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Seminar Briefing 17

Lunchtime Seminar with Professor Stephen Birch McMaster University, Canada and University of Manchester, UK.

Improving the Fiscal and Political Sustainability of Health Systems through Integrated Population Needs-Based Planning

1. Introduction

Consideration of health service planning is timely, with Simon Stevens – chief executive of National Health Service (NHS) England – delivering a speech in October 2014 defending NHS England's Five Year Forward View blueprint, which outlines the strategy for addressing the expected £30 billion per year shortfall in finances (NHS England, 2014). The aim of this Office of Health Economics Briefing is to discuss how the failure in our methods of planning is responsible for these perceived shortfalls, inspiring sentiments that we can no longer "afford" the NHS and that we have to change things we do in a big way. It is appropriate therefore to add a subtitle to this seminar briefing:

Improving Sustainability through Population Needs-Based Planning
– or "In Place of Fear"

"In place of fear" comes from Nye Bevan, the founder of the NHS, and his book on the public services published in the early 1950s. In Canada currently this fear is apparent: the political fear of not being able to sustain a publicly funded health care system; the fear that radical change is needed, either by

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introducing user charges or by restricting what is delivered by the health care system. In this briefing I consider the sustainability problem for publicly funded health care, and describe a framework whereby workforce planning can be integrated into a system-wide approach to health planning which is based around the needs of the population being served and on evidence-based approaches to addressing those needs.

1.1. The problem: sustainability

Sustainability is about the capacity to endure and withstand changing circumstances. All news items around health care systems are focused on whether we can sustain our current health care system whilst withstanding the pressures of our changing circumstances. These changing circumstances are regularly cited to be: (1) the demographic shift – an ageing population gives us more to do; (2) advancing technology – which means that we are able to do more; (3) increasing expectations – people are demanding more. These are recurrent themes alongside stated notions that we must spend more on the health care system. It is thought that we have no choice about these things, and that they act as pressures that mean that we must spend more.

Most publicly funded health care systems were developed in a very different era. The question is: *were they designed to sustain these changing circumstances?* In particular: *are the policy goals that we had for these systems still achievable in the modern age?*

In 1962, the minister of health at the time, Enoch Powell, said,

> *Progress in medicine does not focus on doing existing things more cheaply and simply, but on discovering complex and difficult things to do that previously could not be done at all …*
>
> *the NHS was a miscalculation of sublime dimensions.*

Although it was for other reasons that Enoch Powell generally made the headlines, from this statement it could be said that he was well ahead of his time.

We can look to Canada for an example of this. Medicare in Canada is organised at the provincial level, and the federal government holds fiscal power to dictate the standards of health care required for federal transfer payments to take place. This gives the government significant power, and is similar to the rate capping that Margaret Thatcher put in place with local authorities whereby provinces would risk reducing money transfers if they were not compliant.

In Canada there is a system of first-dollar public funding of "insured" services that fall under the publicly funded system. There is universal coverage of the resident population for reasonable access to medically necessary care. In practice that means no user charges, with need for care being the only criterion for access.

A report in Canada by Don Drummond, a Toronto-Dominion Bank executive, stated, "If current trends prevail, health care expenditure would make up 80% of total program spending by 2030" (Drummond and Burleton, 2010).This raises two questions: do we need to reconsider universal coverage (who is covered) and reasonable access to care (what is covered)? Are we really at a stage where we must fundamentally change the system introduced in Canada in the 1980s?

2. Publicly funded health care

The public provisin of health care is a response to market failure in health care. In particular, but not exclusively, there are two features: recognition of the *inverse care law* (that the capacity to pay tends to be inversely correlated with need for care) and recognition that in the absence of a public system of health care there are *multiple purchasers* competing for the available supply, which would place upward pressure on prices.

A government-run system gives rise to monopsony power; having a sole purchaser removes at least domestic competition and thereby is able to manage supply in accordance with public goals (i.e. avoiding the inverse care law), and also enables government to control expenditure. However, this assumes that there is no government failure, which may not be a reasonable assumption.

2.1. Health care systems and cost control

Table 1. Health care expenditure, Canada, 1980–2010

	1990	2000	2010
Spending on health care (1980 = 100):			
Total ($ billion, real)	150	197	248
% GDP	127	130	168
Per capita ($)	132	158	214
Public	150	182	235
Public expenditure on:			
Hospitals	137	128	162
Physicians	152	165	216
Prescribed drugs	203	372	539

Source: OECD (2012)

Table 1 illustrates health expenditure in Canada between 1980 and 2010, indexed at 1980 levels. Over that period, total spending on health care rose by 2.5 times. If considered as a percentage of GDP the rise is not as extreme, but its growth has outpaced that of GDP. Very little of this effect can be attributed to the increased population size; per capita, spending has risen at nearly the same rate. Nor can this rise be attributed to increased private expenditure, as the rise in public spending on health is almost the same as the trend for total spending.

Spending for hospitals has risen the least over those 20 years, which is likely to be attributable to the shift in delivery of care to outside hospitals. Physicians' expenditure has risen at a level comparable with that of total spending, but the rise in spending on prescribed drugs is by far the most dramatic.

Whilst it is often considered that private systems of health care, such as that of the US, will lead to very high costs, a comparison between 13 OECD countries of total health expenditure (THE) as a percentage of GDP and public health expenditure (PHE) per capita demonstrates that this is not necessarily the case.

Table 2. Health care systems and cost control

Increase in health care expenditure, 1990–2010:						
Ranking among 13 selected OECD countries						
	THE as % GDP			***PHE per cap***		
	1990s	2000s	Total	1990s	2000s	Total
Canada	10	5	9	12	8	11
Germany	1	11	7	7	12	10
Sweden	12	8	13	13	9	13
UK	5	3	1	5	2	3
US	7	6	5	3	5	4

Source: OECD (2012)

The data illustrate the change in ranking between the 1990s and the 2000s, with the right-hand column showing the rank over the whole 20-year period. Whilst Canada does not rank highly in terms of health care spending increases compared with other OECD countries, the UK – where total health care expenditure as a percentage of GDP has risen dramatically – ranks higher than the US. This demonstrates that having monopsony power within a health care system does not necessarily lead to more successful control of expenditure.

2.2. Wither (or whither) universal coverage and reasonable access

Despite what many commentators and reports imply, universal coverage and reasonable access are not inherently unsustainable. The question we should ask is whether our planning methods support sustainability of these systems. Both fiscal sustainability (controlling expenditure growth and sustaining a manageable level of spending within the funding system), and also policy sustainability (maintaining public support) are important, but the two may act in opposite directions.

I argue that current planning methods are not aligned to the goals of the system. If we consider the NHS, Canadian Medicare and many other publicly funded systems, the premise of their creation was population needs, yet their planning systems do not reflect needs. Rather, they reflect demographic shifts, technological advances and increasing expectations; these are the critical factors that influence decisions to expand health care budgets. Despite the outstanding leadership demonstrated by the UK in integrating needs into decision-making for *allocating* existing resources (i.e. sharing the health care "cake"), consideration of needs does not feature explicitly in *planning* the size of the health care budget (the size of that "cake"). Additionally, planning is not integrated across functions. The entities that plan service provision are separate to those planning the workforce size, which are separate again from those planning expenditure. With this in mind, it may be unsurprising that blockages and backlogs arise.

2.3. Health workforce planning or demography "gone wild"?

The focus of most health workforce planning has been the impact of demographic change. It is assumed that an ageing population places an upward pressure on provider requirements. Additionally, an ageing workforce can lead to concern that capacity to meet those higher requirements may be

at risk, for example if a large portion of nurses are in the last 10 years of their working lives. The reaction is to open more nursing schools. There is no consideration of needs, but rather reliance on a simple model of maintaining a provider–population ratio (how many doctors per thousand people) and applying it to future projected populations.

External targets or lobbying are often the result of perceived shortfalls. For example, if people cannot access family physicians, rather than seeking to understand why, we assume we must need more family physicians, and increase the size of training programmes in order to eliminate the perceived imbalances. However, through a good workforce-planning model there are many ways to address shortages and imbalances, the least flexible of which is to open up the doors of training schools. Producing more doctors and nurses is only useful in the presence of real structural imbalance. The question "how many additional physicians do we need to train?" is not a helpful basis of policy development without specifying what we want to achieve. So how many additional physicians are needed to do what, precisely? Continue to serve the population in the way it has been served to date? This would ignore the impacts of changing needs for care, changing technology and so on on the capacity to care.

2.4. Health workforce planning: features

An important feature of current health workforce planning is that it is performed in isolation from other aspects of health care policy and population health. The research questions are implicit, unclear or poorly defined. We essentially ask, how many health care providers are required to serve future populations in the same way as the current population is served? This suggests that we are happy with the current level of provision, and that requirements are determined by external factors that are all beyond the control of policy.

There are many underlying assumptions of this behaviour, two of which are fundamental. The first is that the population age structure determines service requirements. In other words, it assumes that epidemiology is constant, and that there are, and will be, no changes in age-specific levels of health over time or in the future. However, if that were so, how is it that we have an ageing population? The population is ageing because of improved age-specific health and increased age-specific survival rates, yet we are planning based on providing the same age-specific levels of care to the population.

The second assumption is that provider age structure – the age distribution and size of workforce – determines the quantity of care provided. It ignores changes in the way that health care is produced, thereby assuming fixed coefficients in the production function for health care.

Example: Planning for dentists in the UK (Birch and Maynard, 1985)

An example of this model of service planning can be observed by considering planning for dentists in the UK in the 1980s. Planning had involved projecting service use per population, assuming constant needs by age group. However, during the 1970s there were several developments that were associated with improvements in oral hygiene, for example the addition of fluoride to toothpastes and other products, and reductions in the sugar content of diets. As a result, oral health was improving yet health service planning was on the basis of no changes in oral health.

Additionally, the assumption of constant productivity of providers ignored the impact of technology. In the 1970s multi-chair dentistry was introduced, as well as the use of the fully reclining dental chair, changing the productivity of providers dramatically. However, the planned number of dentists was not amended. Birch and Maynard (1985) therefore predicted an excess supply of dentists in the UK.

There was no subsequent evidence of excess supply in dentistry as the analysis did not anticipate the impact of supplier-induced demand: the emergence of wide-scale orthodontics among children. As a result of training more dentists and having reduced needs, what resulted was not an oversupply of dentists, but an oversupply of dental care.

Example: Planning for physicians in Canada (Newton and Buske, 1998)

In Canada in the 1990s Newton and Buske, of the Canadian Medical Association, predicted that the physician–population ratio was about to fall by nearly 31% in the first 25 years of the new millennium. They recommended an increase in medical school seats. By 2004, the authors acknowledged that they had overestimated the shortage, by which stage extra medical school places had already been opened – a politically popular move for the middle classes with interests in improving access to medical school places for their children.

In a follow-up to that report, we introduced into the model an assumed 1% annual reduction in needs and a 1% annual increase in productivity *ceteris paribus* (Birch et al., 2007), which results in an 27% increase in the "effective" physician–population ratio by 2025. This demonstrates that tiny changes in elements of the planning model can produce very different outcomes, and traditional models could stimulate huge oversupply.

Example: Planning for paediatrics in the US (Shipman, Lurie and Goodman, 2004)

In 2004 Shipman and colleagues reported that the estimated increase by 2020 in the number of paediatricians in the US far exceeded the expected increase in the number of children. In order to maintain workloads, the authors proposed (1) expanding paediatric services (find more things to treat) and (2) treating patient populations beyond current age groups (up to the age of 27). Within four years the American Academy of Paediatrics published a recommendation for cholesterol screening for children from age two – something which would help "mop up" this rapidly increasing capacity to care for children.

3. Conceptual framework

We propose that workforce planning occurs within and not independent of health care service planning; these should be linked explicitly, by incorporating the dynamic and interacting nature of these factors that were previously conceptualised as constant and independent. By doing so, we broaden the policy space beyond simply the number of training seats.

The framework supports an evidence-based approach to needs; measures of need must be considered independent of availability or current use. We *derive* provider requirements from the need for services, which is an explicit relationship (or production function) that is built into the model. By specifying the production of health care as a function of human and non-human resource inputs, we are also able to consider changes in this production function as time goes on. Additionally, we include the contextual nature of requirements, which defines the opportunities and constraints. Finally, the framework incorporates a range of policy levers, of which increasing training seats is just one of many.

There are two independent components of such a framework: provider supply and provider requirements. Provider supply asks, how many providers are or will be available to deliver health care services to the population? This is a fairly well-established field, and will not form the focus of this briefing. Rather, the focus is on our approach to estimating provider requirements.

3.1. Provider requirements

To consider provider requirements, we ask, how many providers are required to ensure sufficient "flow" of health care services to address the needs of the population *as planned*? Emergent services such as the introduction of wide-scale orthodontics were never planned by Government, but rather emerged from the profession. Indeed the traditional approach to planning can be considered "health-free" planning. Under this approach the implicit analytical framework uses demography, P, and treats **either**:

current level of providers (N/P) as constant: $N^{t+1} = (N/P)^{t} \times P^{t+1}$; **or**

current level of services (Q/P) as constant: $N^{t+1} = (N/Q)^{t} \times (Q/P)^{t} \times P^{t+1}$

with N/Q (productivity) also assumed constant, so: $N^{t+1} a \times b \times P^{t+1}$

This implies that future provider requirements are a constant proportion of the future population. This is unrealistic, and needs to be addressed by an enhanced framework.

3.2. Beyond demographic change: an enhanced framework

Having demonstrated that consideration of needs for services are not part of the traditional approach, we must introduce these explicitly. We label this variable H: the average level of needs in a group:

$N^{t+1} = (N/Q)^{t+1} \times (Q/H)^{t+1} \times (H/P)^{t+1} \times P^{t+1}$

The determinants of requirements in this equation are:

DEMOGRAPHY P: *size, age and gender profile of population*

EPIDEMIOLOGY *H/P*: *levels and distribution of needs in population*

LEVEL OF SERVICE *Q/H*: *level of service associated with each level of need*

PRODUCTIVITY *N/Q*: *inverse of average provider productivity*

Only the first of these four variables is incorporated into current planning models; the remaining three allow for a more active model of planning. Incorporating needs allows us to capture the level of health of the population, and any changes (e.g. improvements) in that health. The "level of service" variable requires, for every level of health, explicit planning of services to provide. This means that such decisions are not left to the health professionals themselves, who have a vested interest in service expansion. Finally, the productivity variable represents the number of providers per given number of services. These three new variables account for the variability that exists in epidemiology, levels of service, and productivity, which until now have simply expanded to soak up supply, and which makes it appear that there is shortage in the system. This perceived shortage arises because of the upward pressure to increase the number of providers and to expand funding.

In an analysis of the shortage of registered nurses in Canada, data was taken from population annual health surveys, to which a cohort variable was added. The analysis demonstrates that each successive cohort (over time) experiences fewer health problems, which is consistent whether you measure health by mortality, morbidity, pain or self-assessed health (Tomblin Murphy et al., 2009). This means that we are planning to deliver the same quantity of services per person per age group over time, despite improvements in health. There is also a highly significant interaction between cohort and age.

Table 3. Needs across cohorts: Canada

Ordinary Least Squares – Ages 55–84 (*p*-values in parentheses)								
	Mortality		**Mobility problems**		**Pain**		**Poor self-assessed health**	
	Males	Females	Males	Females	Males	Females	Males	Females
Age	–0.0104 (0.0001)	–0.0099 (0.0001)	0.0064 (0.0001)	0.0095 (0.0001)	0.0015 (0.0087)	0.0022 (0.0001)	0.0033 (0.0001)	0.0044 (0.0001)
Cohort	–0.0036 (0.0001)	–0.0017 (0.0005)	–0.0189 (0.0001)	–0.0286 (0.0001)	–0.0067 (0.0008)	–0.0071 (0.0001)	–0.0014 (0.0400)	–0.0022 (0.0005)
Age squared	0.000093 (0.0001)	0.000084 (0.0001)	––	––	––	––	––	––
Age* cohort	0.000063 (0.0001)	0.000030 (0.0001)	0.000280 (0.0001)	0.000418 (0.0001)	0.000093 (0.0012)	0.000098 (0.0002)	––	––
Intercept	0.3017 (0.0001)	0.2992 (0.0001)	–0.3758 (0.0001)	-0.5736 (0.0001)	–0.0697 (0.0840)	–0.1049 (0.0058)	–0.1732 (0.0010)	–0.2618 (0.0001)
Adj R^2	0.988	0.980	0.714	0.813	0.141	0.301	0.211	0.370
n	150	150	150	150	150	150	150	150

Source: Tomblin Murphy et al. (2009)

Table 4. Hospital service in Ontario 1994–9

	1994–5	1998–9	Change (%)
Population (000s)	10,828	11,412	5.4
Inpatient episodes (000s)	1,172	1,024	–12.6
Number of FTE nurses	45,437	40,465	–10.9
Beds	27,568	21,805	–20.9
Inpatient episodes per 100 pop.	10.82	8.97	–17.1
Inpatient episodes per FTE nurse	25.79	25.30	–1.9
Inpatient episodes per bed	41.46	46.31	11.7
Adjusted inpatient episodes per FTE nurse	24.73	26.98	9.1
Adjusted inpatient episode per bed	40.75	50.08	25.9

Source: Birch et al. (2003)

Another example of failing to incorporate needs into service planning can be seen in hospital service provision in Ontario in 1994–9. In reaction to the fiscal crisis of the 1990s, the medical school dean decided to reduce the number of hospital beds by 20%. Hospital managers, who presumed they could also cut nursing numbers in parallel, struggled to do so, and reduced the number of nurses by just 11%. This was due to two factors that follow from reducing the number of hospital beds: (1) fewer people are admitted, and (2) those admitted have shorter lengths of stay in hospital. With regard the first effect, the "marginal" hospitalisations which are thus avoided are those of patients with the lowest needs. The shorter lengths of stay are achieved by cutting the first and last day of a hospitalisation, which reflect those of lowest resource use. The effect of both of these in the case of Ontario was to increase the intensity of the average patient day in hospital, and as a result *more* rather than fewer nurses were required per patient day. Rather than nurses being less productive, as managers believed, the changing average severity level (need) meant nurse productivity actually increased by 9% over that period. These pressures led to nurse burn-out and many nurses leaving Ontario for nursing provisions in the US. Rather than addressing the system problem, government responded by increasing nursing school intake.

This enhanced framework allows for variations in resource requirements between age and sex groups. It acknowledges that requirements are based on two broad elements: needs for services and provider productivity. In this framework we link together these two elements explicitly, which has not been reflected in current modelling techniques.

3.3. Explaining health expenditure growth

Illness data can elucidate how the needs of a population change over time. For example, Table 5 demonstrates population, health status and estimated health service use in England between 1980 and 2005.

Table 5. Population, health status and estimated health service use, England, 1980–2005

	Population	Numbers with LLSI	Number of over-65s	Outpatient attendance	GP attendance
1980	46.8	9.1	7.1	23.4	163.9
1985	47.1	9.0	7.2	24.7	167.0
1990	47.7	9.1	7.5	26.2	199.5
1993	48.1	9.1	7.6	27.2	207.1
1995	48.4	9.2	7.7	27.9	196.3
2000	49.2	9.4	7.8	29.1	174.2
2005	50.5	9.7	8.1	28.3	178.6
% growth	*7.86*	*6.88*	*13.92*	*20.75*	*8.94*

Source: Birch et al. (2013)

Whilst the English population increased by 7.86%, the prevalence of limiting long-standing illness (LLSI), a measure of self-perceived chronic conditions, increased by just 6.88%; whilst the population has increased, needs (as measured by LLSI) have not increased by the same proportion. Moreover, the increase in the number of over-65s – often perceived to be a significant strain on a health care system – by 14% is not reflected proportionally by the increase in LLSI. This demonstrates that age itself should not be the focus. Over the same period, outpatient attendance rose by 20% and GP attendance rose by 9%.

If we consider the prevalence of self-reported LLSI per 1,000 population by age band in England for 1985 to 2005, it can be observed that LLSI increased the most in the younger age groups, and actually decreased in older age groups. The 14% *decrease* over that time period in LLSIs for the oldest age group – over-85s – is not reflected in our planning system.

Table 6. Prevalence of self-reported LLSI per 1,000 population by age band, England, 1985–2005

	Age group					
	0–14	**15–44**	**45–64**	**65–74**	**75–84**	**>85**
1985	57	103	262	380	458	610
2005	60	118	252	371	447	523
% Increase (decrease)	*5.3*	*14.6*	*(3.8)*	*(2.4)*	*(2.4)*	*(14.3)*

Source: Birch et al. (2013)

Table 7. Prevalence of (at least one) outpatient visit in the last three months per 1,000 population by age and LLSI, England

		Age group					
		0–14	**15–44**	**45–64**	**65–74**	**75–84**	**>85**
LLSI	**1985**	284	271	292	255	225	200
	2005	294	254	295	310	337	324
	% Increase (decrease)	*3.6*	*(6.3)*	*1.0*	*21.6*	*49.3*	*62.0*
No LLSI	**1985**	99	100	101	115	110	111
	2005	96	98	114	154	189	215
	% Increase (decrease)	*(3.2)*	*1.6*	*13.7*	*34.0*	*71.6*	*93.2*

Source: Birch et al. (2013)

In order to understand system use, Table 7 presents the prevalence of outpatient visits over the last three months according to age and presence of LLSI. Whilst attendance increased by 62% in the LLSI population (which could be expected as a result of moving more treatment into the community), for people without LLSI outpatient attendance rose by 93%. This demonstrates that the system is treating a greater number of people with less illness, and that growth in service use has not been concentrated in those most severely ill.

A similar observation can be made by viewing GP data, which demonstrates that the biggest rise in GP visits is accounted for by the relatively healthy older age group; in the over 85s, there was a 2% growth in the LLSI group whereas in the no LLSI group there was a 20% growth in GP visits.

Table 8. Prevalence of (at least one) GP visit in the last two weeks per 1,000 population by age and LLSI, England

		Age group					
		0–14	**15–44**	**45–64**	**65–74**	**75–84**	**>85**
LLSI	**1985**	277	252	268	285	263	323
	2005	217	304	295	301	270	330
	% increase (decrease)	*(21.7)*	*20.6*	*10.0*	*5.4*	*2.8*	*2.0*
No LLSI	**1985**	139	115	99	98	128	193
	2005	97	123	123	158	176	233
	% increase (decrease)	*(30.1)*	*6.5*	*24.5*	*61.6*	*37.4*	*20.9*

Source: Birch et al. (2013)

If changes in population or needs cannot explain expenditure growth, then what can? Table 9 demonstrates the growth in number of practising physicians per 1,000 population in various countries.

Table 9. Practising physicians per 1,000 population: average growth rate per annum, 2000–10 (%)

	Growth rate per annum (%)
Canada	1.5
Germany	1.0
Sweden	2.2
UK	3.4
US	0.5

Source: OECD (2012)

It can be observed that growth in the number of doctors in the UK is high, with an average annual increase of 3.4%. This is much higher than in the US, for example, which has risen just 0.5% annually.

3.4. Applying the analytical framework: simulation models

In order to observe the relative and combined impact of different policies, we applied the analytical model by simulation (using Vensim software). The population for the model was people living in the combined Atlantic coast provinces of Canada. Needs were characterised by the measures already described using age- and gender-specific levels of health, and were assumed to evolve under three alternative scenarios: (1) needs remain constant (the traditional planning scenario), (2) needs continue along recent trends, and (3) needs align with average Canadian levels. The planning period was set at 40 years.

Figure 1. Productivity and provider gap

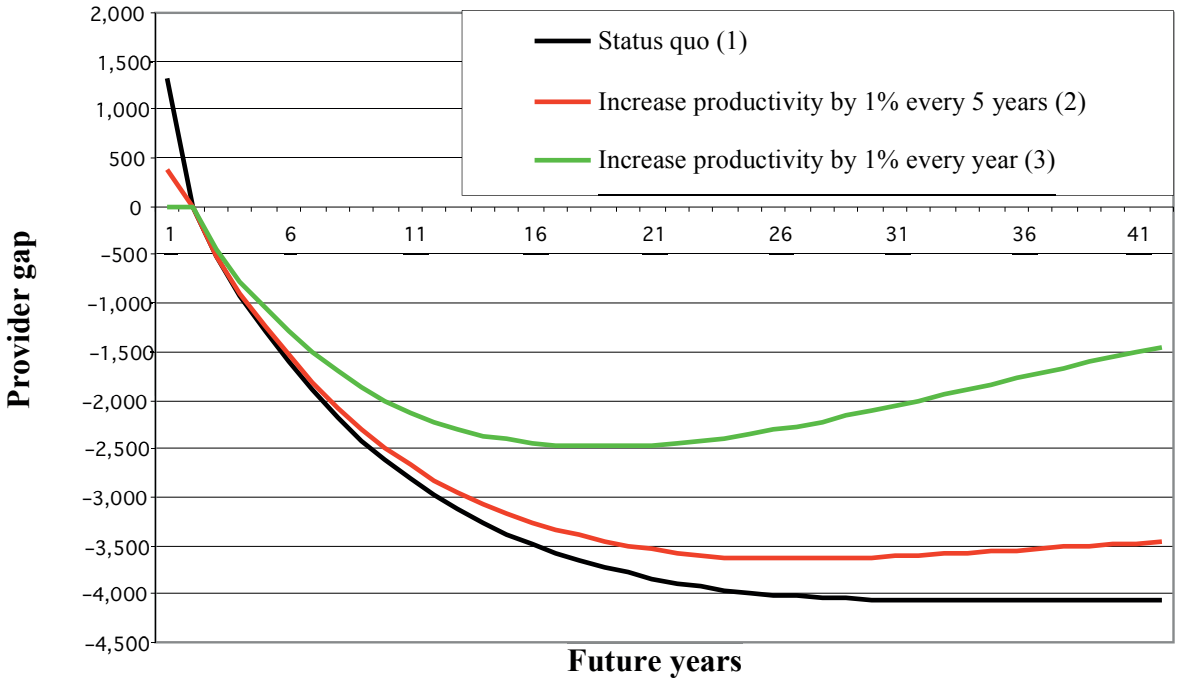
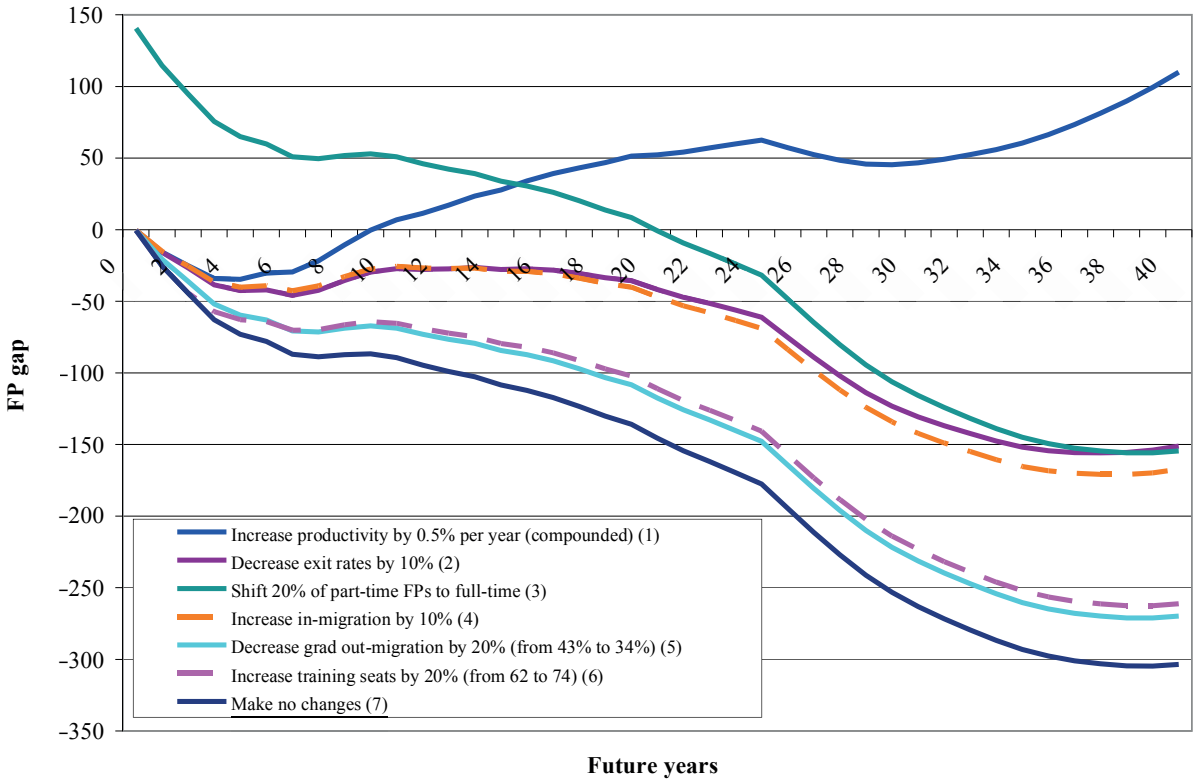


Figure 1 demonstrates the status quo if the provider gap is indexed at zero, as well as what would happen if productivity were to increase by 1% every 5 years or 1% every year (very modest growth). The effect of various scenarios on the provider gap is demonstrated in Figure 2.

Figure 2. Effects of policy scenarios on the provider gap



If no changes are made, a significant shortage in providers can be observed. The knee-jerk policy reaction of increasing training seats by 20% has very little effect on the shortage problem. Other policy levers, such as shifting part-time workers to full-time employment, increasing in-migration, decreasing exit rates etc. all have larger effects on reducing the provider gap. Modest increases in productivity (for example by 0.5% per year) would eliminate the shortage completely. Of course, existing health care policies may already be achieving these modest changes in productivity, but our existing planning systems do not incorporate such changes.

Table 10 demonstrates the increase in training seats required to eliminate the provider gap in 15 years. When used alone, training seats must increase by 130 if needs remain constant; this reduces to 101 if needs conform to average Canadian levels.

Table 10. Additional training seats required to eliminate provider gap in 15 years

	Needs Scenario		
Potential policy scenario	Need remains constant	Need follows observed trends	Need conforms to Canadian levels
Increase training seats only	130	123	101
Decrease grad out-migration from 50% to 40%	97	90	73
Increase in-migration by 10%	93	85	63
Decrease exit rates by 10%	88	79	59
Shift 20% of "part-time" to "full-time"	–ve	–ve	–ve
Increase productivity by 0.5% per year (compounded)	73	68	48

However, by incorporating other policy levers, the number of training seats required can be seen to reduce. Shifting 20% of part-time workers to full-time employment would lead to a surplus of doctors. The *cumulative* effect of the various policy scenarios can be seen in Figure 3, which shows that by putting just a few of the policies in place will lead to a surplus of providers. Table 11 provides the same information in numerical terms.

Figure 3. Cumulative effects of policy scenarios on provider gap

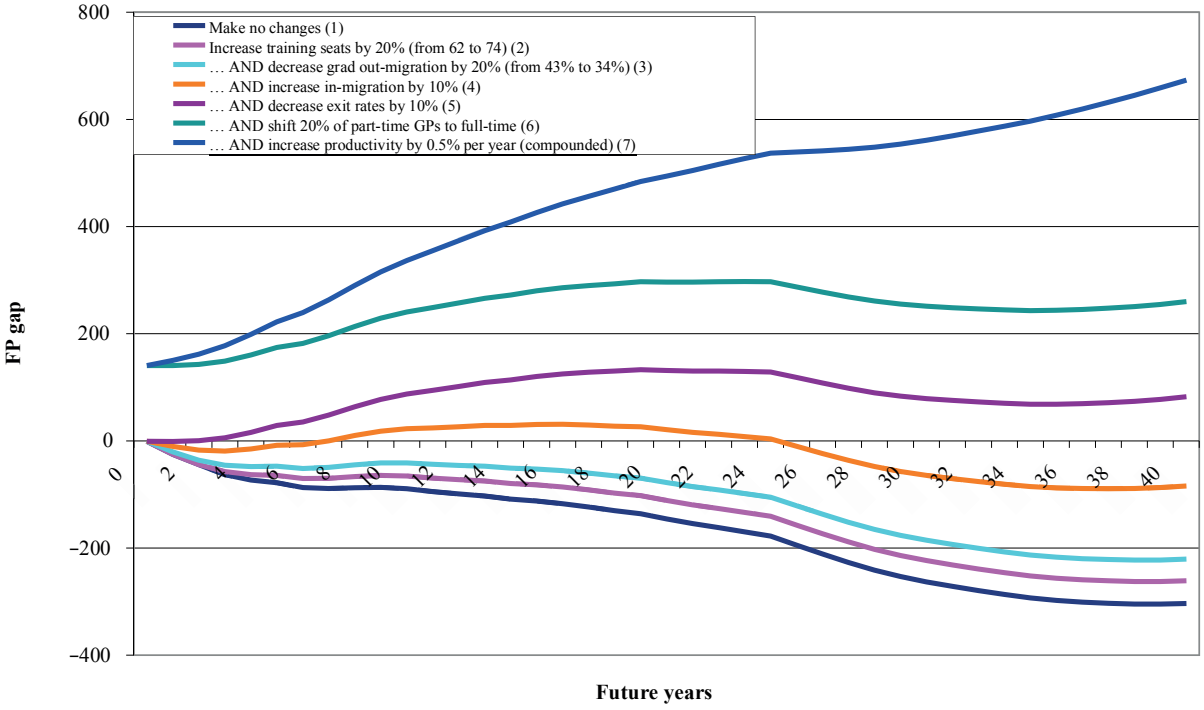


Table 11. Additional training seats required to eliminate provider gap in 15 years under combination of policies

	Needs Scenario					
Potential policy scenario	Need remains constant		Need follows observed trends		Need conforms to Canadian levels	
Make no other changes (baseline)	130	*Diff*	123	*Diff*	101	*Diff*
Decrease grad out-migration from 50% to 40%	97	33	90	33	73	28
…AND increase in-migration by 10%	65	32	59	31	42	31
…AND decrease exit rates by 10%	29	36	23	36	7	35
…AND shift 20% of "part time" to "full time"	–ve		–ve		–ve	
…AND increase productivity by 0.5% per year (compounded)	–ve		–ve		–ve	

This analysis demonstrates that broadening the policy space is critical.

4. Conclusion

"Nothing to fear but fear itself" (Roosevelt, 1966)

There is nothing inherently unsustainable in publicly funded health care systems. Integrated needs-based planning provides a basis for sustainable health care systems, avoiding the "illusions of necessity" that Bob Evans talked about in his book *Strained Mercy*. Planning techniques such as the one described here consider the impact of health care policies on service, workforce and expenditure requirements, bringing these together to avoid the roadblocks arising from health-free planning methods.

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Founded in 1962, the OHE's terms of reference are to:

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