What is ABF?

Activity-based funding (ABF) – sometimes referred to as patient-focused funding – allocates funding to a hospital based on the type and volume of services they provide, adjusted for the patient population they serve. For the past three decades, ABF has been supplanting global budgets for hospital funding in public and private insurance-based health systems in most of the developed countries around the world (1)(2).

ABF quantifies and gives a value to a hospital’s ‘output’ – the sum of all of its patients’ hospitalizations. These values are typically based on diagnosis-related groups (DRG) (3) or aggregations of types of hospitalizations with similar clinical characteristics and expected costs.

ABF in Acute Care

With health care budgets steadily rising across most Canadian provinces, the limitations of conventional global budgets to fund acute hospitals are becoming more apparent. This type of care encompasses the single largest expenditure in provincial health care budgets across the country (4). Activity based funding (ABF) offers an alternative to the global budget funding mechanism, one that is earning favour amongst policy makers across Canada.

Budgetary concerns are only one issue that should be considered before pursuing ABF initiatives. ABF has been widely implemented across most developed nations over the past 30 years, and a rich body of literature provides insight into further considerations for policy makers, hospital administrators, and researchers.

Advantages of ABF

ABF offers both economic and political incentives. Efficient hospitals keep the difference between the amount they are paid for a hospitalization and its actual cost. ABF is a transparent funding allocation method with each hospital being paid the same amount for the same type of hospitalization, minimizing a hospital’s ability to claim government underfunding or unfair treatment relative to peers. In addition, ABF (5):

• creates financial incentives for hospitals to increase activity levels
• motivates hospitals to change their mix of labour and non-labour inputs to the most cost-efficient combination
• mitigates cream skimming because the level of funding is adjusted to reflect patients’ levels of clinical complexity
Efficiency
Since ABF allows hospitals to earn the difference between the cost of service and the ABF payment amount, hospitals have the ability to manage their revenues by delivering care by the most efficient means possible. Setting prices at an appropriate level below the current cost of care creates incentives for hospitals to adjust their labour (e.g. operating room staff) and non-labour (e.g. technology) inputs to maximize cost efficiency, and revenue (6)(7). Making more efficient use of resources can reduce the cost of hospital activities on a per patient basis. Research has shown that ABF has mostly positive effects on the cost per admission, activity levels and wait time reduction (8). A large study in Scandinavian countries noted an increase in Norway’s hospital efficiency by three to four percent (9).

Volume and Length of Stay
Implementation of ABF has been associated with an increase in volume, as reported by countries such as Australia, Norway, Sweden, Denmark, Italy, England, France and Germany (10)(11)(12)(13). One way the increase in volume is made possible is by a general reduction in the length of stay; a study of 28 hospitals using the ABF policy in Europe and Central Asia showed a 3.5% decrease in average length of stay (14). Some European countries (15)(16) and Australia (10) (13) have reported shorter lengths of stay and a shift of activity from acute to post-acute care with the adoption of ABF. Likewise, evidence from the US has reported an association between ABF and shorter length of stays in acute care and greater use of post-acute care(17)(18).

Access
The same financial incentives for hospitals to increase volume also translate to improved access. The greater the volume and more procedures being conducted, the lower the wait times, thus improving access to care (10)(15)(21)(22). Based on patient surveys, Norway has found an increase in patient satisfaction as a result of lower wait times attributed to ABF (21).

While access may be improved under ABF, without careful management this access may not be equitable. ABF hospitals may selectively increase services to patients who are most profitable, where the cost of their care is lower than the funding amount (5). The US observed reduced access for more costly patients, such as those with chronic illnesses or disabilities (23)(24)(25). Moreover, efforts to centralize some hospital services in urban areas to capture economies of scale may lead to reductions in geographic access. For countries with a large geographic area, such as Canada, without proper management ABF may increase problems in equity of access as more services are centralized away from rural areas (8).

Quality
There are concerns regarding implementation of ABF and less safe and lower quality of hospital care, however current evidence in the literature does not support this claim. Evidence from the US and Europe show that mortality was unchanged after ABF implementation (26)(27)(28)(29) while an evaluation of 28 countries detected a weak association between ABF policies and lower mortality (16). Implementation of ABF has also prompted countries such as Germany and France to implement hospital quality monitoring systems, serving to improve clinical best practices as well as support quality improvement efforts (15).
Disadvantages of ABF

Weaknesses associated with ABF include (30):

- the tendency for healthcare providers to provide services with the highest ‘margins’ (highest possible payment requiring the least amount of resources)
- the creation of financial incentives around increasing volume and providing unnecessary care
- increases in the overall cost of care to the healthcare system due to increased volume of care

Data collection requirements and defining funding amounts

ABF relies heavily on standardized, timely and accurate hospital data to set prices and inform hospital-level and policy-level decision making (28). Setting the right price under ABF is crucial because it directly impacts hospital behaviour (31)(32). If marginal prices are set too low, there will be no incentives for hospitals to increase volume, while setting prices too high will crowd-out other, non-ABF, services (28).

Ensuring that prices are set accurately requires that policy makers and hospital administrators understand the cost structure associated with delivering specific types of acute care. To date, this has proven difficult in Canada, with few jurisdictions across the country having the capabilities of detailing their cost structure (6).

Prices set under ABF are based on the average cost of providing care to specific patient types (or case mix classifications). In Canada, hospital cost data used to define prices are dominated by larger, urban hospitals, primarily from Ontario, Alberta, and to a small degree, BC. This has unintended consequences for smaller hospitals whose cost structure for delivering care may be very different to that of a large hospital.

Hospitals must become responsible for increased record keeping and data reporting associated with ABF services. Audits of these data are required to ensure accuracy, in order to avoid mistakes or intentional up-coding (33)(34). Some countries with ABF policies have observed an increase in patients’ reported level of complexity, such as comorbidities (33)(34). This may be a result of better diagnostic and coding practices (35), or it may be an attempt to “up-code” patients into a higher payment amount (36)(37)(38)(39).

Up-coding

Up-coding is the manipulation of clinical data to increase a patient’s classification level to one with a higher funding amount, usually by addition of minimal or non-existent co-morbidities (8). Up-coding has been documented in the US, UK, Sweden, the Netherlands, and Australia; however the risk of this practice varies by country and may be affected by factors such as market characteristics and the design of the patient classification system (40)(38). Systems in place to mitigate up-coding include internal audits and fines for hospitals as well as incentive adjustments to institutions that have high levels of up-coding (8). In the US, up-coding is considered fraud and penalties for individuals which include exclusion from future reimbursement from Medicare and imprisonment (41). Currently, there is no thorough monitoring system in place for the application of ABF in Canada (8).
Crowding-out
With ABF, there is a risk of crowding-out other procedures in the name of revenue generation and efficiency. Crowding-out occurs when prices are set too high. Hospitals have a tendency to increase the volume of those activities with the highest margins, potentially at the expense of other activities not funded by ABF (or with lower margins) \((15)(24)(25)\). However, studies conducted in Ontario have observed no such effects as a result of introducing incremental funding for some hospital activities \((42)(43)\).

Higher overall costs
Despite the potential reduction in costs per patient, the increase in volume of services results in an increase in total per capita healthcare spending \((5)\). There will also likely be costs associated with new investments in technology, data capturing reporting procedures, and auditing. Policy makers should prepare accordingly, by either increasing their acute care budget or looking for an offsetting reduction in costs. Likewise, hospital administrators should prepare for an increase in their administration and information technology (IT) costs.

Services and hospitals for which ABF can be problematic
Several types of services have been identified as difficult to manage with ABF. Emergency room, ICU, and mental health care are all examples of services which may not be appropriate for ABF because they are associated with more intensive levels of care and higher costs \((44)\). Many systems have excluded these services from their ABF policies \((15)\). Highly specialized hospitals, with a greater number of very complex cases, tend not to work well under ABF policies \((15)\). Their costs per patient are often much higher than the average hospital, causing them to run a deficit. In addition, academic hospitals do not tend to work well under ABF because non-medical services, such as teaching and research, are not remunerated under this funding policy \((15)\).

Small Hospitals
There is evidence that ABF can place substantial financial pressure and have unintended consequences on small hospitals \((45)\). Reducing their costs below the average cost (and funding amount) may not be feasible because the cost of labour and supplies can be considerably higher in the areas where small hospitals tend to be located \((46)\). Implementing ABF in smaller hospitals has the potential to result in \((47)\):

- a decrease in appropriate hospital admissions
- lower perceived quality-of-life and lower perceived health status by residents
- increased wait times for hospital care

Small hospitals tend to have more chronic patients and whose patients have difficulty accessing the spectrum of post-acute care services \((46)(47)(48)\). In Australia, for example, significant variations in hospital length of stay have been observed for clinically similar patients living in rural and urban setting; rural patients tend to have longer stays due in part to the availability of appropriate health care resources post-discharge \((49)\). If small hospitals in Canada experience similar issues, their ability to increase volume, and improve access would be limited.

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ABF in Inpatient Rehabilitation

Inpatient rehabilitation care is often required after surgery or major illness in order to restore physical or cognitive functionality. Rehabilitation units are typically located in acute-care hospitals, or in specialized rehabilitation hospitals, where patients receive complex medical services from medical and rehabilitative professionals (50). Average lengths of stays for rehabilitation inpatients range from 10 days for stroke, to 90 days for spinal cord injury (50).

In the US, inpatient rehabilitation is funded on an episodic basis under Medicare's Case Mix Group (CMG) case mix system (8). Patients are classified into one of 21 rehabilitation impairment categories (RIC) which are associated with a cost weight. Medicare then pays the hospital based on the number of patients and the costs associated with their CMG (51). Evidence from the US show that using ABF to fund inpatient rehabilitation is associated with reduced length of stay and episode costs, but there are mixed effects on quality and access to care (52)(53). There is some evidence that quality of rehabilitative care is subject to forces of market competition (54) although it is difficult to evaluate providers in terms of quality of care (55)(5).

ABF in Long-Term Care

Long-term care (LTC) is intended for people with long-term functional or cognitive disabilities. It integrates the functions of health services and accommodation in a single setting, with access to 24 hour nursing care as well as assistance with activities of daily living (56). The health services component is usually publicly funded through a per-day amount (per diem) or a combination of global budgets and per-diem, depending on the province (57).

In Canada, LTC is offered through a mix of public, private for-profit, private not-for-profit, and religious-based providers. The terms nursing home, intermediate care home, residential care facility and long-term care home are used interchangeably. Nursing homes and other types of institutional care made up 10.4% or $20.8 billion of Canadian health expenditures in 2011, and are estimated to be 10.5% of Canada's total health care expenditures in 2012 and 2013 (56). In 2008, there were nearly 194,000 long term care beds in Canada or 90 beds per 1000 population aged 75 or older (50).

ABF in LTC is funded on a per-diem basis, but it does not provide any financial incentives for providers to increase volume or transition patients to less intense care when appropriate (57)(8). Evidence from the US suggests that ABF was successful in reducing growth in costs, yet there is mixed evidence regarding its impact on quality of care and cost efficiency (58). In some for-profit long-term care facilities, a reduction in nurse staffing levels has been observed (59), which is concerning given the correlation found between nurse staffing levels and quality of care (60)(61). For example, ABF has been associated with a reduction in rehabilitative services, with a stronger association being observed in private facilities (62). It may not be all bad news, as there is some evidence to suggest that more intense competition between facilities is associated with higher scores on quality measures (63)(64)(65).
ABF in Home care

Home care includes both home health care services (e.g., nursing, rehabilitation, and social work) and home support services (e.g., bathing, housekeeping, and meal preparation) delivered to people living in their homes (66). Home care provides multiple functions, substituting, preventing or delaying the need for acute care or other institutional care (67).

In Canada, home care is funded both publicly and privately and delivered by for-profit and non-profit providers (67). Publicly-funded clients receive care in one of two ways; either through a contracted agency paid for by the government or through a home care agency paid for by the client who receives a monthly stipend from the government to “shop” for home care that best meets their needs. In Canada, total public spending on home care was estimated at $3.4 billion (2007 dollars) in 2003-04, while private spending on home care was estimated at $963.1 million in 2002-03 (66). These numbers likely underestimate the value of home care being delivered to Canadian as it does not include informal care (i.e., care delivered by unpaid care givers, such as family or friends).

In Alberta, the Resident Assessment Instrument for Home Care (RAI-HC) is used to determine the type of care that best fits the clients’ needs (e.g., home care, supportive living or long-term care)(68). In addition, this data can be submitted to CIHI for comparative purposes and can be used for clinical quality monitoring (8). In the US, ABF methods were introduced for home care in 2002 by Medicare with the goal to reduce the number of visits and avoid potentially high-cost individuals. Funding is based on a 60-day episode of care aimed at restorative care and therapy, and funding levels are adjusted for patient-level clinical characteristics collected within the Outcome and Assessment Information Set assessment tool (OASIS) (8). The introduction of ABF resulted in financial distress for many home health providers (69), a decline in the volume of home care visits and mixed results in terms of quality of care (63).

Conclusion

In Canada, activity-based funding may be effective in improving access to services, an area in which Canada is poorly ranked compared to other OECD countries. However, ABF may also present new challenges such as growth in spending, and may not be the best policy to address issues such as quality improvement or coordination of care. Additionally, ABF may not be the most appropriate funding method for certain services, such as mental health care and in specialized hospitals where the price per patient is much higher than the average hospital. Therefore, ABF should be considered alongside other funding mechanisms such as bundled payments to address the various challenges faced by policymakers.
References


43. Canadian Institute for Health Information. Surgical volume trends, 2009-Within and beyond wait time priority areas. Ottawa; 2009.


50. Sutherland JM, Crump RT. *Exploring alternative level of care (ALC) and the role of funding policies: An evolving evidence base for Canada.* Ottawa; 2011.


