In place of fear: aligning health care planning with system objectives to achieve financial sustainability

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Abstract
The financial sustainability of publicly funded health care systems is a challenge to policymakers in many countries as health care absorbs an ever increasing share of both national wealth and government spending. New technology, aging populations and increasing public expectations of the health care system are often cited as reasons why health care systems need ever increasing funding as well as reasons why universal and comprehensive public systems are unsustainable. However, increases in health care spending are not usually linked to corresponding increases in need for care within populations. Attempts to promote financial sustainability of systems such as limiting the range of services is covered or the groups of population covered may compromise their political sustainability as some groups are left to seek private cover for some or all services. In this paper, an alternative view of financial sustainability is presented which identifies the failure of planning and management of health care to reflect needs for care in populations and to integrate planning and management functions for health care expenditure, health care services and the health care workforce. We present a Health Care Sustainability Framework based on disaggregating the health care expenditure into separate planning components. Unlike other approaches to planning health care expenditure, this framework explicitly incorporates population health needs as a determinant of health care requirements, and provides a diagnostic tool for understanding the sources of expenditure increase.

Keywords
fiscal sustainability, health care planning, integrated planning, population needs

Introduction
Questions about the financial sustainability of publicly funded universal health care systems have arisen as a result of the challenging financial climate in many countries as well as the call for expanding universal coverage for health care in lower and middle income countries.¹,² Sustainability is a dynamic construct related to the ability of a system to endure and withstand changing circumstances.³ In health care, changing circumstances include population aging, advances in technology and increasing patient expectations.⁴,⁵ Continued growth in total health care expenditure and the proportion of public spending absorbed by health care strain the capacity of governments to continue funding universal, comprehensive health care independent of changes in political orientation associated with changes in governments.

In this paper, we show how the potential of publicly funded health care systems to contain health care expenditure through use of the monopsony power of the single provider or purchaser has not been realized. We further show how this has resulted from planning mechanisms that focus on matters of health care supply and service utilisation to the exclusion of explicit consideration of population needs. We develop a health...
care sustainability framework (HCSF) to identify the drivers or determinants of health care expenditure. The framework provides an important tool for health care planners by integrating health care, health workforce and health expenditure planning in ways that reflect the changing needs of the population.

Are publicly funded health care systems unsustainable?

Public funding of health care provides a way of controlling health care expenditure through monopsony power of governments as the sole, or major purchaser of health care services. However, countries with similarly high proportions of health care expenditure from public funds have experienced different levels of growth in the proportion of gross domestic product (GDP) spent on health care. For example, the proportion spent on health care increased between 1989 and 2009 by 67% in UK but only 22% in Sweden. Moreover, the rate of growth in the UK during this period was much greater than in the United States (52%), where the proportion of private funding is much higher and hence much less monopsony power is held by government. Hence, the financial sustainability of health care systems does not automatically follow monopsony power but depends also on effective planning and management of health care resources. The threat of government failure in health care (i.e. failure to allocate health care resources optimally) and the consequences for system sustainability are no less than the threat of market failure in health care (i.e. failure of private markets to allocate health care resources optimally). It is therefore important to consider whether policies and strategies aimed at containing health care expenditure achieve anticipated reductions in the rate of growth of expenditure and, if so, whether any such reductions in expenditure growth are achieved by compromising the policy goals of the health care system such as reasonable or equitable access to health care, or broader social goals to which the health care system contributes such as reductions in social inequalities in health.

During the period of financial restraint in health care in Canada between 1985 and 1991, use of primary care among lower socio-economic groups relative to other groups remained the same but their health status worsened relative to the rest of the population. So, changes in the relative amount of health care these groups received did not reflect changes in their relative need for it. Similarly, social inequalities in health in Australia increased under universal publicly funded health care while policies promoting private health care insurance, intended to relieve pressure on the publicly funded health care system, instead redistributed health care utilization towards more prosperous groups in the population. These examples suggest that expenditure control policies risk eroding the basic principles of publicly funded health care systems including who is covered (universal coverage), what is covered (comprehensive services), and how services are accessed (access based on need, not ability to pay) through changes in the way health care is delivered. In Ontario, for example, a policy of early discharge from hospital following joint replacement surgery relocated the physiotherapy component of the treatment episode to the community. However, changes to the Ontario Health Insurance Plan (OHIP) in 2005 limited public funding for outpatient physiotherapy to persons 65 and older (limiting coverage) and to physiotherapy treatment (limiting services), leaving the patient to pay out of pocket for the physiotherapy assessment fee as well as additional ‘per visit’ fees (limiting access). These and other examples of cost control policies have neither arrested nor reversed the increasing demands of health care on public funding, leading to concerns that universal publicly funded health care may be fundamentally unsustainable and that public funding may need to be limited to providing a ‘safety net’ covering vulnerable groups such as the elderly and the poor, or costly treatment (e.g. catastrophic coverage subject to a high deductible payment).

A recent review of health expenditure forecasting identified three analytical approaches to addressing these concerns: (1) micro-simulation models (applying desired clinical approaches to demographically adjusted populations) and component-based models (including disability trends) that focus on changes in demand as the source of expenditure growth; (2) macro-level models, that forecast aggregate health care expenditure using GDP as an indicator of aggregate demand; and (3) more general equilibrium approaches that introduce supply forecasts. Di Matteo used regression analysis to identify factors associated with public health care expenditure growth in Canada between 1965 and 2008 and used the estimated equation to project future expenditure. However, the analysis was not based on any clear conceptual framework. For example, physician numbers were not included in the model, though physicians generate a large proportion of health care utilisation. More recently, Di Matteo included physician expenditure as an explanatory variable in an analysis of health care expenditure. He concluded that ‘physician numbers alone are a modest policy concern when it comes to restraining health costs and other factors such as utilisation and fees are more important’. However, this assertion fails to recognize that physicians influence utilisation in response to, inter alia, changes in fees and other health care policies.
Demand, supply and population need for health care

These models of health care expenditure fail to recognize the complex nature of health care demand and supply. Expenditure is a function of service use, where use reflects the intersection of supply and demand. In most markets, supply and demand represent the independent plans of producers and consumers, leading to ‘market clearing’ prices and quantities and stable equilibria. Demand for health care is not independent of supply; ‘consumers’ demand change in health status (or risks to health) from which the supplier (service provider) derives a demand for services. Hence demand is determined in part by supply, and so demand is not an independent measure of population needs. But health care expenditure forecasting models typically identify ‘drivers’ or determinants of expenditure (e.g. technological progress, consumer expectations) as exogenous or external pressures on expenditure, even though these determinants can be influenced by suppliers concerned with maintaining workloads and incomes (supplier-induced demand\(^23,24\)). Kopec et al.\(^{25}\) and Astolfi et al.\(^{12}\) argue that a model is valid only if its structure reflects relevant features of the policy environment. By ignoring market failure, and the endogenous nature of expenditure determinants, these forecasting models lack validity. An alternative model of derived demand for health care is therefore required to analyse changing circumstances and the implications for sustainability.

Aging populations, as indicated by increases in population mean age, reflect increases in average levels of health, and hence the average probabilities of survival, at each age. Increased demand for health care arising from an increasing number of older people (an age effect) is partially offset by a reduction in needs for care from an increased average level of health by age (a cohort effect). While the probabilities of mortality, mobility problems and pain increase with age in the Canadian population, the rate of change with age is greater for those born earlier.\(^{26}\) In other words, aging has less adverse impact on health across successive cohorts. However, trends in health care use do not reflect this reduction in average need for care by age. Levels of service use in the UK have increased over time within older age groups despite improving levels of health.\(^{24}\) Moreover, the rate of increase in use was greater in groups reporting no health problems compared to those reporting health problems.\(^{24}\) Hence trends in service utilization over time cannot be explained by trends in needs for care.

Given the labour intensity of health care production, advances in technology have the potential to generate cost savings from productivity improvements.\(^{27,28}\) However, technology adoption usually leads to increased expenditure as demand increases to absorb the capacity to provide care. For example, the introduction of less invasive procedures for elective surgery in Ontario (e.g. cataracts) increased total expenditure as the reductions in the resources (and hence costs) required per patient were offset by the failure to reflect productivity gains in provider payments and changes in the threshold for intervention.\(^5\) Questions about what the health care system ‘should do’ for patients became overtaken by answers about what the health care system ‘can do’ to maintain provider workloads.

Finally, patient expectations are often driven by provider information on what ‘can’ be provided;\(^{29,30}\) and may not reflect patient needs. Observed variations in utilization of many health care services within Canada cannot be explained by variations in need.\(^{31,32}\) Hence increasing demands for health care that threaten the sustainability of publicly funded systems may be driven by the interests of suppliers. This reflects Evans’ Health Care Sector Income-Expenditure Identity\(^6\) in which the total cost of care is given by the total income of health care suppliers. Controlling demands and, therefore, expenditure requires careful planning and management of health care supply in terms of both the number and remuneration of providers. Managing provider numbers is insufficient to control expenditure since pressure to increase expenditure, and hence incomes, may shift to provider pressures for increased services and/or fees.

Needs must: a health care sustainability analytical framework

Birch et al.\(^{33}\) presented an alternative approach aimed at linking provider numbers to needs for health care in the population being served. Their health care workforce planning model integrated changing circumstances in terms of demography, epidemiology and productivity, into service and workforce planning, controlling for supply-led ‘pressures’ on expenditure. In this approach, health care requirements respond to population needs as opposed to service use, and hence supply.

Little attention has been given to managing those factors conducive to policy change, such as productivity and level of service, in order to plan effectively for factors less conducive to policy changes (e.g. population health needs).\(^5,34–36\) Although some authors have measured or discussed trends in population needs,\(^5\) this research has generally not been incorporated in the sustainability literature. Evidence relating to expenditure on health care systems (financial sustainability) and to access to health care and social inequalities in health (political sustainability) has not been
linked at a system-wide level. Some countries such as the UK have made significant progress in adopting needs-based approaches to allocating a particular health care budget as a means of improving efficiency of resource use and equity of access to care.\(^\text{38}\) However, these efforts have not extended to applying needs-based approaches to planning the levels of resources for health care. By integrating financial, service and workforce planning into a single dynamic needs-based framework, the threats to system sustainability arising from the interdependence of demand for and supply of health care can be avoided and sustainable universal publicly-funded health care systems can become a reality. Figure 1 presents such a HCSF in which financial sustainability is affected by revenues to support the health care system (column 4) and levels of expenditure (column 2).

In difficult economic times the opportunity to support increasing expenditure through increasing revenues is constrained (column 4), leaving expenditure controls as the main tool for financial sustainability. Column 1 identifies the determinants of expenditure. The ways policies and strategies to control public health care expenditure growth affect these determinants appear in column 2. Demography and epidemiology largely lie outside the influence of health care policy, at least in the short term, leaving the shaded expenditure determinants, levels of service, provider productivity and provider pay, as policy routes for expenditure control in response to exogenous changes in population size, age distribution and health. These policies may also affect access to publicly funded health care and social inequalities in health (column 2). Reductions in access to care would threaten political sustainability (column 3) as more people seek health care from the private sector. Bevan’s notion of a publicly funded health care system being an institution ‘in place of fear’\(^\text{39}\) may become ‘in face of fear’ if the population believes that financial policies reduce the probability of effective care being available when needed. If those with the potential ability to pay privately for care, either out of pocket or through private insurance, demand access to an alternative system, support for the publicly funded system is eroded.

**Discussion**

The HCSF represents a development of the needs-based health workforce planning framework,\(^\text{33}\) and is consistent with the activity analysis planning framework used effectively to analyse health workforce policy, health care expenditure policy and physician practice pattern changes.\(^\text{6}\) More recently, these frameworks have been used separately to inform health human resources policy in Canada and other countries.\(^\text{24,26,40}\) The HCSF, by drawing on these separate approaches, identifies total health care expenditure as the product of the number of health care services delivered and the average cost per service. The total number of services is determined by the product of the size of the population served, the average level of health among the population, and the average service use per person by level of health. The average cost per service is given by the product of the average provider payment per service and the average number of services delivered per provider, plus any non-direct labour costs (i.e. management and administration, capital or consumables). In other words, total health care expenditure

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**Figure 1.** Health care system sustainability framework.
is a function of the size and level of the health of the population, the services they use, the providers required to deliver those services, the costs of paying those providers, and any additional non-labour costs. By combining the frameworks of Evans\textsuperscript{6} and Birch et al.\textsuperscript{33} in this way, the contributions of each determinant of expenditure can be analysed and compared and the effect of policies on those determinants evaluated. The framework can be used prospectively as a planning tool to explore the resource consequences of policy developments covering, inter alia, service enhancements for particular client groups, implications of productivity improvements and provider substitution for health workforce requirements as well as expenditure consequences of these developments. It can also be used as a diagnostic tool by identifying the underlying contributing sources of expenditure growth: increases in population size, needs, services per unit need, or reductions in provider productivity and pay.

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**References**


