

Can quality and productivity improve in a financially poorer NHS?

NHS finances have been in a healthy state for a while, but the situation is set to become more challenging. **Bernard Crump** and **Mahmood Adil** argue that there is nothing inevitable about loss of quality or productivity in a “flat budget” environment

Health services across Europe and around the world will come under increasing pressure in the wake of the recent financial crisis. There is a serious risk that the quality and productivity of health care will fall as countries make inevitable cuts to their health budgets to deal with the imminent financial gap.

After a decade of unprecedented growth in resources, England's healthcare services must now begin to plan for a much tougher financial future. Although growth in spending is set to continue at the planned rate of 5.5% a year until the end of March 2011, the outlook for the coming years is for a period of static resources.

The King's Fund and the Institute for Fiscal Studies recently speculated about the funding and resource prospects for the NHS using progressively harsher funding scenarios for the next six years that they describe as tepid, cold, and arctic.¹ Even the most optimistic of these scenarios (annual real increases of 2% for the first three years, increasing to 3% for the final three years) represents a much more straitened financial outlook for a service that has been experiencing growth at an average of 6.6% a year.

Recent growth has been following fairly closely that suggested by Derek Wanless in his 2002 report,² which also used three possible scenarios to assess the resources required to provide high quality healthcare services in the future. His fully engaged scenario, the most optimistic and the one adopted by the government, assumed improved health related behaviours and a 2-3% annual improvement in NHS productivity. The figure shows the gap that develops when the “cold” projection from the King's Fund and Institute for Fiscal Studies (zero real change in the availability of funds) is applied to the funding needs predicted by the Wanless scenarios. By 2016-7 the shortfall in what Wanless views as the required future funding, could be £21bn-£30bn (€23bn-€33bn; \$35bn-\$50bn)—nearly 30% of the current NHS spend in England.



The cold scenario does not assume a reduction in resources for health care. Rather, the service would need to realign expenditure to accommodate the extra demands of an older population, the net additional costs of any new technology, the consequences of increasing expectations, and at least some of the typical inflationary pressures that will arise. Although the scale of the gap cannot be predicted with certainty, the projections emphasise the challenge ahead and justify a call for action now.

Do static resources inevitably mean loss of quality?

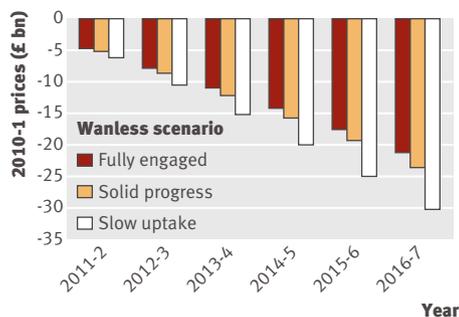
The challenge of maintaining or increasing quality while reducing or realigning costs is common to most sectors of the economy. Indeed, other parts of the public and private sectors might be envious of the relative priority being given to health care.

The work of key pioneers of quality like Deming, Juran et al, and Kano, has shown the scope for improving quality and reducing cost in many sectors.³⁻⁵ Approaches such as lean thinking and six sigma have also been applied to health care in the past decade.^{6,7} The emphasis has been on improving quality—safety, clinical outcomes, etc—rather than reducing costs,⁸ but there is evidence that quality deficits have financial implications. Vincent et al studied adverse events in two acute British hospitals over two months, drawing from a total sample of 1014 randomly selected medical and nursing records.⁹ They concluded that preventable adverse events could cost the NHS around £1bn a year in terms of additional bed days (table).

The relation between the quality of care and cost of care has also been studied. For example, Mitton et al¹⁰ reviewed the theoretical and

Estimated cost of adverse events in two UK hospitals over two months (1999 values)⁹

Specialty	No of patients with adverse events	Mean (SD) extra bed days for all adverse events	Daily cost of bed (£)	Total cost of additional bed days for study sample (£1000s)
General medicine	25	4.87 (5.67)	171	20.8
General surgery	47	6.07 (12.52)	282	80.4
Obstetrics	7	3.57 (2.88)	305	7.6
Orthopaedics	40	14.58 (17.87)	311	181.4
Total	119	8.54 (13.55)		290.2



Predicted gap between required and available resources for NHS in England under three scenarios in the Wanless report and assuming zero real growth in funding after 2011¹

the empirical evidence and concluded that: “a focus on quality would ultimately provide an effective strategy to contain costs, not to mention having a positive impact on patient well-being.” Most recently, the Health Foundation review also highlighted the available evidence of financial aspects of quality improvement.¹¹

Improving quality and reducing cost

Although the application of improvement science in health care has grown rapidly, there are few high calibre studies from the UK that have included the direct and opportunity costs of the improvement intervention. This may in part reflect a lack of evaluation expertise. None the less, we know some interventions are not only effective in improving the quality of care but also bring savings to help with constrained budgets.¹²

There are several interesting examples from the US and Europe. Intermountain Healthcare (Salt Lake City, Utah) was able to reduce the amount of time patients having open heart surgery spent on ventilators by 60%. This improvement resulted in a 30% reduction in the length of stay in thoracic intensive care units, decreasing the total cost of surgery by 15%. Over their entire healthcare system, this change affected about 3000 patients and resulted in a saving of \$5.5m (£3.3m; €3.7m) a year.¹³

Another study in the US showed that patients with ventilator associated pneumonia had a significantly longer duration of mechanical ventilation (by about 10 days), a longer stay in intensive care (by about five days), a longer hospital stay (by about 10 days) and a greater associated cost (more than \$40000).¹⁴ A study in a 24 bed surgical intensive care unit estimated that appropriate oral care with toothpaste and chlorhexidine gluconate reduced ventilator acquired pneumonia cases from 5.2 infections per 1000 ventilator days to 2.4 infections/1000 (P=0.3), saving \$577912, even after the cost of oral care products was included.¹⁵

One Swedish study of five continuous

The productive ward—releasing time to care

The productive ward is an NHS Institute for Innovation and Improvement programme in which ward staff redesign common working processes following a modular approach. The interventions draw on the principles of waste reduction efforts such as lean thinking and six sigma. Implementation typically leads to substantial increases in the proportion of time that ward staff devote to direct patient care, with subsequent improvements in quality and safety of care. Similar programmes are now available for other healthcare settings

quality improvement projects estimated that improved planning of coordinated care before discharge from a geriatric unit would save £103541 in the first year (2006).¹⁶ Review of drug treatment in one home for older people was estimated to save £14633 (£73 per patient per year, in the first year), and reducing the rate of sphincter injury during childbirth from 5.3% to 3.9% was estimated to save £23912 in 2006 and £65283 in 2007.¹⁶ These studies were noteworthy because they tracked carefully the costs of the improvement interventions, including staff training, as well as the impact on the costs of health care.

These and many similar studies, along with the encouraging reports resulting from increasingly popular staff driven initiatives such as the productive ward (box),¹⁷ have stimulated further interest in quality improvement in health care. As well as the ethical, moral, and professional case for taking action to reduce harm and unwarranted variation in care, there is also a compelling business case for quality.¹⁸ Yet even the most ardent advocate for such a case would accept that further evidence is needed.

Quality improvement at scale

Given that the NHS will face a starker financial environment after April 2011 and the evidence that improving quality can release resources, the improvement agenda deserves urgent attention. Although it might be argued that we do not yet have sufficient evidence to support the widescale use of improvement methods, more traditional approaches to cost containment—such as vacancy freezes, reduced training budgets, and general budget reductions—are at best crude and could risk damaging quality.

Nevertheless, advocates of an improvement driven approach have real questions to answer. The first of these relates to scale. Most of the best evaluated improvement programmes have been focused and local. A feature of the improvement approach is that interventions are adjusted in the light of continuously moni-

tored local data. Strong local leadership and improvement capability are required. In many places it will be necessary to build this capacity quickly if projects are to be scaled up. Organisation-wide implementation will be essential to make the required cost savings.

A second issue is that the experience in health care of quality improvement has developed during a decade of rapid growth in resources. As a result, the focus of most programmes has been on improving quality rather than saving money. We therefore need to build confidence and credibility among the managerial and financial communities, persuading them that these approaches can also be used to improve productivity and reduce costs. These projects will also rely on the engagement of staff whose work will change to improve quality. Indeed, there is a principle that it is the staff who will generate many of the improvement ideas and solutions. The harsher financial climate makes this engagement even more essential, but even more challenging to achieve.

A third issue is that the incentive structures in place in the NHS have been developed in a time of increasing resources. There are many examples where these incentives are misaligned with the creation of a service that delivers higher quality but at lower cost.¹⁹ For example, payment by results gives hospitals the theoretical incentive to admit patients rather than facilitate their care closer to home. Also, investment to create an improved and more cost effective service may need to come from an organisation that will not directly benefit from the efficiencies of the new service. Changes to the incentives will be needed, but these may be best identified by local agreement rather than nationally.

It will be essential to engage the clinical community in not only identifying and implementing improvements that will release resources but also in making the decisions about how these resources will be reused. Although primary and secondary care clinicians have been increasingly involved in decisions about the commissioning and provision of care in the NHS, examples remain of disconnection between the managerial and clinical communities.²⁰ Programmes that have been developed in partnership with clinicians, and which have a strong value base and a focus on quality and safety, have engendered engagement. Experience shows that this is most powerful when a visible coalition of managers and clinical leaders support these efforts.

Finally, the next few years will also need to see much greater efforts in engaging patients and the public. Some of the new, more cost

effective approaches to service delivery will feel different from traditional services—for example, telephone follow-up might replace outpatient appointments for patients with long term conditions. These changes will need to command public confidence. It is inevitable that the successful widescale implementation of efforts to reduce length of stay or avoid unnecessary admissions will lead to the opportunity to reduce the capacity of parts of the service and to reduce duplication. These proposals were already highlighted in the regional plans developed as part of *High Quality Care for All*.²¹ And, importantly, there are also strong examples where patients and carers, working in partnership with clinicians, have been able to redesign services together and transform the quality of the patient experience as a result.²² This approach is being used for many long term conditions.

It will therefore be important to work with a public that recognises change in public services as a necessary part of national economic recovery, and to agree the most appropriate changes at national and local level. This transformation will need a sustained and sophisticated dialogue in which local clinicians are central. The development of a local clinical narrative is a priority, where clinicians are voicing a convincing and consistent story about what needs to change and why. This has to transcend historical organisational and sectoral rivalries, and it calls for unprecedented professional leadership. The maintenance and further improvement of quality,

notwithstanding the financial challenges, must become central to this leadership.

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Contributors and sources: BC has worked as a clinician, a clinical researcher, a director of public health, and as chief executive of a strategic health authority. MA was the medical director for the Care Quality Commission Establishment Team (Department of Health), which created the new regulator for the health and social care sector in England. He has also spent time in the Yale School of Public Health reviewing the US healthcare quality improvement and regulatory system. The information in this article is drawn from the NHS Institute for Innovation and Improvement's work and growing body of knowledge about the practical application of improvement science in the healthcare sector, as well as from a wide range of studies and research published by the national and international community of improvement and service design experts. BC is the guarantor.

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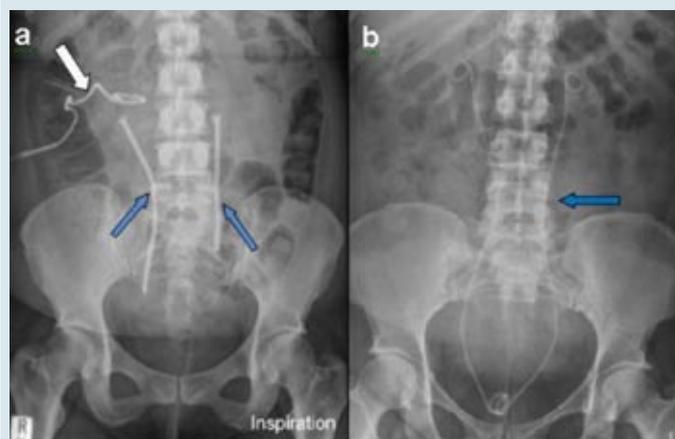
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(a) Abdominal radiograph showing a right percutaneous nephrostomy catheter (white arrow), bilateral ureteric thermoexpandable alloy stents, and medial deviation of the ureters (blue arrows). (b) A different patient with bilateral ureteric double J stents also showing medial deviation secondary to retroperitoneal fibrosis (blue arrow)

PICTURE QUIZ

An unusual cause of acute renal failure

- 1 The plain radiograph shows a right sided percutaneous nephrostomy catheter, bilateral ureteric (thermoexpandable) stents, and medial displacement of the ureters (figure a).
- 2 The axial contrast enhanced computed tomogram shows a rim of soft tissue encasing the aorta that has medially displaced the ureters. This is in keeping with a diagnosis of retroperitoneal fibrosis.
- 3 Causes can be categorised as idiopathic or secondary to a wide range of conditions including neoplastic disease, infection, inflammation, trauma, and drug reactions. Ultrasound, intravenous urography, magnetic resonance imaging, and nuclear medicine can also help diagnose the condition and monitor response to treatment.
- 4 Treatment includes modification of risk factors and withdrawal of the causative agent, surgical and interventional relief of the mechanical complications, and medical treatment aimed at minimising the incidence of relapse and preserving renal function.

STATISTICAL QUESTION Random allocation I d