



## Hospital Funding Policies: Hospital Quality and *C. difficile* Infection

BCHeaPR Study Data Bulletin #13 (February 2013)

In April 2010, an activity-based funding (ABF) program was launched in BC, under the direction of the Health Services Purchasing Organization (HSPO). One motivation for the initiative was to create incentives for hospitals to operate more efficiently by reducing the incentive to restrict services in order to meet budget targets.

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 (1–3). One measure of hospital quality is rates of *Clostridium difficile* (*C. difficile*) infection. *C. difficile* is a bacterium that causes intestinal disease such as enterocolitis, an inflammation of the digestive tract.

While ABF does not provide any direct incentives for improving quality of care, any noticeable decline in quality (such as increased *C. difficile* infection rates) would be cause for concern. Research from the US estimates that the 2008 burden of *C. difficile* infections on acute-care facilities was \$4.8 billion, with excess costs also being seen in long-term care facilities (7). A review of the impact of *C. difficile* in Europe noted that 30-day mortality rates for *C. difficile* ranged from 2.8% to 29.8% with a length of stay between 16 and 37 days (8).

*C. difficile* is a particular concern in BC, where local and national media attention routinely highlight hospitals with outbreaks and associated deaths (4–6). Both Vancouver Island Health Authority (VIHA) and Fraser Health Authority (FH) report current outbreaks online as a result of concerns. VIHA publishes an *active outbreak list*, while FH publishes a *map with active outbreak descriptions*.

### 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](http://www.healthcarefunding.ca) for updates and policy implications.

In BC there are currently no penalties associated with re-hospitalizations for hospital-acquired *C. difficile* infections. In the UK financial penalties exist for failing to reduce rates of hospital-acquired *C. difficile*, and in the US, Medicare does not reimburse hospitals for *C. difficile* as a comorbidity if it was hospital-acquired (9,10).

### Impact of the Incentive

Figure 1 shows the number of enterocolitis cases due to *C. difficile* per thousand inpatients. There does not appear to be any overall trend to infection rates, although both FH and Vancouver Coastal Health (VCH) show increases in *C. difficile* rates after the introduction of ABF. Interior Health Authority (IH) and VIHA show a slowly declining *C. difficile* rate until about 2012.

Figure 2 shows *C. difficile* rates for the three largest hospitals in FH. Infection rates in Surrey Memorial Hospital have increased since the introduction of ABF; however, increasing rates at Royal Columbian Hospital began before the introduction of ABF.

## Conclusion

In BC, the data does not support an association between *C. difficile* infections and the introduction of ABF. However, *C. difficile* infection rates have been increasing over the longer term across the system and pose a significant burden to the healthcare system.

This project will continue to calculate and report on changes in *C. difficile* rates on a periodic basis.

## Technical Notes

The data source is the Discharge Abstract Database (DAD). The study population covers BC residents as well as non BC residents who received health care services in BC. The volume of cases includes both medical cases and surgical cases for inpatients.

Only hospitals that were included in the activity-based funding program are included in the study. All hospitals that began activity-based funding in 2010 are included except the sole hospital in Northern Health Authority.

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

The three largest hospitals in Fraser Health were selected according to the total inpatient cases in 2011/2012.

The cases of enterocolitis due to *C. difficile* in hospital were identified by ICD-10\_CA = 'A047' and diagnosis types = '2' (post-admit comorbidity diagnosis), the diagnosis type which describes a condition arising during the patient's hospitalization.

Figure 1: Rate of enterocolitis caused by hospital-acquired *C. difficile* infection, 2006/07 to 2011/12, for hospitals beginning activity-based funding in April 2010

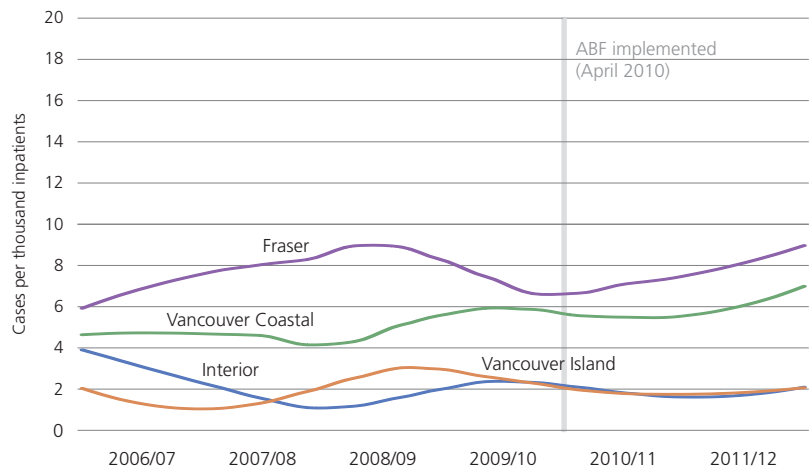
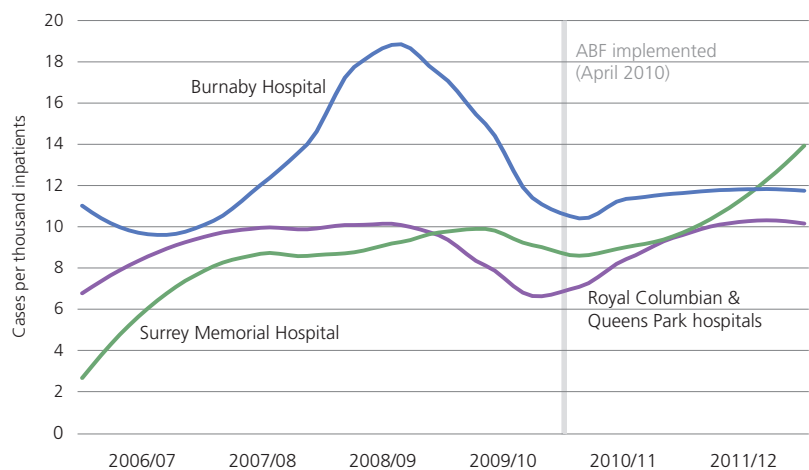


Figure 2: Rate of enterocolitis caused by hospital-acquired *C. difficile* infection, 2006/07 to 2011/12, for the three largest hospitals in Fraser Health that began activity-based funding in April 2010



The rate of *C. difficile* infection = total number of enterocolitis cases due to *C. difficile* in hospital in a period / total number of inpatient cases in the same period x 1000.

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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