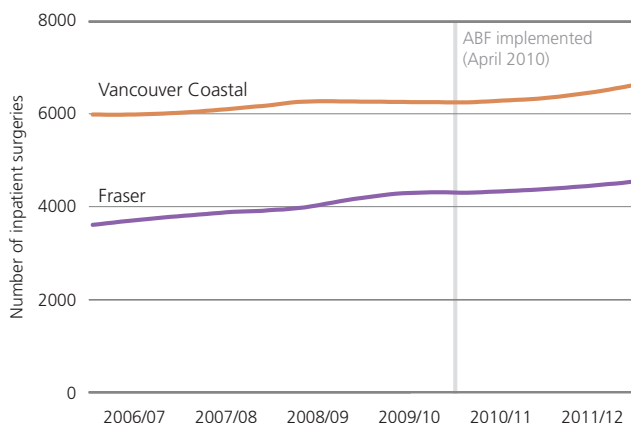


Figure 2: ALC days as a percent of total inpatient days, 2006/07 to 2010/11, for VCH and selected FH hospitals beginning activity-based funding in April 2010

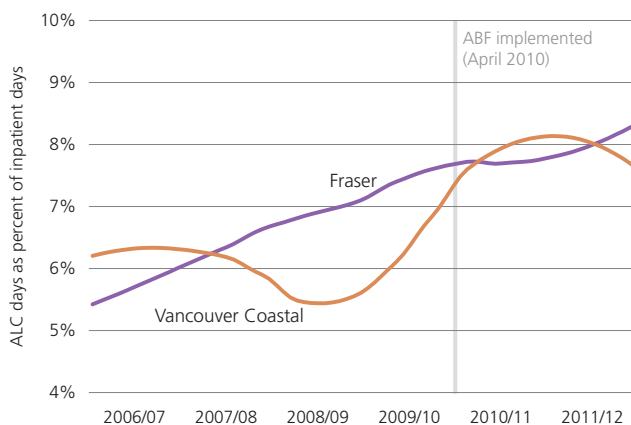
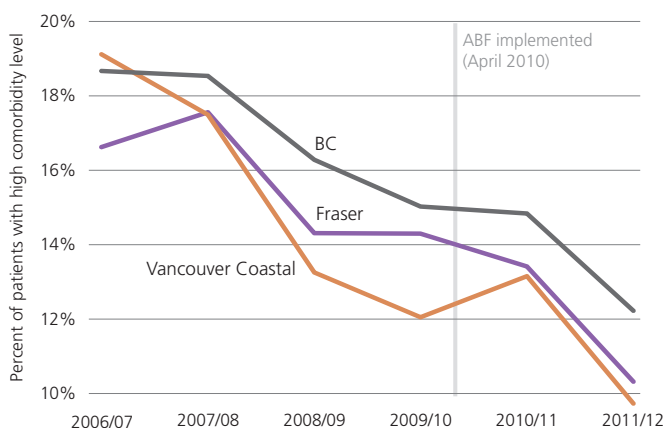


Figure 3: 30-day in-hospital death rate for stroke, 2006/07 to 2010/11, for VCH and selected FH hospitals beginning activity-based funding in April 2010



and FH since 2006, mirroring the provincial trend. In VCH an increase in stroke mortality rate was observed after the introduction of ABF in April 2010, from 12.1% in 2009/10 to 13.2% in 2010/11; however, the rate declined to a low of 9.7% in 2011/12. Stroke mortality in FH has continued to decrease, to a low of 10.3% in 2011/12.

VCH sees more stroke admissions than FH with averages of 1,223 and 1,037 admissions per period in 2011/12, respectively. Both VCH and FH have reported an increase in the number of stroke patients admitted since 2009, when averages of 1,104 and 1,022 patients per period were admitted in VCH and FH, respectively. Both VCH and FH seem to have improved the quality of stroke care, despite dealing with an increasing number of stroke patients.

Health System Effects

Figure 4 illustrates the seven-day all-cause readmission rate for all inpatients. The readmission rate declined from 2008 to 2010 and then increased in both health authorities, as well as across BC as a whole.

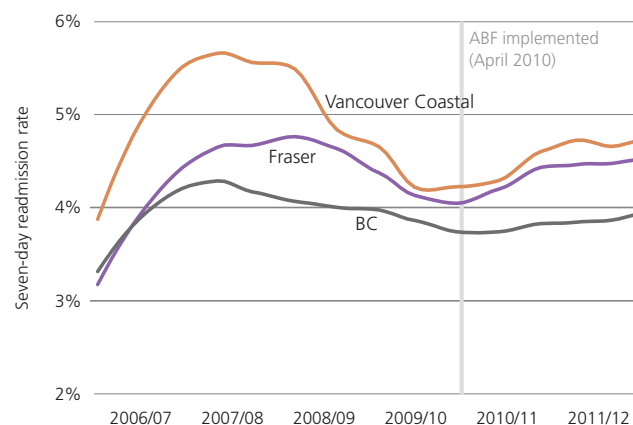
In VCH the readmission rate decreased markedly from an average of 5.6% in 2007/08 to 4.3% in 2009/10. It then increased to 4.4% in 2010/11 and to 4.7% in 2011/12. In FH the readmission rate decreased from 4.7% in 2008/09 to 4.2% in 2009/10 and 2010/11, and then increased to 4.5% in 2011/12. These increases began to occur at about the same time as the introduction of ABF.

In both VCH and FH the number of index admissions has been steadily increasing since 2006. For VCH, which has higher admissions, they have increased from 2,705 in 2006/07 to 3,366 in 2011/12. FH admissions have increased from 2,189 to 3,095 over the same period. Both VCH and FH are dealing with more patients, and are experiencing an increase in readmission rates, indicating a possible negative impact on quality of care.

Conclusion

The time series data presented above provide a high-level perspective regarding changes in important domains of the health care system. However, we cannot definitively

Figure 4: Seven-day inpatient readmission rate, 2006/07 to 2010/11, for VCH and FH hospitals beginning activity-based funding in April 2010



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.

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.

Nine FH and four VCH hospitals began ABF in April 2010. To make the data more comparable, four large ABF hospitals were selected from FH: Royal Columbian and Queen's Park, Surrey Memorial Hospital, Burnaby Hospital, and Abbotsford and Matsqui-Sumas Abbotsford General Hospital.

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

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

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 1, 2012 were excluded to allow for 30-day follow-up.

The 30-Day In-Hospital Death Rate = 100* (total number of stroke deaths within 30 in-hospital days in a fiscal year) / (total number of admissions in the same fiscal year).

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