



UNIVERSITY OF
BIRMINGHAM

HEALTH SERVICES
MANAGEMENT
CENTRE

Restricted capital spending in the English NHS: a qualitative enquiry and analysis of implications

Iestyn Williams, Kerry Allen, Gunveer Plahe

This report presents results from research on the theme of capital spending in the NHS. The research involved interviews with senior finance staff at trusts in which their perceptions and experiences in relation to capital spending and the impact of financial constraint were explored. The research was carried out by the Health Service Management Centre (University of Birmingham), and funded by the Health Foundation.

Summary

Interviews from NHS Trusts described increasing constraint on their ability to access capital budgets and therefore to invest in new projects and/or to maintain current physical assets. The majority reported scaling back and/or delaying capital programmes and reducing their planning horizons in the face of financial constraint and uncertainty. These interviewees believed that reduced spending was limiting the capacity of their organisations to plan and deliver optimal care. In some cases, capital budget shortfalls were seen to have affected patient care.

The study suggests that the environment did not support effective capital planning. This was due to a combination of factors, including:

- Funding deficits: this was the single most cited factor and interviewees were unanimous in advocating an increase in the quantum of available funds for capital projects
- Central controls: interviewees believed that central mechanisms designed to manage the financial position of NHS organisations prevented them from taking a strategic approach to capital investment
- Bureaucratic delays: additional restrictions on planning were seen to result from complexity and delay in the process of securing approval for capital projects business cases
- Internal delays: there was a perception that these wider constraints had induced some risk aversion within organisations and reluctance to embark on major programmes, further exacerbating deficits in the capital infrastructure.

As a result, most respondent organisations were reliant on debt finance to fund major projects and felt that long term planning was not possible. Interviewees cited a range of impacts of these factors on:

- Effects on efficiency and productivity: this was seen as a widespread and inevitable effect of the failure to maintain and/or improve capital infrastructure
- Range and quality of services: this was identified by a subset of interviewees and was linked in particular to deterioration of buildings and equipment
- Safety: this was identified as an area of concern for a minority of interviewees

Capital management was a high priority for the interviewees and was generally a source of frustration as interviewees referred to 'patch up jobs' and 'hanging on by their fingertips.'

Responses identified by interviewees included:

- Scaling back of capital plans and projects: large-scale transformation plans were seen as particularly difficult to achieve with major capital works delayed or abandoned.
- Embarking on lower priority capital programmes for which funding was available (e.g. through donations)
- Asset sales and decommissioning: a small number of interviewees had taken these options

Some organisations had also entered into private partnerships – for example to lease equipment and/or to fund new buildings. Interviewees reported mixed levels of success in bidding for sustainability and transformation funds.

The majority of interviewees described processes for explicit priority setting between capital investment options. The severity of the gap between spending options and available resource meant that considerations of patient safety and service viability took precedence over longer-term drivers of efficiency and service improvement.

Introduction

This report presents findings of research carried out by the Health Services Management Centre, University of Birmingham and funded by the Health Foundation. Capital investment in physical assets such as equipment, technology and buildings is important to the functioning of health care systems, and requires skills and resources to be available at multiple tiers of decision making. However, it is often a neglected or under-appreciated activity. In the words of Braithwaite (2018, 2):

New buildings and new equipment or technology are necessary changes that can contribute to better, more modernised models of caring. Technology supporting new diagnoses and treatments, tests, and clinical techniques can instigate important gains. These initiatives, however, are mostly left to research and development departments, researchers, or clinicians, while politicians and managers focus on organisational charts, opening new hospitals, and prescribing policy.

The aim of the study was to understand how the financial context of the NHS has affected capital spending plans, and the perceived effects of this. We sought to explore how NHS organisations have responded to constraints on their capital investment activities and their perceptions of how this has or has not influenced their ability to make efficient decisions, to achieve local and national change plans, and to maintain patient access to a range of high quality services.

These aims were addressed through interviews exploring the views and experiences of senior finance personnel in a sample of NHS organisations. The report provides a brief outline of the policy and empirical context before describing the approach to data collection. Findings are presented under the headings of 'current funding deficits', 'bureaucratic challenges', 'responding to the challenges' and 'impact on services'. Selective use of interviewee quotation is made in order to illustrate themes. Finally, findings and their implications are discussed.

Background

Policy context

The NHS is facing well-documented demographic and financial challenges as it seeks to reconcile high levels of demand with a limited overall funding allocation (Lafond et al. 2016). NHS organisations are subject to financial and performance targets, with future funding levels dependent on their ability to meet these (NHS Improvement 2016). Local systems are also subject to a combined financial target, organised around the 44 Sustainability and Transformation Plan (STP) areas. Forty eight percent of NHS Trust finance directors forecast a deficit for the period 2018/19 and there is a recognition across the system that difficult decisions are required over spending in all areas (NHS Improvement 2018).

One area affected by these pressures is capital spending, defined here as investment in the acquisition, maintenance or upgrading of physical assets including equipment, technology and buildings. Health Foundation analysis shows that in recent years, capital budgets have been used to fund day-to-day spending on the NHS, leading to a backlog maintenance bill of approximately £6bn (Health Foundation 2018). There remains uncertainty over the implications of these capital spending reductions for local improvement strategies, clinical targets and patient outcomes.

As NHS capital programmes often involve a substantial initial outlay, there is a significant level of national control over decision making, and the Department of Health and Social Care (DHSC) is

required to keep overall expenditure within the envelope allocated to it by Parliament. It works within a Capital Department Expenditure Limit (CDEL). When the DHSC transfers funds from its capital to revenue budgets (as has happened in recent years) in order to stay within budget, this reduces the capital funds available and concerns have been expressed that access to capital is becoming more difficult (Health Finance Management Association, 2018).

As well as the overall CDEL, individual NHS Trusts are subject to a capital resource limit (CRL) which means they require approval of a 'business case' by NHS Improvement (NHSI) for capital projects. Foundation Trusts can pay for capital programmes through funds that are internally generated (e.g. through accumulation of depreciation charges). However, this depends on having the means for generating surplus cash and many currently find themselves in financial deficit, which in turn makes securing loans on favourable terms more difficult.

The overall capital funding regime – in which national public funds have become more scarce and local sources of revenue less accessible – has therefore contributed to delays and deficits in the development and maintenance of capital resources across NHS provider organisations. Despite the additional NHS funding announced in the 2018 budget, little if any of this is available to support capital spending, and NHS Trusts are still required to meet deficit reduction targets and to adhere to financial control totals in relation to capital spending. To meet these targets, local areas are encouraged to 'maximise opportunities for self-funding of schemes using their own capital and receipts from land disposals and are fully considering the use of private finance where this provides value for money' (NHS England/NHS Improvement 2018, 7).

Published evidence

The empirical literature on capital spending in health care is somewhat scant and highly dispersed. There are a number of potential reasons for this, including the relatively low profile nature of such decision making and the causal complexity and time-lag between investment decisions and intended outcomes. These characteristics make empirical examination of decision making processes and outcomes methodologically challenging and such evidence as exists often requires adaptation from subfields of operations management, service improvement, architecture and so on.

As a result, we know relatively little about how and why capital investment decisions are made, and their effectiveness and cost effectiveness. Exceptions to this include work funded by the World Health Organisation focussing on how capital stock – especially hospital buildings – can be most effectively financed, regulated and managed (Rechel et al. 2009, 2009a, 2009b). Frameworks to support decision making have been developed although their applicability to this context remains unknown (e.g. Shohet 2003; Ali & Hegazy, 2013).

In the area of equipment, methods of Health Technology Assessment (HTA) apply in principle although in practice, the vast majority of HTA is dedicated to pharmaceutical interventions. Some frameworks for decision making have been developed (see for example Ivlev et al. 2014), although again these are untested in the NHS context. Finally, whilst there is a more substantial literature on the effects of health information technology (HIT) investment on performance and outcomes, this remains highly equivocal (e.g. Hah & Bharadwaj 2012; Hitt & Tambe 2016; Wang et al. 2018), and this is an area where *interventions* are often secondary to processes of *diffusion* in predicting outcomes.

Methods

This study used an interview-based design to explore perspectives on the effects of reduced capital spending at a time of increasing demand on health care services. Specifically, the study involved:

- A scoping review of the policy context and evidence base
- Development of an interview schedule designed to address the research aims described above
- Telephone interviews with 30 finance directors and other senior personnel in relevant NHS provider organisation, and
- Qualitative content analysis of results against study aims and questions

Sample

A sample of interviewees was identified based on geographical spread and diversity of organisational type (see Table One).

Table One. Sample characteristics of interviewees, by role, organisational type and geography

Organisation type	Ambulance Trusts	2
	Community Trusts	7
	Mental Health and Learning Disability Trusts	7
	Acute Foundation Trusts (FT)	10
	Acute Non-Foundation Trusts	2
	Clinical Commissioning Groups (CCG)	1
	National level integrated care initiative	1
Geographic region	North East	4
	North West	2
	East Midlands	4
	West Midlands	8
	South East	6
	South West	5
	National	1
Role	Finance Director (FD)	20
	Deputy/Assistant/Associate FD	5
	Operations Director (OD)	3
	Estates Director	1
	Head of Capital Development	1
Total		30

Interviews

Semi-structured interviews allowed interviewees to voice their perspectives while ensuring a common set of themes were explored. The interview schedule (available from the authors) includes questions on three topic areas corresponding to the core study objectives:

1. *General contextualising questions.* This section clarified the interviewees' role and sought an overview of the organisation and its capital spending activities.

2. *Extent of spending delays/cancellations.* Questioning explored whether and how capital spending was being affected in organisations.
3. *Impact of delays/cancellations.* This part of the interview considered views about the impact of financial delays and deficits, prompting specifically for insights around access, quality, efficiency and range of services provided, as well as ability to deliver service changes.

Interviews were conducted via telephone and audio-recorded following consent from the participant before being transcribed and analysed. Research ethics approval was obtained from the University of Birmingham Research Ethics Committee (ERN_13-1085P).

Data analysis

Transcripts were coded using thematic analysis, which allowed themes to be solely derived from the data, rather than being led by the research questions and any underlying hypotheses. This approach provided rich descriptions of how interviewees are experiencing and responding to capital spending restrictions. In a preliminary analysis, initial descriptive codes were developed and discussed by the research team. These codes were then organised into overarching themes that identified common areas of interest and findings of relevance across the dataset.

Current funding deficits

Many interviewees commented on financial pressures nationally and their perceptions that these were driving constraints at the local level. Whilst a minority of interviewees reported increases in their total capital spend, the broad consensus was that the financial climate impacted negatively on NHS provider budgets.

There is a big programme of capital spend required but nobody has got any money, including central government. So it is crippling us, making us inefficient as well. (Interviewee 26, Acute FT FD)

Interviewees commented on how at a national level, money has been transferred from capital to revenue budgets as a response to financial pressures. This was seen as putting pressure on providers' capital plans due to less money being available.

If you look how the NHS has moved money around from capital to revenue to improve the overall bottom line and position, that ultimately means that there's less capital available through the national route because they've used it to bail out the revenue position ... We've done that, I think, for the last four years quite significantly and that has meant that there has been like a ticking time bomb and it's hitting us. (Interviewee 12, Acute FT Interim FD)

Many interviewees discussed the resulting challenges of funding local capital plans and the financial position of the Trust was seen as playing a significant role in the extent of this challenge. Some noted how, as their organisation's financial situation worsened, it was no longer possible to internally raise the funds for local capital plans and that these pressures were exacerbated by public expectations and an increasing demand on services.

We probably don't feel as much constraint as some do, but even so, if we were operating with the level of cash we've got at the moment, and the overall environment financially was

not as constrained as it is, we would probably be looking to invest more. (Interviewee 11, Acute Trust Deputy FD)

We are reliant on bidding for national money because our depreciation doesn't give us the capital resource that we need to be able to do those big transformations. (Interviewee 13, Mental Health/Partnership Trust FD)

Those surpluses are not there to allow us to replenish our cash, to continue to invest in capital going forward. And for the foreseeable future, I can't see those surpluses coming back, given the state of NHS funds. (Interviewee 14, Mental Health FT FD)

The challenging financial position of some Trusts had resulted in external funding being required for routine operation:

Although we call it our 'core capital', when we're bidding to NHSI and the Department of Health, they call it 'emergency capital'. So they call it 'emergency', we call it absolutely bog standard need. (Interviewee 18, Acute/Community Trust FD)

Many Trusts had loan applications to NHSI planned or under consideration, including as part of the local STP. However, there was a strain of pessimism over the likely outcome of these and a perception that loans are increasingly difficult to access.

So, our ability to borrow now from say the Independent Trust Financing Facility, if you're a Trust running a significant deficit, you're going to struggle to demonstrate ability to pay back, etc, and therefore in the past, the ITFF was often used by lots of organisations to, if you like, supplement and build upon its capital programme and that's getting harder and harder. (Interviewee 12, Acute FT Interim FD)

I think there is a backlog of business cases for capital investments that are queued up with the DH because there is no funding solution. (Interviewee 7, Acute FT FD)

Foundation Trust interviewees frequently contrasted the current climate with earlier times when they had been able to raise funds through increased volume of activity with:

If you are in a surplus situation then actually you can self-generate cash to support capital developments. I think just the way that the provider sector is at the moment, with the number of Trusts that are in financial deficit, means that financing requirements from the Department of Health become more frequent, and actually the ability to draw down loans or service loans to support a capital programme has become more difficult. (Interviewee 5, Acute Trust, Acting FD)

There was also discussion of the challenges when national and local strategy are not aligned. Obtaining funding for capital plans as part of a national initiative was considered more straightforward, compared to plans that are not a national priority but may be crucial locally:

A scheme that's on a critical path locally might not be recognised as being on a critical path nationally and there's some rough points with that. (Interviewee 21, Acute Trust FD)

Bureaucratic challenges

Another area highlighted as driving financial pressure was the imposition of additional central controls:

Despite the fact that we maintain a set of healthy financials, we are penalised because we have not done the NHS corporate thing and the reason we haven't signed up to the control total is because that would require us to increase our surplus and we're not prepared to do that as an organisation. (Interviewee 3, Ambulance FT FD)

Some interviewees noted that national requirements created problems even where local funds were available for capital spending.

There is a major problem between capital planning totals that the Department of Health and the Treasury are trying to manage and the level of capital requirements within the NHS. We're just caught within a scissor movement at a national level. I do think [NHSI] are trying their best in a very difficult situation. What I can't get my head around is why there seems to be a problem about using our own cash reserves ... the mechanism does superficially seem quite blunt if it also appears to block Trusts from using their own resources. (Interviewee 2, Partnership Trust Interim FD)

Many interviewees described the administrative task of securing approval for capital spending plans, whether through requested funding or using their own reserves, as convoluted and frustrating. Interviewees felt that this had worsened over time.

Yes it is incredibly onerous, incredibly time consuming, the whole process. We are having to borrow revenue money as well as capital monies and there is a heck of a lot of paperwork. Not only do you have to have your business case, you actually have to submit a case for the funding which requires huge amounts of information and it is incredibly onerous. (Interviewee 18, Acute/Community Trust FD)

There's no certainty and so it's quite hard to make decisions and you end up... you know, that lack of concrete decisions or lack of clarity about the rules of engagement mean that you can often waste time on things that quite possibly were never going to happen anyway so that's always a concern. (Interviewee 20, Community Trust FD)

Other interviewees commented on the inflexibility of the terms for approval of plans and felt that practicalities of implementing these were not appreciated.

I think the last three years it's got worse. It used to get agreed quite early on but it's got worse and the impact of that is we start to get huge backlog maintenance because we just can't plan to get the work done. And they don't recognise that planning for capital is not as straightforward as one might think. So for instance, we've had plans all year to deliver a set number of schemes and any number of things could have prevented those schemes getting to where they needed to be: i.e. the builders walk off site or say 'we've changed our lead in times. It's going to be 20 weeks now instead of 12 weeks.' And so we're constantly trying to manage slippage, whereas if we could have a process where we could manage that every month and it was updated every month, that would be a lot easier than having it set at the beginning of the year. (Interviewee 15, Partnership Trust FD)

Another complaint raised by interviewees was the delay in funds being approved. This has led to either capital expenditure having to be used within a short time frame; plans being abandoned; or Trusts taking the risk of going ahead before loans have been agreed.

If we decide that we want to do something bigger than what our depreciation can fund, we will put a request in to utilise some of our [income and expenditure] reserves as capital and that is never agreed. And so we have our plans ready to go, we get to November, it still hasn't been approved and therefore we can't continue so then we have to say, 'okay, we request to withdraw our request for additional CRL because we now can't get it done in time.' (Interviewee 15, Partnership Trust FD)

Over the last two years because the Trust has been in deficit it has been subject to the requirement for capital loans by the Department of Health and in both of those years there has not been approval of the loan until December last year. And so I now have to spend in effect 60 or 70% of my capital expenditure for the year in the last three months of the year ... It's literally across the board, in particular IT and our buildings as well. The Trust board had to write this year to the Department of Health telling it that it was having to go at risk in terms of capital expenditure even though the loan hadn't been agreed. (Interviewee 16, Acute FT FD)

Some interviewees speculated on possible reasons for the apparently convoluted process of approving plans and the bureaucratic challenges experienced. The perception in some cases was of a national level concern to restrict the flow of capital budgets.

A related complaint of interviewees was the perceived absence of long-term strategic planning at the national level of the NHS.

There is no capital strategy for the NHS in England, it is just funded on a year by year basis, depending what money they have got, which isn't really helpful. (Interviewee 14, Mental Health FT FD)

They've approved the business case, told me I can get on and do it, I've signed the contract but then I have to bid annually for the resource money. That seems a bit of a crazy way of doing things. (Interviewee 21, Acute Trust FD)

It does feel a bit like at the moment, the focus is so much nationally on keeping the deficit down, trying to hit the CDEL no matter how you do it, that other things and decent planning are suffering. (Interviewee 10, Acute FT FD)

All interviewees that expressed a view felt it unlikely that this overall situation would improve in the near future. Indeed, many expected the financial challenges to worsen, with resulting negative effects on their capital plans.

Responding to the challenges

Scaling back plans

As noted, a minority of interviewees reported no significant impact on their capital investment activities. More commonly, interviewees described various degrees of scale-back and or deferral in response to financial constraints.

What we would like to do is centralise down to one or two sites [but] we just can't do it because we haven't got the money, the capital, to do that. (Interviewee 26, Acute FT FD)

As we strive to try and achieve financial balance and sustainability, obviously that will then just starve the capital programme, and [we are] really having to take some very tight decisions in what we invest our money in. (Interviewee 13, Mental Health/Partnership Trust FD)

Organisations with significant financial deficits reported additional capital constraints as capital budgets were also required to help service debts. Many interviewees, including those organisations in relatively good financial health, had reduced their planning horizons to one or two years, and although a small number of interviewees continued to take calculated risks on investment in capital programmes, most described increasing risk aversion.

Given the financial uncertainty, we are probably having to be more prudent than maybe we would want to be. That would to me be definitely a consequence of the overall constraint that's in the service at the moment. Just on the basis that whilst we are in a financially in a reasonable position at the moment, it would not take much for us to be in a difficult position, so you are very cautious therefore about commitments that you would make. (Interviewee 11, Acute Trust Deputy FD)

For example we originally started with a proposal of doing two refurb wards a year, so that we were going to finish all our wards in five years, and we are not now ... I have said 'look even if we had the money, I am not sure as an organisation we can manage'. (Interviewee 25, Partnerships Trust Deputy FD)

Raising funds for capital schemes

Some interviewees felt that perceptions of the poor financial state of the NHS in general had led potential lenders and investors to have doubts over repayment. Although others were less pessimistic, interviewees overall were at pains to emphasize how revenue restrictions also prevented capital spending. For example, some felt that whilst loans (for example from local councils) were potentially accessible, they were reluctant to pursue these unless for revenue-generating schemes.

Hardly anyone could come up with a five year financial plan at the moment to be able to take to the bank or to anybody else to show that they could be viable. (Interviewee 19, Vanguard FD)

Let's say we break even now and somebody says, 'Would you like £10million to do something new?' the reality is unless that's going to generate some revenue to cover the capital cost then you can't actually afford to do so without worsening your bottom line. (Interviewee 9, Acute FT FD)

Some interviewees had been or were in the process of bidding for Sustainability and Transformation Funds (Murray, 2016), and one interviewee reported incorporating capital (especially equipment) into research funding bids and contracts. Other competitive sources of funding were identified for investment in information technology and electronic patient records. However, some interviewees felt this had led to something of a distortion of spending priorities, with investment reflecting funding availability rather than need or expected benefit.

Where possible, interviewees had sought to increase charitable donations, especially for medical diagnostic and treatment equipment, and to combined these donations with other sources of ongoing maintenance revenue. However, these interviewees cautioned that raising charitable funds was time consuming and delays due to over-reliance on this strategy could affect waiting lists and ultimately patient care.

Private funding and partnerships

Many interviewees had explored income-generating schemes with private companies, some had entered into one-off building partnerships (e.g. for car parks), and in one case a 'strategic estates partnership' had been set up to help fund ongoing plans. The overall assessment of these was mixed and some expressed a reluctance to embark on major project developments in this way.

We have got income generation schemes in, like with [name of coffee company] or various other organisations that most Trusts are doing now, but they don't generate the type of income that you actually need for major capital developments. (Interviewee 24, Acute FT FD)

That is not something we would ideally want to do but we might end up being forced down that route, which would reduce revenue then as well. We are not going to have the cash in the future to do what we have done in the past and then we will have to restrict what we do significantly ... Or we have to go through this sort of new [public-private partnership] arrangement, which might give us a nice brand new building but at a very much higher revenue cost. (Interviewee 14, Mental Health FT FD)

I think that is why they have come up with some of the new options that are now being talked about, and why a lot of public private partnership is still being pushed: it can be treated as off balance sheet, from a whole of government account's perspective. It's madness really: the government can borrow at historically low levels, but is forcing people down the more expensive private route just to keep it off the books. (Interviewee 7, Acute FT FD)

Leasing of equipment, for example through 'managed equipment service' arrangements was a more commonly reported and less contentious area of activity. This was considered to be cost neutral by some (compared to owning the equipment) and more expensive by others. Some noted that a leasing arrangement enabled equipment to be updated more regularly, arguing that this freed up capital budgets to be spent on the physical infrastructure. However, all interviewees that had adopted this approach also noted that leasing put pressure on revenue and reduced depreciation budgets.

The Trust in an effort to improve its ability to replace equipment, entered into a managed equipment service agreement in 2015, which was for the provision of some of the major capital equipment in terms of our imaging and radiotherapy departments with an outside provider. And what that does is it reduces its requirement for capital expenditure but it pays for that through a revenue stream. And that was to enable the Trust to replace those major pieces of equipment in line with service need rather than the ability to access capital. (Interviewee 16, Acute FT FD)

The most cost effective option is always to own but actually, if we owned it, we wouldn't have the equipment we needed because it wouldn't have got funded, it wouldn't have got on the priority list. (Interviewee 24, Acute FT FD)

Selling assets and decommissioning services

Many interviewee organisations had implemented asset (primarily property) sales but again noted that these were non-recurring and had deleterious effects, via reduced depreciation, on subsequent budgets. Other interviewees reported obstacles or resistance to the sale of buildings, both from within and outside of the organisation, or else did not consider this a significant area of potential saving.

The general population are very protective of NHS assets so we don't tend to mess about with closing Ambulance Stations, because to be honest it's more trouble than it's worth most of the time. (Interviewee 3, Ambulance FT FD)

There is a huge amount of pressure at the moment and a lot of emphasis is being placed on land sales. There probably is opportunity for that in London but I think it is very limited in a lot of other parts of the country. (Interviewee 7, Acute FT FD)

These interviewees noted that asset sales required a place-based approach to estates management and were concerned that this level of integration across organisations was not yet present in decisions over local reorganisation and allocation of resulting funds.

As a mental health Trust you're often forgotten about because it's all about A&E and targets but actually there's a bigger picture to that and people are now realising the impact that the mental health Trusts have on the wider system. (Interviewee 28, Mental Health Trust, Capital Development Director)

Some interviewees felt that decisions to sell properties were often delayed, or else inappropriately delegated to relatively junior staff. A small number of interviewees identified activities that went beyond divestment of buildings to closure of actual services. However, this was seen as politically hazardous and – paradoxically - resource intensive, with programmes of service rationalisation often not implemented due to short term pressures on capital budgets.

Priority setting and rationing

As well as scaling back on future capital investment plans, many interviewees described activities and strategies for restricting or reducing the resources allocated to current areas of spend.

Last year we had to scale back our backlog maintenance programme and whilst there weren't any specific larger projects we wanted to do, we had to trim back on a whole of range of things. (Interviewee 11, Acute Trust Deputy FD)

What we are doing is spending £15 million of capital to replace urgently needed equipment, not just equipment that needs replacing. If it is not urgent, it doesn't get replaced. And patching up our buildings, putting in small areas of new stuff to cope with the A&E pressures. ... We are just patching around the edges. (Interviewee 26, Acute FT FD)

Whilst some were at the stage of reluctant acceptance of the need to impose restrictions on their spending, others had been effectively rationing capital resources for some time.

We may say, okay, well, if we cut back on maintaining those particular premises it might raise cash in order to invest in provision that is more urgently required for the long term elsewhere. (Interviewee 20, Community Trust FD)

Definitely the last two years it really has been getting tighter, where people have said 'we really want to do these things', and because things are getting tatty or they could move it more into the 21st century, but effectively we just don't have it. So we have had to say 'well no sorry, if you want to do that, something has got to be bumped.' (Interviewee 25, Partnerships Trust Deputy FD)

My immediate backlog maintenance risks for the high and significant risks are higher than £1 million but if I just tackle them I'm still not going to have a fit for purpose estate because just tackling the high and significant risk items doesn't do other things like, you know, windows that are rotten and roofs that are starting to... It feels like you're constantly playing catch-up. (Interviewee 30, Ambulance Trust Estates Director)

Our Capital Advisory Board meet every month and it would be a rationing discussion, you know. We would come up with a list and say, 'The Board's told us to sit within £20 million this year, we've got a list of £40 million and it's all priority one high risk'. So we'd go through it again and again and again and then the Board would come back and say, 'Actually we've changed our mind because of the financial situation; it's not £20 million, it's got to be £11 million. Go make it fit.' (Interviewee 17, Acute FT OD)

Last year, and again this year in our planning for the new financial year, we have had capital bids probably put forward of say £10 million. We are only able to fund 50%, so the capital bidding process is very, very uncomfortable for everyone. And what happens is that you only end up doing capital works or investing in capital equipment that is absolutely urgent and essential, for patient safety and quality. (Interviewee 24, Acute FT FD)

I'll give you a simple example ... if I depreciate [an ambulance] over ten years, I might take the view I've now got to depreciate over 11 years, but then what happens is it will break down more in that 11th year and then eventually it'll be off the road, so that when you call 999, my fleet will be in the workshop. (Interviewee 3, Ambulance Trust FD)

Many interviewees described formalised processes and criteria for making such decisions. These invariably took the form of advisory groups or sub-committees of the Trust board making recommendations on areas of capital investment. Criteria for decisions varied in breadth and emphasis but the overall pattern was for patient safety and protection of service viability to trump other considerations such as efficiency, service improvement, strategic partnerships and reducing inequalities, especially for organisations in the most extreme financial poor health.

Everything that is related to patient safety will get on the priority list. Once it has been confirmed that it is a safety issue that will go straight [through], so those are the priority cases. We would then look at the ones that would improve quality or improve outcomes. And then that means really anything to do with service transformation is bumped off. (Interviewee 24, Acute FT FD)

We go through a prioritisation process ... so we're moving stuff further down the line and prioritising on safety and quality. We do have other things in the decision making process i.e. does it generate income, does it deliver CI [cost improvement], etc. But when our safety and quality is a priority, it means those other schemes are going to the back and because we

haven't got any money to even do all the safety and quality ones they're not getting done. (Interviewee 15, Partnership Trust FD)

Once you're in that distress finance regime the burden of proof requirement for capital spend isn't 'this is a good idea', it's absolutely in the space of 'there's no alternative but to do that to maintain your existing service portfolio.' (Interviewee 6, Acute FT FD)

Interviewees cited the difficulty of adjudicating between business cases for highly disparate investment options (for example comparing car parks with scanners), and the scope this introduced for undue influence of advocates 'in the room' during discussion.

It would be fair to say that we have struggled with this over time, trying to get an honest appraisal. Clinicians sometimes aren't the best at being balanced about what they need, rather than what they want. (Interviewee 29, Acute FT OD)

In recognition of their incommensurability, some organisations had formally subdivided their capital budget between physical services, IT, major and minor equipment, and prioritised within rather than between these categories.

Financial management

Comments from a subset of interviewees indicated that the problems described were not solely due to external factors and that some organisational weaknesses in capital planning and management skills were influential.

Overall we might have enough management capacity in place but have we got people in situ in provider organisations or in STPs who can go, 'here's a very well evidenced business case for digital investment or changing models of care that require this estates or facilities change?' Perhaps not. (Interviewee 6, Acute FT FD)

We tend to make incremental decisions about our estate without thinking what does a five-to ten-year plan, or even a 25-year plan, need to look like. We disposed of a building that was used for community service accommodation because it was seen as being a good cost efficiency saving. And now a year later we're kicking ourselves because we're looking at a plan to potentially buy a building identical to the one we just got rid of. I think we probably lack capacity and capability to steer the planning around that. (Interviewee 22, Partnership FT OD)

Overall, capital investment was considered something of a Cinderella within the broader range of NHS domains, suffering from lack of professional training and identity when compared to more patient-facing roles and functions. Tellingly, some interviewees felt that the indirect relationship between capital programmes and measurable clinical outcomes affected their profile and the importance attached to their work.

Comparing Trust and Foundation Trust responses

A comparison of responses across the organisations represented in our sample suggests that the experience is not systematically different for Foundation Trusts than for NHS Trusts. Although FTs were more likely to rely on their own reserves to fund capital projects, these reserves had reduced to a point that few interviewees felt able to embark on schemes beyond routine upkeep and

maintenance, or to increase profits to increase reserves. Allied to this, the imposition of controls totals placed further restrictions on their spending. These two factors in combination appeared to have led to a convergence across FTs and Trusts with respect to the strategies available to them, which were largely confined to bidding for central funds either as single organisations or through STPs.

Capital spending plans have become far more constrained over the last few years, and I think the main driver of this is that as Trust's financial positions deteriorate in the main, NHS Improvement as the regulator have issued far more controls around capital expenditure. (Interviewee 24, Acute FT FD)

We have got to make decent profits otherwise we can't replace our capital long term, and that isn't even on the agenda, that is on nobody's agenda. (Interviewee 26, Acute FT FD)

There appears to be very little flexibility and I don't know quite if we spent another £100 million in a particular year, getting a new building built and completely breached our share of the cash limit, what they [NHSI] would want to do about it, whether we'd be in breach of our licence for having spent more of our plan. (Interviewee 10, Acute FT FD)

Overall there was a sense from Foundation Trust interviewees that they were no longer encouraged or expected to operate with the same level of autonomy as they had previously and that there were disincentives to embark on major capital transformations. These experiences and frustrations did not differ significantly across community, acute, ambulance and partnership Trusts.

Impact on services

The overall message was that capital restrictions were limiting spending on buildings, IT and equipment and that this in turn had some effect on plans for service change, efficiency in resource allocation, the range and quality of services provided, and (in a small number of cases) safety.

Not all interviewees noted a direct impact on the delivery of services. However, the majority believed that reduced spending was limiting the capacity of their organisations to plan and deliver optimal care. In some cases, interviewees noted the difficulties of attribution within the complexity of service funding and delivery. For example, the poor quality of the built environment was felt by one interviewee to have affected recruitment to such an extent that the service was declared unsustainable and decommissioned, whereas others considered the environment to be a relatively peripheral factor in shaping patient experience.

Service change and improvement

Large-scale transformation plans were seen as particularly difficult to achieve with major capital works cancelled or delayed, or abandoned in favour of more urgent patient safety concerns. An exception to this was where Trusts were working as part of Sustainability and Transformation Partnerships and had access to specific funding. However the involvement of Trusts in these partnerships and their perceived influence on STP plans and funding applications was reported to be highly variable.

As well as the scale or expense of proposed service changes, the long-term nature of investments was seen as incompatible with approval and funding allocation systems (as noted earlier).

I think we've always focused on short term projects rather than the longer term purely because of that whole planning process ... It would be really nice to have some real invest to save schemes that you can plan for and that you could focus on longer term. For instance, we want a single site, which is a longer term solution. To be able to get that up and running and start to plan for that would be brilliant but how we'll do that I've got no idea. (Interviewee 15, Partnership Trust FD)

Effects on productivity

Almost all interviewees stated that efficiency and productivity were compromised by the reported constraints on capital spending. Examples of how this was manifest include:

- *Staff recruitment.* The failure to maintain and improve the built environment was identified as a source of poor staff morale and failure to recruit ('people do not want to work in these buildings') which led to reliance on agency staff, with associated inefficiencies.
- *Increasing staff numbers.* In a similar vein, it was argued that improvements to the built environment would drive up efficiency by enabling an increase in staff numbers and, in turn, volume and range of activity.
- *Travel times.* Failure to secure appropriate community premises meant that staff were obliged to make frequent and time-consuming visits to patients' homes, thereby reducing contact time and increasing costs.
- *Inability to move services out of the acute setting.* One interviewee commented:

For example, if you wanted to create a day case setting rather than in-patient, you would have to set up that day case facility, and you would have to buy portable equipment, you would have to set up a few consulting rooms, and say a reception desk and a reception area. So to do that, you have got to fund it, but if there is no funding you are not going to do it, you are going to carry on as is, and the people will end up coming through A&E and going into a bed. (Interviewee 24, Acute FT FD)

- *Negotiating prices for equipment.* Late notification of loan approval was reported to put Trusts at a negotiating disadvantage and limited funding was seen to lead to worse procurement deals for equipment. Interviewees commented:

If we were able to be notified in time or have prior notice that actually loans are being approved it does give you the ability to negotiate harder where you do not have a deadline that equipment needs to be supplied, otherwise your ability to provide that equipment has been lost for another 12 months. (Interviewee 16, Acute FT FD)

Now if you haven't got the constraints in place, you would buy both of them because you also get better procurement deals if you are buying two rather than one. (Interviewee 24, Acute FT FD)

- *Slow equipment.* One interviewee commented:

Compared to the new scanners we are losing some efficiency, you know, having old scanners; having to keep them going for much longer compared to new scanners which can process the same image in a much shorter space of time. (Interviewee 8, Partnership Trust FD)

- *Failing equipment.* One interviewee commented:

We regularly have breakdowns in things like CT and MRI, and then have to move patients across our sites. Very occasionally do we move them outside the organisation, because we do have multiple sites but yes, it is not infrequent that we have to move ... because they are very old machines that we need to replace. They are on our rolling programme, and we are getting there in the end but we have to limit the amount we do on those changes, because we have got other pressures. (Interviewee 26, Acute FT FD)

- **Equipment shortages.** One interviewee commented:

The age of the equipment and the quality of the estate, definitely impacts on the care that can be delivered. It certainly impacts on the productivity and efficiency where, because we haven't got enough endoscopy rooms and things, we have to run lots of single sex lists. There are lots of things like that that are impacted. (Interviewee 7, Acute FT FD)

- **Heating costs.** One interviewee commented:

On the main site, you know, the windows are presumably costing us more in energy. They're not retaining heat. (Interviewee 8, Partnership Trust FD)

In general, the feeling was that poor maintenance levels would negatively affect efficiency and productivity:

'It is a bit like if you don't service your car, then it is not going to last as long as if you service it every year, change the oil and that type of thing, so I think it is probable there will be some consequences of decisions that are made, that put off that maintenance, will cause things to creak and break, I would say. (Interviewee 5 Acute Trust, Acting FD)

A minority of interviewees cast doubt over the productivity gains of previous capital investments, especially in IT.

We've spent an enormous amount of money on a new IT system and it is brilliant but it's also bloody expensive. It's made a number of departments less efficient even now and we implemented it about three or four years ago. Some people love it, some people hate it. Overall has it made a difference to our cost/income ratio? Not really, and it cost a lot of money. (Interviewee 17, Acute FT OD)

Range and quality of services

Negative effects on efficiency and transformation were linked to perceived impact on the range of services that the organisations could provide. Most commonly, these manifested as missed investment opportunities. For example, interviewees cited lack of funds for new premises and/or electronic software support.

We are always looking at stopping people going into hospital, getting them out as soon as possible, working with local authorities to keep down delayed transfers to care and so on. We're finding now that lack of premises availability stifles that. (Interviewee 23, CCG FD)

A good example would be e-scheduling which we have been wanting to do for a while but I have not been able to find a way to afford. (Interviewee 27, Community Trust Associate FD)

In some cases, lack of maintenance of existing areas of capital were also seen to affect service quality and patient care. Clearly, these responses reflect the aforementioned differing conceptualisations of the relationship between capital – for example the built environment – and patient care. The most commonly cited issues were lack of maintenance and renewal of the built environment (wards, hospitals etc.) and lack of investment in equipment (primarily diagnostic).

The reality is that we end up replacing some kit as it falls over, as opposed to in the run-up to that, which then creates some operational clinical pressures. (Interviewee 29, Acute FT OD)

We have got a situation in CT where our scanners were old, you could introduce newer scanners, the dosage could be far better for patients, they have got more sophisticated over time, so when you can't replace those or you have to phase those in over a longer period of time, there are patient care issues. We are clinging on by our fingertips and focusing on patient care, so I think the day-to-day impact on patient care is limited in respect to their immediate care. But the surroundings that they are actually being cared for in are appalling and we all know that actually if you look at studies, that those surroundings do impact the recovery rate. So in that respect, it is impacting their recovery as well. (Interviewee 26, Acute FT FD)

We would have equipment that we weren't replacing but was so old that we simply couldn't get spare parts for it. You know, nuclear medicine machines where we would be machining the parts to make them. And what that means is you don't get the same accuracy, you don't get the same resolution out of those machines, whether they be imaging or surgical, as you would with modern instruments so your quality of care outcomes aren't as good as they could be. (Interviewee 17, Acute FT OD)

Safety

A small but significant minority of interviewees cited safety concerns. Investment in IT and electronic records systems was seen as urgent in some cases and interviewees working within mental health cited the potential for serious quality failures where electronic recording systems do not work effectively across inpatient and community settings. One interviewee referred to a building as being an 'enormous fire risk' and described relying on regulatory bodies' reluctance to close down medical facilities. Another interviewee described regulatory pressure for this type of capital investment.

It would terrify me if I thought that one part of the NHS that saw me in an outpatient facility didn't know about the day procedures that had been done to me in the x-ray department and it's even more complex I think in mental Health. That's a really practical example of lack of investment which is a by-product of the planning process, that does adversely impact upon patient care. (Interviewee 2, Partnership Trust Interim FD)

The biggest issue is patient care in our A&E departments, where – if you are going to look at the guidelines - we need much bigger A&E space. There isn't the space to care for patients, and because of that, patients are in corridors frequently. Over the Christmas period, when I am on call, patients are in the corridors. It is not ideal, we are doing our best to make sure the patients are safe, but that is the impact. And that needs some money spent on it, in terms of changing A&E, which we don't have. (Interviewee 26 Acute FT FD)

To try and get that CT scanner through the charitable route, you are talking a couple of million pounds type of thing, and so I suppose it causes a time impact, and when you are looking at diagnostics, then most of those diagnostics are for cancer related treatments. So that is the worry that we have, in relation to the impact on patient care. And also if you have got older equipment, if it is not able to get sufficient granularity of imaging et cetera, then it puts patients at risk and also it can take longer than newer equipment, so actually you lose a productivity opportunity. Which means then that people go on to waiting lists and then potentially you put patients at risk. (Interviewee 5 Acute Trust, Acting FD)

There was a lot of delays, and we have had to re-scan some patients recently because the MR at [name of site] which I think is about ten years old, failed. It didn't just stop working, what happened was that the quality of the images deteriorated and we ended up having to re-scan about 200 people, I think. (Interviewee 7 Acute FT FD)

The bottom line is that all of these delays mean that there's an increased risk that equipment that's end of life or IT systems that are end of life could fail and put, you know, patients at risk or being able to keep services; there could be a delay if a key piece of medical equipment fails, for example. (Interviewee 8 Partnership Trust FD)

We've been trying to secure money to replace these two wards for the last three years and we weren't successful in last year's STP round. We have now got some support from NHSI to suggest that they would support us in seeking a loan for these replacement buildings ... But I think the point I'm trying to make is that this is what I would call absolutely critical, urgent: these are buildings that are just about fit for purpose but they could become unusable at any moment. (Interviewee 18 Acute/Community Trust FD)

Discussion

Across our relatively small sample, there are no obvious patterns in the reported experiences in terms of organisational size or type, with all organisational categories reporting problems. In contrast, the financial position of the organisation appeared highly significant in shaping experiences and activities. This suggests that as more organisations fall into deficit the problems of capital under-investment will increase, assuming no change in the wider regime for accessing resources, thereby necessitating greater levels of priority setting and/or rationing (Hall et al. 2018). Overall, the study findings can be summarised using the categories of capital planning and management 'good practice' identified in the previously mentioned WHO work (Rechel et al. 2009).

- *Capital Planning*: our study suggests that the environment did not support effective strategic planning. Irrespective of the skills required for strategic capital planning the prerequisite is for resources and powers to be appropriately allocated over a sufficient length of time and this was perceived to be lacking.
- *Capital Regulation*: interviewees voiced concerns that the regulatory framework they operated within had made effective, long-term capital programmes increasingly difficult to pursue. For example, frustration was expressed where Trusts had internal resources for capital spending but were unable to obtain timely approval to use these.
- *Capital Financing*: as a result of immediate financial shortages, organisations were reliant on debt finance to fund major projects and many expressed great reluctance to take on this risk – for example through public-private partnerships that many felt were either too risky or too

inflexible. Similarly, transferral of debt repayments to revenue streams was also considered untenable in many cases.

- *Capital Management*: capital management was a high priority for the interviewees we spoke to – perhaps reflecting a self-selection bias in the sample – and was generally a source of some frustration as interviewees talked about ‘patch up jobs’ and ‘hanging on by’ their ‘fingertips.’
- *Service financing*: our interviews underline the claim that improving health services requires a more flexible and dynamic approach to capital financing. This was exemplified by perverse incentives, for example to retain inefficient assets in order to protect depreciation budgets.
- *Service design*: the effect of these pressures was to induce inertia and risk aversion. Finance interviewees in particular were aware that this was a source of frustration for their colleagues, many of whom considered the current capital stock to be inappropriately configured for the services they sought to provide.

Conclusions

This study has implications for both the overall size of the NHS capital budget and the methods for its distribution.

- *Capital budget size*: the difficulties experienced by some of our interviewees were attributed by them to the transferral of capital funds into revenue budgets. This was seen as having reduced the availability of funds for capital projects and to have led directly to delays in maintenance of capital infrastructure. Complaints about the overall *quantum* of capital were present in nearly all interviews.
- *Capital budget distribution*: difficulties were also attributed to the current regime for the allocating NHS capital funds. In particular, it was felt that the process of applying, through NHSI, for centrally-held funds had become unnecessarily complex, and with some perverse effects – for example, delays in approval for plans for which funds had been secured. Furthermore, some interviewees believed that the imperative to stay within the overall NHS budget was pushing local plans towards less favourable options for borrowing. Interviewees had mixed feelings about regional (STP) capital funding pathways; whereas some had benefitted from these, weak inter-organisational relationships precluded this in other areas.

References

- Ali, A., & Hegazy, T. (2013) Multicriteria assessment and prioritization of hospital renewal needs. *Journal of Performance of Constructed Facilities*, 28(3), 528-538.
- Braithwaite, J. (2018). Changing how we think about healthcare improvement. *BMJ*, 361, k2014.
- Hah, H., & Bharadwaj, A. (2012) A multi-level analysis of the impact of health information technology on hospital performance. <https://aisel.aisnet.org/icis2012/proceedings/ITHealth/4/>.
- Hall, W., Williams, I., Smith, N., Gold, M., Coast, J., Kapiriri, L., Danis, M. & Mitton, C. (2018). Past, present and future challenges in health care priority setting: Findings from an international expert survey. *Journal of health organization and management*, 32(3), 444-462.
- Health Finance Management Association (2018) NHS Capital – a system in distress? www.hfma.org.uk Accessed 20/11/18
- Health Foundation (2018) How much has the backlog in maintenance of NHS estates increased? <https://www.health.org.uk/chart/how-much-has-the-backlog-in-maintenance-of-nhs-estates-increased>
- Hitt, L. M., & Tambe, P. (2016). Health care information technology, work organization, and nursing home performance. *ILR Review*, 69(4), 834-859.
- Ivlev, I., Kneppo, P., & Bartak, M. (2014) Multicriteria decision analysis: a multifaceted approach to medical equipment management. *Technological and Economic Development of Economy*, 20(3), 576-589.
- Lafond, S., Charlesworth, A. & Roberts, A. (2016) A perfect storm: an impossible climate for NHS providers' finances? London: Health Foundation.
- Naylor, R. (2017) NHS Property and Estates: why the estate matters for patients, London: Department of Health.
- NHS England/NHS Improvement (2018) Refreshing NHS Plans for 2018/19. <https://www.england.nhs.uk/wp-content/uploads/2018/02/planning-guidance-18-19.pdf>.
- NHS Improvement (2018) Performance of the NHS provider sector for the quarter ended 30 September 2018 https://improvement.nhs.uk/documents/3520/Performance_of_the_NHS_provider_sector_for_the_month_ended_30_Sept_18_FINAL.pdf
- NHS Improvement (2016) The Sustainability and Transformation Fund and financial control totals for 2016/17: methodology. Guidance 02/16.
- Murray, R. (2016) How will services access the new Sustainability and Transformation Fund? London: Kings Fund
- Rechel, B., Erskine, J., Dowdeswell, B., Wright, S., & McKee, M. (2009) Capital investment for health: case studies from Europe (No. 18). World Health Organization.
- Rechel, B., Wright, S., Edwards, N., Dowdeswell, B., & McKee, M. (2009a) How can capital investment in European health systems be more effective?. *HaCIRIC* 2009, 89.

Rechel, B., Wright, S., & Edwards, N. (2009b) Investing in hospitals of the future (No. 16). WHO Regional Office Europe. Chicago .

Shohet, I.M. (2003) Building evaluation methodology for setting maintenance priorities in hospital buildings. *Construction Management and Economics*, 21(7), 681-692.

Wang, T., Wang, Y., & McLeod, A. (2018) Do health information technology investments impact hospital financial performance and productivity?. *International Journal of Accounting Information Systems*, 28, 1-13.