

# ACTIVITY BASED FUNDING FOR HOSPITALS

English Policy, International  
Experience

Based on presentations and discussions at a conference organised by the Office of Health Economics and the University of York Centre for Health Economics in London on 31st March 2004

Edited by Jon Sussex and Andrew Street



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- collect and analyse health and health care data from the UK and other countries;
- disseminate the results of this work and stimulate discussion of them and their policy implications.

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## EDITORS' INTRODUCTION

The NHS in England is following the US, Australia and many countries in Europe in introducing a system of paying hospitals and other providers on the basis of the work they do. The idea is that providers will receive a fixed payment – the national tariff – for each type of patient treated. Termed ‘payment by results’, the policy rewards providers for volumes of work adjusted for differences in case mix.

Official documents present the policy as complementary to a range of concurrent reforms to the NHS, jointly designed to improve efficiency, enhance quality, and provide better access to health care services. An overhaul of financial incentives is viewed as a key element of the overall reform programme. The reform links provider income and activity much more closely than previously has been the case. If they receive a standard payment, providers should be encouraged to find ways of cutting costs and reducing lengths of stay in order to find capacity to accommodate more patients. Access should improve as providers have a direct financial incentive to do more work – they will receive extra funds for each additional patient they treat. Moreover, by giving primary care organisations stronger incentives to prevent referral or admission, more care may be delivered in appropriate settings.

Two other intentions appear key to understanding the reform. First, the government is committed to ending price competition, believing that fixed prices will reduce transactions costs and encourage competition on the basis of quality. The government has long been concerned about seemingly persistent variation in local prices quoted by providers. Why should the cost of treatments differ across the country, and why should Primary Care Trusts (PCTs) have to pay more if their local provider is expensive? It would seem much fairer that PCTs pay the same price for the same service. Faced with a fixed tariff, providers previously quoting high prices have a clear incentive to question why they appear relatively expensive and to do something about it. Fairness and transparency are desirable features of any policy initiative.

Second, by ensuring that payments are linked directly to levels of activity, the reform is intended to support a plurality of providers and

the patient choice agenda, whereby patients are given more say about where and when they receive treatment. In the past commissioners may have been reluctant to refer patients and providers reluctant to accept patients not included in their formal contracting arrangements because of the difficulties of dealing with one-off financial matters. The new system is intended to remove these financial obstacles.

Introduction of the policy is phased over a very short timescale, with the pace of implementation dependent upon the status of the provider. In 2003/04 NHS trusts applying to become 'foundation trusts' were given the opportunity to negotiate all of their contracts in relation to the national tariffs. It was also intended that the tariffs be used by the NHS in negotiating contracts with providers from the independent sector. For all other NHS providers, national tariffs were applied to 15 Healthcare Resource Groups (HRGs), these being treatments "critical to waiting times targets and to the Coronary Heart Disease strategy" (Department of Health, 2002). The tariff applied to these 15 HRGs for activity above or below baseline – if a provider undertakes more activity than agreed with Primary Care Trust commissioners, they are paid the national tariff amount for each additional patient treated. Under-performance results in an equivalent reduction in funding.

From 2004/05 the arrangements were extended to an additional 33 HRGs, with it being expected that national tariff prices will apply to almost all specialties by 2007/08 (Department of Health, 2003).

This book is based on a conference held in March 2004 to examine the issues that are likely to result from paying NHS hospitals on a case-by-case basis. The intention of the conference was to draw lessons for England from the experience and economic research in the US and European countries where similar payment systems have already been introduced. The aim is to enable policy makers, NHS managers and academics in the field to consider these issues whilst the specifics of the English NHS payment by results system are still being developed, the hope being to help shape and influence improvements to the system and to determine priorities for future research to help the policy achieve its objectives.

The English Department of Health's key policy objectives for 'payment by results' are set out by Bob Dredge in the first chapter of this book, where some of the policy risks are also recognised. An advantage of being a late-adopter of this form of financial regime is that there is a wealth of international experience to build upon. In Chapter 2 Tom McGuire draws lessons from the US, which was at the forefront in introducing case mix based payments, about the incentive effects of different design specifications of the financial system. Egil Kjerstad, in Chapter 4, provides evidence from Norway showing the extent to which case payments can stimulate higher levels of activity. In Chapter 5, Miriam Wiley summarises the experience in Western Europe with using case mix to adjust hospital funding. Nigel Edwards suggests in Chapter 7 various ways in which NHS trusts and PCTs may react to the new policy. In Chapter 8 Andrew Street probes the likely consequences of the attempt to fix prices that is contained within the English 'payment by results' policy; and the final chapter presents the main points raised in the discussion of that policy at the seminar.

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# 1 PAYMENT BY RESULTS – CHANGING FINANCIAL FLOWS

BOB DREDGE

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The ‘payment by results’ policy for NHS hospitals in England has been put together by the Department of Health with a great deal of reference to what has happened internationally. In this chapter I describe why the government is introducing this policy now and what the Department expects, in broad terms, to result from it.

## Policy context

Payment by results needs to be seen in the context of the overall health care system reform programmes under way since the NHS Plan (Department of Health, 2000). These reforms imply a broad and huge change in the way that the NHS is going to deliver patient services, including movement towards plurality of health care providers and towards devolution of control away from the Department of Health. The NHS reforms are, in turn, part of the Government’s broad policy of public sector reforms.

The Department of Health, HM Treasury and the Prime Minister’s Office were not content with the current way we were doing things in the NHS. There was dissatisfaction at policy level with the output, outcomes and performance of the NHS relative to the new investment being made in it and a sense that the existing financial mechanisms and the underpinning management mechanisms were not delivering sufficient improvements. We needed to get away from the ‘fixes and fudges’ whereby if an NHS organisation gets into real financial trouble then ultimately a big cheque arrives to wash the matter away. That is not fair in terms of equity and it is not efficient in terms of allocation. A more consistent and transparent system is required.

Thus the policy of payment by results is not just for the sake of changing financial flows in the NHS; it is part of a broader context of what the Government is trying to do. It underpins a number of strategic policies for the NHS:

- **Incentives and rewards:** the Department of Health and HM Treasury considered that the existing system just did not incentivise



performance, i.e. it did not adequately benefit those who were more effective and did more work relative to those who were inefficient and did less work. Existing commissioning arrangements were too vague: there was no guarantee that if you did extra work you would be paid. A new financial system was needed to incentivise the NHS to deliver the NHS Plan;

- **Investment:** a huge investment of resources is going into the NHS: 7.2%-7.3% real terms growth, guaranteed for five years. The Treasury needs to see productivity returns from that. ‘Payment by results’ is one mechanism to achieve this;
- **Plurality:** the opening up of the market on the provider side to independent treatment centres, foundation hospitals, and a whole different range of provision around the NHS required a payment mechanism that was going to fit all. The policy is that, at the end of independent treatment centres’ current contracts, essentially five years, any patient treated and paid for by the NHS will be paid at the same tariff rate universally applied regardless of the provider. Competition among providers will be based around quality, access and patient choice, but not around price;
- **Choice:** a financial system was needed that would make the policy of patient choice easy to deliver, so that you did not need a whole purchaser-provider discussion, consultation, negotiation and argument about who was going to pay what for which patients. With the ‘payment by results’ system, patients who move as a result of exercising choice move at tariff – end of discussion about money.

### The ‘payment by results’ system

‘Payment by results’ is a prospective tariff-based system. There is nothing new there; there are many international models, as is made clear in subsequent chapters of this book. The Department of Health has tried to learn from international experience: we have talked to some of our international colleagues to find out exactly what works and what does not work. We hope we have learnt some lessons from that.

10 Hitherto, much NHS commissioning of hospital services was based on block contracts. Money passed hands and no-one really knew what the money was for other than keeping institutions alive. ‘Payment by results’ replaces block contracts with variants on cost and volume commissioning, so that a hospital’s revenue is directly linked to the work it does. Meanwhile, the overall NHS hospital sector remains a budget-limited system.

Under the new system, payments are adjusted for case mix. The plea from organisations when they are in financial difficulty that it is because they treat all the difficult, expensive patients will no longer wash under the new model. In time, although not initially, refined case mix adjustments will ensure that tariffs reflect differences in case mix.

The ‘payment by results’ system is planned eventually to cover all services and all providers: that is hugely ambitious. Internationally this is the only model we know of that is going so far. Many acute services are already covered and the remainder will be included come 2005. We are looking seriously at how to bring in mental health and community services and whether other countries’ models of case mix classification and service classification will work for that. We are eager to see whether the Australasian case mix models will work for mental health.

Our end point is 2008. At that point all hospital services will be commissioned on the basis of a single tariff, with no further transition arrangements in the system. There is still work to be done to get to that point and we are still evolving some of our ideas. It is not a perfect model but we hope that we can refine it and progress with it by 1 April 2005, when the ‘big bang’ happens.

The tariff itself is based around the current NHS Reference Costs, i.e. the average cost reported to us by the NHS for each Healthcare Resource Group (HRG) or other classification of activity where there are no HRGs. Reference costs cover about 95% of NHS spend at the moment, but we do not propose to use all of those yet for the tariff

because we are concerned about some of them. The ones we do use, mainly in the acute sector, will be adjusted to allow for the two-year time lag between collection of reference cost data and implementation of the tariff. Thus the data from two years ago will be adjusted for pay and price inflation, unavoidable cost pressures, the costs of things like NICE, allowance for new technologies, and any policy which the Department is imposing upon the NHS with a cost attached to it. The tariff prices will be adjusted prospectively to allow in-year appropriate delivery of services at appropriate quality levels and adoption of technologies recommended by NICE and so forth.

Finally, the tariff prices are adjusted by a market forces factor (MFF). There is an obvious case for making some allowance for legitimate variations in the cost of providing services from one part of the country to another. For example, if you look at land valuation prices, it will cost a lot more to provide services in the centre of London than in, say, Wolverhampton or Darlington. Other costs also vary by location.

The Department is continuing to assess whether to apply MFFs to every provider so that the local price equals the national tariff times the local MFF, or if there is a way of taking the MFF out of the equation but reimbursing unavoidable differences in local costs via some other kind of allocation mechanism. The advantage of the first method is that it provides a true local price. Thus, a Primary Care Trust (PCT) in, say, Hertfordshire has a choice in theory about sending patients into London and, if the national average price is £100, paying £125 – £130, or sending them to Northampton and paying £95. But Ministers are keen to avoid what would amount to price-based competition. We are looking to see if we can take the MFF out of the price but still reimburse local providers fairly.

### **Purpose**

The purpose of ‘payment by results’ is to enable us to take forward three fundamental policies required to deliver the NHS Plan: choice, plurality of provision and access. We believe it will deliver efficiency

12 because there is a very clear incentive for providers to get their costs at or below tariff. We are in discussion with the Treasury about changing the financial regime so that if an NHS provider is able to supply services at costs below tariff, then it may retain the surplus and agree locally how it is to be invested in health care. That provides a real incentive to beat the tariff. If your costs are above tariff then the incentive is to get them down to tariff because if you do not you will go bust.

Transparency is enhanced by ‘payment by results’. It is a rules based payment system; everyone can see how the money flows. There will not be fudges and fixes. There will not suddenly be £60 million going off somewhere because someone is in trouble. The Department of Health accepts, however, that there will need to be some short term support through the NHS Bank in very limited circumstances.

‘Payment by results’ will be a fair system. The Department of Health will set a fair price. PCTs will be able to take that fair price. This will increase equity because, at the moment, if a PCT’s main provider has costs higher than average reference costs, then by implication the capitation-based population of that PCT is not getting as much health care as it would from a PCT that happens to be buying from an efficient provider.

‘Payment by results’ also provides PCTs with efficiency incentives. In particular, if PCTs can get into place alternative modes of care which mean that their patients do not go into hospital, then they save the full tariff for that patient, as opposed to some minimal percentage of variable cost.

### **Risks**

There are some risks with this policy. Timing is clearly one. We know that HRGs currently are not always good enough to be the basis of the tariff, and that we have a lot of work to do on them. But we think, looking at international evidence, that they are probably good enough for reimbursement. Nevertheless, they do still need some tweaking at the edges.

The transition is another issue: moving over the next three years from where people are in their current cost base to where they need to be, i.e. to average. There are some real risks about what it is going to cost to get people back into line. Is that going to destabilise the NHS? We have plans in place that will deal with that possibility.

On the commissioning side, have the PCTs the capacity and the quality of data to understand what this all means? I think for the more astute acute hospitals the evidence is that they are on top of this. PCTs and SHAs are getting there.

Another risk is that the Department's policies and its drive to take things forward may run faster than 'payment by results' can allow. We had a very interesting three or four months developing this policy so that the Foundation Hospitals – the first of which came into being on 1st April 2004 – could be given the opportunity to move fully to payment by results immediately. We had at short notice to shoehorn in work that we had planned to do next year, and make some short-term adjustments to tariff rules, about outliers and about very complex work. We have also excluded some HRGs where we were concerned about data quality.

### Summary

The 'payment by results' policy is central to enabling implementation of the Government's policies for the NHS. Without the proper incentives and disincentives in the financial constructs, you cannot deliver appropriate services effectively, efficiently and equitably. We believe 'payment by results' takes us into a system which will gain efficiency; it will clearly be transparent and fair; and it will reward those that deliver.

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## 2 DRG-BASED PAYMENT FOR HOSPITAL CARE: OBSERVATIONS FROM THE US EXPERIENCE

THOMAS G. MCGUIRE

Diagnosis related groups (DRGs) are the US equivalent of the UK's HRGs. I first discuss the effect of incentives in the American hospital payments system in Medicare, and specifically DRGs. My second theme bears on policy choices that are relevant everywhere: DRG-based payments are just one policy instrument but there are many social objectives associated with hospital activity. There is only a certain amount you can accomplish with one policy instrument in the presence of many policy objectives. Finally I report some observations that may be useful to the discussion of the HRG pricing policy in the UK.

### **Incentives matter (but not only incentives)**

The use of a DRG-based payments system for patients covered by US Medicare was principally intended to save money. The objective was not to increase productivity (for a fixed budget, increase output) which may be more the aim in the UK, but rather to keep the output the same and save money. One early calculation figured that roughly 20% of Medicare hospital costs were saved through the introduction of the DRG-based price system (Russell and Manning, 1989). This is a reduction in the level of spending, not a change in the growth rate of spending, but the level-shift gets compounded over the years. I do not think anyone would dispute that a lot of money was saved as a result of the movement to DRG-based payments.

Over the 20 year period since 1982 there was a 50% fall in the level of inpatient bed days required per 1,000 Medicare (i.e. elderly) patients. This is not, of course, all due to the DRG system but that is probably responsible for some share of the overall change.

I would label these as intended effects of the DRG system. There have also been unintended effects. For example, hospitals undertaking teaching activities get paid directly by Medicare for these costs, but the presence of trainees also affects average treatment costs, and so there is what is called a "teaching adjustment" in the US, which bumps up the

DRG payments at some hospitals. That had the effect of making residents (i.e. doctors) a source of profit for hospitals, who responded by increasing the number of residents: of the 30% growth in numbers of residents between 1985 and 1993 about half has been attributed to the effect of the “teaching adjustment” (Nicholson and Song, 2001). Most of the additional residents were recruited from overseas. The US does not need more doctors in relation to the places these residents were drawn from.

The “disproportionate share payments” also had unintended effects. These adjustments give more money to hospitals that take more care of poor patients. But these payments increased at such an unexpectedly fast rate – from \$1.1 billion in 1989 to \$4.5 billion in 1998 (Newhouse, 2002) – that they had to be chopped off in various ways. The increase was not due to hospitals taking more effort to treat poor patients, but to hospital effort (and states acting on their behalf) to use the administrative rules of the programme to their advantage.

It is very important to keep in mind that Medicare DRG payments are only a small part, less than 30%, of US hospital revenue. Figure 2.1

**Figure 2.1: Populations, payers and contract forms – San Francisco Bay area hospitals, 2000**

Distribution of Bed Days	#plans	Payer	Contract Form
Medicare 35.9%	1	Regular Medicare	DRGs
	~6	Medicare + Choice	HMO Contracting*
MediCal 21.5%	1	County plan	N/A
Other Third Parties 36.2%	1	HMO	HMO Contracting*
	~40	HMO, POS	HMO Contracting*
Other & Uninsured 6.4%	~10	PPO	Usually per Diem
	N/A	?	?

\*HMO contracting: institutional capitations; subcontracts to MD group with global cap; per diem.

16 makes this point by showing the payments that San Francisco hospitals received from various sources in 2000. MediCal is California's Medicaid system for the poor. Other third party payers are primarily private health insurers. In the US there are ways to pay for the uninsured through public systems. Thus Medicare is about 36% of the business and not all of this is on a DRG payments basis. A proportion of Medicare beneficiaries join Health Maintenance Organisations (HMOs) and then the HMOs develop their own contracts with the hospitals in their own way; these are generally not DRG-based but some kind of capitation or per diem payment. As a result, in the San Francisco Bay area DRGs are only about 20% of hospitals' total revenues. So it is not mainly prospective payment that is making US hospitals act they way they do. In the UK the story is very different because the NHS is the biggest game in town. Consequently, financial incentives to hospitals for NHS work will be much more important in affecting hospital behaviour.

### **One instrument, multiple policies**

My second theme is that DRG-based payment is a single instrument and cannot alone achieve multiple policy objectives. Bob Dredge indicated the many policies that payment by results is intended to help accomplish. Maybe productivity improvement is the most important goal but there are many others. To meet all of these goals requires more than just setting DRG-based prices.

### **Observation 1: Payment policy substitutes for classification at the discharge level**

DRG-based payments are prospective payments. In other words, the price paid is unresponsive to the actual cost incurred caring for a patient until they are discharged. This creates two kinds of incentives:

- First there is a *prospectiveness incentive*: the marginal revenue is less than marginal cost for every dollar or pound the hospital spends. Marginal revenue is zero but marginal cost is not. That incentive means the hospital will want to spend as little as possible on each patient;



- There is also a *competition incentive*. The hospital will want to attract some patients, the ones who are profitable, and will want to deter other patients who are not profitable. The lower is the expected cost of treating a patient, the stronger is the incentive to attract such a patient, even to the extent of providing more resources for this patient. Consider obstetrics for example: you may want to offer very comfortable accommodation for normal deliveries if these are winners in the hospital's payments system, whereas complicated deliveries you are not so interested in and so you do not spend money on providing facilities that attract women who are likely to have more complicated delivery.

The first incentive tends to decrease use for all patients equally; the second incentive contains both positive and negative pressures, and these differ by type of patient. Patients with high expected cost in relation to the classification system are under the most pressure, from both types of incentives, for cost reduction.

A study in California for 12 DRGs found that the high cost patients within a DRG were indeed the hardest hit by incentives to reduce care (Meltzer, Chung and Basu, 2002). Patients at the upper end of the cost distribution within a DRG experienced greater reduction in costs due to prospective payment. The effect was exacerbated by competition: in markets in which patients have the most choices, this effect is the strongest.

If payers worry that these incentives are distorting hospital behaviour in an undesirable way, one way to reduce the problem is to make a finer classification system: with more DRGs the price is more often close to expected cost for each patient.

But you do not have to split the DRGs into more and more, finer and finer categories. You could, alternatively, introduce a payment system in which part of the payment is prospective, as with DRGs, but part of the payment is tied to costs. Then every time a hospital spends a bit it receives a, smaller, bit of marginal revenue. This moderates the

18 incentives simply by a payment change, without having to refine the DRGs. Thus payment policy substitutes for classification as a response to distortionary incentives. If you think of a payment system as a way to deal with misclassification, you do not have to obsess about getting your classification system right.

### **Observation 2: Insurance principles guide pricing at the hospital level**

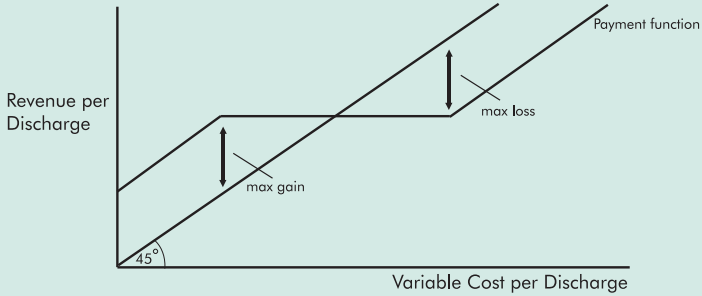
There are two relevant aspects of this:

- risk minimisation; and
- experience rating.

There is risk at the individual patient level and at the hospital level. Patients can be very expensive – the hospital could lose money on those patients – or the hospital’s average costs could be very high in relation to the average payment it receives. If policy makers are worried about patients being dumped by hospitals or served poorly because they are expected to be expensive to care for, they should focus on the patient level outliers and in some way pay hospitals more for patients who are very expensive. If policy makers are worried about hospital risk, the most efficient way to prevent hospitals from going out of business is to pay extra to hospitals for which the average cost exceeds the average revenue by the most. There is a policy choice to make depending on what policy makers think is the more valuable use of outlier funds.

One approach is to have ‘stop loss’ payments to deal with outlier – high cost – patients or hospitals. Inlier ‘stop gain’ payment is the opposite concept: pulling back money from exceptionally low cost patients or hospitals. The two types of payments can be combined so that money from ‘stop gains’ is used to insure high cost patients or help losing hospitals. An example of this is Medicare’s TEFRA system. The Tax Equity and Fiscal Responsibility Act of 1982 was used for hospitals that did not fit into the DRG system. Medicare still uses it

Figure 2.2: **Discharge level stop losses and stop gains**



for some hospitals. Figure 2.2 illustrates the payment concept. The horizontal line represents the DRG price per discharge. Where a hospital's costs for a particular patient exceed the DRG level by a moderate amount no further adjustment is made: the hospital just receives the DRG payment. But a cap is placed on the amount of loss that a hospital is expected to bear on any one patient, so that once excess costs reach that maximum loss level every extra dollar of cost thereafter is reimbursed to the hospital by the payer. Conversely, a limit is put on the gain which a hospital is allowed to make on any one patient. If variable costs are moderately below the DRG level then the hospital is allowed to keep the surplus. But once the gain exceeds the maximum allowed level each further dollar of gain thereafter has to be returned to the payer. Thus with this arrangement Medicare was protected against paying too much by having a stop-gain feature and the hospital was protected by having a stop-loss feature.

Experience rating is another aspect of insurance principles that apply to hospital payment. That is, rather than using a single national average cost per case DRG price for all hospitals, a combination of one or more of three averages could be used:

$$P = a\text{COSTUK} + b\text{COSTGROUP} + c\text{COSTHOSP}$$

where:

a, b and c are weights summing to one

COSTUK is the national average cost per case in that DRG or HRG

COSTGROUP is the average cost per case in that DRG or HRG for a particular group of hospitals, e.g. London hospitals, which picks up differences in wage levels, organization mission (teaching, research) and other factors

COSTHOSP is the average cost per case in that DRG or HRG in the particular hospital concerned, which picks up hospital specific factors

Medicare's TEFRA System uses COSTHOSP, for example.

### **Observation 3: Keep payments close to average variable costs**

Hospitals care about average total costs. In the US we add things to average variable cost so that hospitals can recover average total costs. We add in teaching adjustments; we add in disproportionate share payments; we add in capital payments that are approximately 10 per cent of the total DRG payment. But these additions distort the margin by, for example, making the marginal revenue gained from hiring another resident greater than the marginal cost of doing so. Now hospitals make money by hiring a resident because they bump up all their DRG payments. The additional payments also distort the margin because at the discharge level you make everything more profitable because you build in a discrepancy between average variable cost, which is what the hospital has to spend when it treats someone, and the average total cost because you are trying to cover all the hospital's total costs.

### Further comments

I want to end with just a few brief comments on some other issues. The first is that although there is indeed gaming in the hospital system, I do not think it is that big a deal. One fear might be that quality will suffer under DRG-based payment: there is not a lot of evidence that quality has fallen in the US but it is really hard to tell. The number of discharges might be expected to increase as hospitals try to increase their incomes but, mysteriously, that also did not happen in the US.

Cost shifting is a serious issue. When you start paying prospectively per DRG for one set of the activities that providers do, and you leave the other part of their activity to be covered by some other payment system, you have to be very careful about the boundaries between the different kinds of activities. Otherwise costs will be loaded into those areas where they can be used to justify higher payments to the providers and away from those areas where prices are fixed.

Overall I think the DRG-based payments system is good policy. Its introduction in the US made a big change to what was possible in health care contracting. It saved quite a bit of money without any evidence that it decreased quality. But it must also be remembered that the US health care system, with all its faults, is very resilient to policy changes of just one payer. This is the good side of the messy, multiple payer environment in the US. The US system is not a purely prospective DRG-based system, so if one payer, Medicare, messes something up it is only 20 – 30% of the business and hospitals will survive. However, in the UK the NHS is effectively a single payer for 100% of its hospitals' business. Going to a purely prospective system poses more risks when it is done across the board.

To summarise: at the discharge level, I recommend that you do not think completely prospectively. You can use elements of risk sharing to tie payments to cost a little bit to deal with incentives, to deal with classification problems, to deal with many of the inevitable errors that will be introduced into a prospective payments system.

22 The second recommendation is: think like an actuary. Economists naturally think in terms of formulae: we run regressions, estimate coefficients, make adjustments. Actuaries think in terms of averages. It is like running an insurance system here: forcing the hospitals to be in, paying them premiums to take risk. If you think like an actuary, you figure out what those premiums should be on the basis of averages rather than regression formulas.

Finally, DRG- or HRG-based pricing is just one policy instrument and there are many objectives. There is not that much you can accomplish with one instrument; it is not going to address all the objectives of the NHS.

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### 3 DISCUSSION OF CHAPTERS 1 AND 2

The discussion covered the following points:

- The purchaser perspective;
- Patient choice;
- Incentives for provider efficiency and competition;
- How clinicians may react;
- How PCT or NHS trust deficits may arise and be dealt with; and how fear of trust deficits may affect lenders to PFI consortia;
- Dealing with uncertainty about what an activity costs;
- Unbundling HRG payments.

**Diane Dawson (University of York):** It is important to keep in mind that discussion of how the new NHS payment by results system in England is likely to operate has focused on how suppliers will respond. But we must also ask how purchasers are going to respond. This is not going to be a piece rate system where a GP goes out and buys one hip replacement. Rather it is still going to be the case that a PCT will have a fixed budget to cover all of the hospital-based and other activities it wants to purchase. Also many PCTs will be dependent on one major provider for the majority of their hospital activity. Therefore, we will still have the type of situation that we have had for years, where a PCT will have to compare its budget with the sort of volumes it expects its population will need and sit down with its major provider to work out how much and what mix of activity can be provided within the budget. Whether on paper it is then written down that the price for a hip was £x, is not going to be one of the main drivers of how contracting will operate.

The payment by results system is intended to facilitate patient choice, which is a major element of government policy for the NHS in England. But patient choice is, in effect, going to be restricted to the suppliers that purchasers (PCTs) contract with. Although the policy might be to offer three choices of location to patients requiring certain types of elective care, it is basically going to be up to PCTs and Strategic Health Authorities (SHAs) to decide which providers will be offered. My experience, from some of the work I and colleagues at the

University of York have been doing monitoring the London Patient Choice project, is that PCTs and SHAs are territorially possessive. They do not like the idea of their patients going beyond their traditional geographical area. That is reflected in the NHS trusts with which they are willing to contract.

The fixed price tariff is officially expected to force suppliers to become more efficient or, at least, to reduce their average costs if they happen to be above the tariff level. But if a trust that is a major local supplier, providing a lot of the non-elective care required locally and all of the elective care that is not subject to choice, starts running serious financial deficits because their costs are above the set prices, then the issue about the impact on the system is not efficiency. The issue then is what the Department of Health's policy is going to be on deficits and on bankruptcy and on dealing with hospitals under those circumstances. I think we have quite a bit of experience in the NHS of knowing that the Department of Health would not allow a major supplier of hospital care in an area to go bankrupt. The Director of Finance or Chief Executive may lose their jobs but that is probably not a solution.

Payment by results is supposed to increase competition between providers as they try to attract more work at the fixed tariff price. But the idea that there is going to be enough competition generated by purchasers in areas with limited numbers of suppliers in order to force down costs is one that needs to be examined with some care.

**Carol Propper (University of Bristol):** So far no has spoken about clinicians but in my view the key to improving NHS performance is to get on board not the finance officers, not the general managers, but the clinicians, because the clinicians can never be fired and the finance managers and general managers can be fired very quickly. If I were a clinician, I might simply say, "I don't care what the price is; I have got a programme I want to carry out". So how will the payment by results system affect the behaviour of clinicians?



**Bob Dredge:** I think hospital medical directors are now getting to grips with payment by results. Initially this policy initiative was labelled 'finance' and was dealt with by finance people but now we have moved beyond them to chief executives and increasingly clinicians; getting their involvement, their engagement and their understanding because they are the key people in delivering.

How will clinicians react? They will react as they have always reacted. Some will react constructively, will get onside with managers and will understand what the tariff can and cannot do. We do not want a system where each clinician looks at his case mix and says with the managers, "We make money on this type of HRG, so we will do it, but we do not make money on that type of case, so we will not do it". That is not what we want and not what we perceive will happen. We will see the balance of services still put together. Some will make surpluses and some losses, but overall there will be balance.

We believe that clinicians, through the medical directors and clinical directors, will engage, because ultimately they will have to have the financial health of their organisation paramount in their minds. When a hospital is in financial difficulty the impacts on clinicians and clinical services are completely disproportionate. We have to get that message across. I think this greatly sharpens the incentive locally for managers to engage in proper governance and ethical discussion with clinicians about what is affordable and what can be done in the future under the tariff.

**Tom McGuire:** The question of doctors' reactions also came up in the US. There the DRG system changed the way hospitals are paid but physicians remain paid on a fee for service basis. Many people thought: if you do not change the world from the doctor's point of view, what makes you think anything is going to happen? Doctors discharge patients; hospitals do not discharge patients. But somehow the way the hospital was paid filtered down into the physicians' decision-making and led them to change their behaviour.

**Gwyn Bevan (London School of Economics):** What I find perplexing is that in England we have, as Diane Dawson said, PCTs financed by capitation; but payment by results means that hospitals must be paid by HRGs according to cases treated. I cannot quite see how these are reconciled. There are going to be some PCTs that have to pay tariffs greater than the amounts they have been paying hitherto and greater than they can afford, and some the other way round.

**Bob Dredge:** The price will be the price will be the price, which the PCT will be able to afford. The Department of Health will protect PCTs' purchasing power at the start of the transition period. The apparent dilemma of what appears to be a fee per patient based system alongside a capitation capped budget for PCTs will be resolved by local delivery plans and by involving primary care. PCTs are being empowered to get their GPs on board with demand management and alternatives to acute sector provision. Also the PCT's contractual relationship with its providers will have some caps in it. It is not an open door/blank cheque policy. It is a reimbursement mechanism for agreed volumes of activity between the providers and the commissioners.

**Wilf Williams (Canterbury and Coastal PCT):** The incentives for clinicians in primary care are very interesting. Bob Dredge alluded to this. The key is for PCTs to use the payment by results system to drive change. Can HRGs be unbundled to enable us to take part of the package of care into the community so that the HRG payment does not have to be made (in full) and funds can be invested in providing care in the community?

**Bob Dredge:** The Department of Health recognises the need to be able to 'unbundle' HRG tariff payments to enable care to be shifted between settings. We are in serious, detailed discussions within the Department about how to build a tariff around chronic disease management and non-acute services and how to make sure that the tariff does not act as a disincentive to redesign services.

**Nicholas Jennett (European Investment Bank):** The European Investment Bank is a public sector bank that funds hospital investments through the PFI process in the UK. The PFI seems set to continue to be an important source of capital funding for new hospital developments in the UK. Banks and capital markets have been prepared to make funds with very long tenors available for these projects, in some cases 35 years or more, on the basis of an assessment of the strength of the public sector covenant that sits behind these projects. Bankers have got comfortable with the idea that if their borrower, the special purpose company providing the PFI hospital, does not perform then the bank may not get repaid. But they would not be comfortable with the idea that even if the special purpose company performs it might not get paid in full by an NHS trust because the trust is in deficit as a result of payment by results. Does that mean that in the future the EIB and other banks really ought not to lend to providers that have costs higher than tariff prices?

**Bob Dredge:** There are relatively few PFI hospitals operating so far and if you look at the hospitals that have significant PFI costs in their current reported reference costs, they are not universally high cost hospitals. There is not a universal link between age of capital, PFI or not PFI, and reference cost. It is nearly a random distribution. Obviously a below reference cost NHS trust is, on the face of it, a better bet than an above reference cost trust but I do not think there is a huge risk there. Furthermore, we are in discussions with HM Treasury and the NHS Bank about transitional funding for the legitimate additional cost of upfront PFI to make that happen.

**Richard Fordham (University of East Anglia):** I do not believe that the NHS is very good at knowing its costs of anything at the moment. Variation in costs for the same HRG between hospitals is wide. We do not have the information systems available to us to tell us what each activity costs and hence whether we are making a surplus or a loss on it given the tariff. That is a fundamental flaw.

**Tom McGuire:** I think Richard Fordham's comment represents another reason to build a system that has some give in it. The pricing system needs to recognise that we cannot know the cost of anything exactly. It should be partly prospective – like payment by results – but also have a mechanism for some adjustment for cost or other factors built into it to recognise that.

**Bob Dredge:** I accept that no-one knows precisely the cost of anything because anyone can reallocate costs as they want to and justify them. But this is equally true of DRG-based payment systems internationally, so I do not worry too much. We are looking at a system to reimburse a total organisation across the whole range of its work. We have a long history in costing in the NHS and consider it an adequate starting point, although it needs to be refined in future.

It must be remembered that we have three years of transition before we go to the fully tariff-based payment system. So, organisations currently above or below national average costs have three years in which to get themselves into a position where they can live within their tariff income. Even then not all, though most, of their NHS income is going to be tariff based. If you assume the reference cost distribution is relatively accurate, there are very few NHS trusts with costs in aggregate that are more than 8% above average reference cost levels. The Department of Health believes that those organisations ought to be able to make that sort of efficiency gain over three years, having been given five years' notice to do it. During the interim there will be some additional transitional arrangements involving the NHS Bank.

## 4 PROSPECTIVE FUNDING OF GENERAL HOSPITALS IN NORWAY: INCENTIVES FOR HIGHER PRODUCTION?

EGIL KJERSTAD

### Background

This chapter draws on my paper in the *International Journal for Health Care Finance and Economics* last year.

In Norway there is what we call an activity-based financing (ABF) system for funding general hospitals. This is a DRG-based payments system. As yet, psychiatric hospitals are not covered by the ABF system, but there is work going on now to try to establish DRG codes for them too.

The ABF was introduced in July 1997. It is based on fixed DRG prices but in combination with block grants. Thus it is not a fully fixed-price system in the sense that the hospital gets the income only from the DRG prices. Last year the mix was 60% DRG-based payment and 40% block grant. This year it is the other way round: 60% block grant and 40% DRG-based. The government can easily, and does, change the balance in either direction.

Norway had a waiting list problem and the main purpose of introducing ABF was to give hospitals an incentive to increase activity levels, so that more patients could receive treatment more quickly, without renegeing on quality. There was not much talk about productivity and cost-efficiency, at least not explicitly, but the incentive should nevertheless be for greater efficiency and lower costs because then the hospital will have a larger financial surplus. Sadly this appears not to have been well understood in the beginning because although hospitals did treat more patients some of them incurred deficits as a result of insufficient concern about the cost side of things.

Until the end of 2001, the hospitals were owned by counties. Since 1 January 2002, the government has centralised ownership at the

30 national government level. The rest of the discussion in this chapter refers in its institutional details to the pre-2002 arrangement; however the same principles apply with the new system of state ownership.

The government would agree with the counties how many DRG points would be delivered by their hospitals in the forthcoming year, and the counties had discussions with their hospitals to plan how many DRG points each would deliver. There were about 380 DRGs and the value of a DRG point was based on average costs excluding capital.

The DRG points system was easily transformed into a budget. Using 1999 as an example: one DRG point was priced at NOK 28,289. (The government can change the price per point as it wishes). In 1999 there was a 50:50 split between payments per DRG and block grant. Thus the total number of points agreed to be delivered by each hospital in 1999 would have been multiplied by NOK 28,289 and then 50% of this total would have been allocated to the hospital as a block grant for 1999. The hospital would then receive further funding according to how many DRG points it produced in 1999, being paid 50% of NOK 28,289 (i.e. NOK 14,144.50 for each point). A hospital's total DRG points are calculated as follows:

$$\text{Total DRG points} = \sum_j [\text{DRG weight}_j * \text{number of stays}_j]$$

where  $j$  = type of DRG

An increase in DRG points, which decides a hospital's income, is not necessarily the same as an increase in the number of treated patients. A hospital could, for instance, drop low weighted patients and go for high weighted patients if the increase in revenue would be greater than the consequent rise in costs from doing so. That means that you increase income without increasing the number of patients treated. That is why I have analysed both the number of patients treated and the number DRG points produced.

With a DRG-based payment system there is a tendency for ‘creep’ over time, i.e. cases are re-defined as being in higher price groups in order to obtain a higher price. Thus over time the average number of points per case increases. In Norway there was a scandal because in one region there were some clever doctors who had figured out that a simple tonsil operation could be grouped or reported as a more severe illness involving more surgery. The price difference was substantial. Such gaming of the system is a greater problem the coarser are the DRGs. If it is a very fine-tuned system, then the scope for re-classifying cases is much reduced.

The Norwegian Government knew that it could not control creep, which could occur for different reasons. It could be due simply to better, more precise, coding over time as familiarity with the DRGs increased. Instead of trying to prevent creep the Government would only pay for up to a 1% per annum increase in the DRG index (number of points divided by number of cases) from one year to the other. If the DRG index increased by more than that, the excess growth was not paid for. This use of the DRG index was abolished a few years ago.

### Analysis

I have analysed whether the introduction of ABF has had any significant effect on the number of patients treated and on the DRG points produced. I interviewed administrative staff at county and hospital level and as a result was able to divide the hospitals into two groups:

- those which, after 1997, were funded by the counties which owned them in a way which mimicked the ABF system by which the counties were funded by central government; and
- those owned by counties using block grants and not purely DRG-based financing.

Thus there was an experiment group of general hospitals and a comparison group. It is possible that the two groups of hospitals are to some extent self-selected, so that a hospital that goes into the mimicking group has a different leadership style or is more eager to be market-oriented. We have to consider that possibility when we try to evaluate the experiment and I will return to it.

What can we expect from a DRG-based payment system? We could expect the incentives inherent in it to cause a reduction in average length of stay because that brings costs down. We might fear a reduction in quality, perhaps reflected in increasing readmission rates as patients are discharged earlier. There could be a reduction in capacity as units are closed whose costs are too high compared to the price received. You could also expect an increase in capacity utilisation. As already argued, we can also expect to see 'DRG creep'. You can also expect hospitals to post deficits if they are more costly than the prices they receive. Finally, we can expect that hospitals may adapt to the prospective reimbursement system by increasing the number of patients treated.

The details of the model and the econometric methods I used to analyse the impact of the 1997 ABF reform are in Kjerstad (2003). In essence, for 59 hospitals, I looked at growth in patients treated and in DRG points produced over the period 1995 – 1998, straddling the introduction of ABF. I compared the growth in patients treated and points produced between 1995 and 1998 for the two groups of hospitals: those paid on a DRG basis from 1997 onwards, and those continuing to be paid on a block grant basis. Specifically I compared the two groups of hospitals using a difference-in-difference model. This is a neat way of excluding the influence of unobservable factors (and, indeed, observable factors) that can reasonably be expected to be time invariant. There are a lot of things we would like to observe, like management style and everything that affects the daily running of a hospital, but in this way we can cancel out the time-invariant observable and unobservable features. We are left with a dummy explanatory variable – whether we are in the experiment group or not



– and a number of other potential explanatory variables that are not time-invariant, such as the numbers of doctors and nurses available per hospital bed.

### Results

The results of my analysis are that:

- ABF hospitals treat more patients than do non-ABF hospitals: a statistically significant effect of about 2% per cent, so it was not a big difference;
- ABF hospitals produce more DRG points than non-ABF hospitals: a statistically significant difference of about 3%.

My results are a bit sensitive as to how I divide the 59 hospitals into the two groups. My method for allocating hospitals between the two groups was *ad hoc* in the sense that I based it on an interpretation of information given to me by county administrators. Nevertheless it seems clear that the introduction of DRG-based hospital payment in Norway did produce some increase in patient activity.

### REFERENCE

Kjerstad E. (2003) ‘Prospective funding of general hospitals in Norway – incentives for higher production?’ *International Journal for Health Care Finance and Economics* 3(4); pp231-251.

## 5 EXPERIENCE WITH DRG-BASED HOSPITAL FUNDING IN WESTERN EUROPE

MIRIAM WILEY

### Introduction

In attempting an overview such as this it is difficult to avoid a ‘Cook’s tour’ of who is doing what in this, that and the other country. People want to know what other countries are doing and to learn from international experience. But the main thing that we can learn from international experience is, of course, that it is always different.

It is now more than 20 years since DRG-based payments were introduced in the US and over 10 years since we first had case mix type applications in Europe and Australia. Health systems continue to function, doctors continue to treat and patients continue to go to hospitals. What is problematic in the European context is that we are not quite sure whether all of that happens in a better or worse situation as a result of the use of DRG-based payment because, unfortunately, we do not have the experience or history of evaluation that there is in the US.

There are lots of different applications and ways in which case mix can be useful in hospital and health care systems but, for the most part, in Europe it is applied in a funding context. Each country has adapted the DRG-based funding approach to its local environment. It is impossible to summarise any country’s experience concisely. The simplified remarks about individual countries in the rest of this chapter are not intended to be definitive; they are intended only to impart a flavour. Anyone wanting to start to understand any specific country’s system will need to do much more than read this chapter.

Table 5.1 presents one of many possible ways of categorising European health care systems. It shows that, for the most part, countries in Western Europe, whether they have tax-funded or social insurance systems, do use DRG-type systems either for payments per case or, more commonly, as an adjustment to global budgets.

**Table 5.1: Payment of hospitals in Western Europe**

	Per Case	Global Budget	Combination Global Budget with DRG/Case-Mix Adjuster
Austria	√		
Belgium			√
Denmark	√	√	
England			√
Finland	√		
France			√
Germany			√
Ireland			√
Italy			√
Norway			√
Portugal			√
Spain			√
Sweden			√

It is interesting that the countries that started with DRGs over 10 years ago were the smaller countries, like Portugal, Ireland and Norway. Since then we have seen a gradual progression of other countries taking on board these types of techniques.

### Country by country: use of DRGs

Portugal has applied a case mix adjustment within a global budget model for hospitals since the early 1990s. The amount of hospital funding dependent on case mix started at 10% and remained at that level until 1997; thereafter it increased progressively to 20% in 1998, 30% in 1999 and 50% since 2002.

In Spain, while the autonomous regions vary in how hospitals are funded and how they use case mix, the general approach in evidence is for prospective funding, which may be product-based or budget-based. For the most part case mix is taken into account in funding inpatient activity. For example, in 1998 the Catalan Government introduced case mix adjusted budgets to fund hospital inpatient activity. The amount of money a Catalan hospital receives depends on both its case-mix complexity – accounting for 30% of the budget

– and on what are called its ‘structural characteristics’ – accounting for the remaining 70%. Case mix management covers almost 100% of Spanish public hospitals’ inpatient activity and it is widely used for hospital monitoring, evaluation and funding.

A case mix adjustment had been applied within a global budget model in Ireland since 1993. About 20% of the acute hospital budget has, since then, been determined on a DRG basis. The plan is that by 2007 about 50 per cent of hospital budgets will be allocated on a case mix basis. The application of case-mix within the hospital framework is budget neutral. In addition to being used for resource allocation, case mix measures are used in Ireland for service planning, and for admission and discharge management.

In France, a new prospective payment system, ‘Tarification à l’Activité’, is due to be implemented from 2004 for all kinds of hospitals providing acute care (public, non-profit and for-profit hospitals; medical, surgical and obstetric activity). This new system is based on a fixed payment identical for all hospital stays classified in the same GHM (Groupe Homogène de Malades), which is very much like a DRG. Rehabilitation and psychiatric care remain outside the French case mix model.

Some countries use case-mix applications for funding at the regional level; that is to allow for patients who move between regions. In the Nordic countries there are differences between municipalities or county councils as regards how they choose to fund their hospitals, but most use case mix based applications. Adjustments for movement of patients between regions are also based on DRGs. The Nordic countries use NordDRGs for inpatients and outpatients – a locally modified coding scheme based on ICD-10.

In Denmark global budgets are used to fund hospitals. A 90/10 model for budgets was introduced in 1999, under which 90% of the budget is allocated by the county on the basis of an estimated projected level of activity and the remaining 10% is per treated patient

using measures such as DRGs. This is not a mandatory funding model. DRG based payments are also used to allow free choice for patients to cross county boundaries for hospital care.

Also in Denmark there is an important initiative within its DRG payment system, referred to as the 'grey zone'. This applies where inpatient or day case care would be equally appropriate and offers the same DRG weighting regardless of which setting is used so as not to impose any undue disincentive effects. Thus if day case and inpatient care are equally appropriate, then they will be funded at the same level.

In Finland the use of DRGs is not mandatory and is not regulated. DRGs are used primarily for internal management of hospitals, reimbursement of inpatient and day surgery cases, benchmarking of hospital performance and for health services research. NordDRGs are used as a basis to bill the municipalities for the services provided but there is no uniform fee per DRG. Two university hospitals use NordDRG solely for benchmarking. The fact that all hospitals and health centres are using uniform classifications for laboratory and imaging examinations has created a solid basis for outsourcing or internal invoicing of services.

Sweden, and specifically Stockholm, was one of the first places in Europe to use the DRG system. In Stockholm, about 70% of expenditure for acute hospital care is funded through case-mix. DRGs are used to set service prices within prospectively determined expenditure constraints. The specific approach to hospital financing varies between county councils as there is currently no national policy on DRG use. A generic model involving activity-based financing for hospital services may be seen to emerge. DRGs are used to price patient flows between county councils.

In Italy, within the regionally-based health system, Local Health Units (Aziende Sanitarie Locali – ASL) pay for the services provided by hospitals and outpatient specialist providers for their residents. Inpatient services are reimbursed on a DRG basis, with regions setting

38 the rate payable up to a nationally determined maximum. DRGs are also used for day cases and for cross-border patient flows between regions. Extension of DRG based payment to ambulatory and nursing home care is still in an experimental state.

In Austria the regional (Länder) governments negotiate budgets with the hospitals based, since 1997, on a DRG-type classification system specific to Austria (LKF) that incorporates over 900 groups. Indications of initial reductions in the rate of growth of hospital costs when this payment system was introduced may now be reversing.

Belgium has used the AP-DRG system for some time to modify the fixed budgets that Belgian hospitals receive for common services and nursing costs. The drive is very much towards achieving standardisation of length of stay, which is to some extent a proxy for costs. Where length of stay for a hospital differs significantly from the national average when estimated on a DRG basis, a positive or negative adjustment is applied. For example, when DRG-weighted average length of stay is excessive, a hospital loses some funding.

The German Health Care Reform 2000 introduced, by law, a commitment to a hospital payment system completely based on DRGs. The system was introduced on a voluntary basis in January 2003 and on a mandatory basis from 2004. This new system is budget neutral and is based on a German adaptation of the Australian AR-DRG classification (G-DRGs). Outpatient stays and psychiatric cases are excluded. Additional payments must be made for each G-DRG in hospitals that provide emergency care, as well as the teaching costs of teaching hospitals and salaries for trainees. This is a dramatic development in the European context.

A three-year project has been underway in the Netherlands since 2001, involving 40 hospitals in the development and implementation of DBCs (Diagnosis Treatment Combinations). The intention from 2004 onwards is to fund hospital services on a prospective budget basis, adjusted for case mix using the DBC system. While its origins are in DRGs, the DBC has expanded to cover the complete episode of care.

## Overview

With the exception of Germany it is noteworthy that none of these countries, particularly the global budget countries, have gone for 100% case mix based financing of hospitals. That is a consequence of the history that every country's hospital system carries. We cannot deny the history. The hospitals in our countries have been accustomed to being funded on a historical basis, so they have staffing levels determined accordingly, they have patterns in terms of the types of patients they treat and their clinicians' practices and so on.

I do not accept that this justifies hospitals charging or spending in a way that is inefficient in terms of treating certain types of patients. One of our problems is how we work towards better efficiency by introducing different types of techniques. However, this cannot be pursued by sudden large changes in funding because in Western European types of systems something like a 10% cut in a hospital's budget would close the hospital. That is primarily because about two-thirds of expenditure is determined by pay, and in most Western European countries you cannot simply fire the staff because they tend to be government employees. If you do not have control over the numbers you employ, then you are constrained in terms of what you can do with your pay budget and you are therefore constrained in terms of what sorts of efficiencies you can apply within a budget period like one year.

For those sorts of reasons, there are constraints on how much of a hospital's budget is going to be allowed to be determined by case mix adjusted activity levels. In most Western European countries now it is around the 50% level. This recognises the historical constraint while also stating that we do not accept that hospitals should continue to vary so widely in terms of the resources expended on treating particular types of patients.

Case mix 'tools' are applied in all types of health systems in a variety of ways. They are aimed at the achievement of many different objectives, including: containing expenditure, improving efficiency, increasing

40 output and reducing waiting lists. Development of DRG applications has very much been policy driven.

The initial phases of application development focused on the technical performance of case mix measures – e.g. whether the classification is specific and comprehensive enough – and on the adequacy of data systems to support them. Those questions are important but we have seen many countries take the approach of refining DRGs in use rather than waiting to perfect them before implement them.

We are seeing an increasing diversification of case mix measures. Many countries are now developing their own. The English experience with HRGs is an example. But case mix-based applications remain very much focused on the acute hospital sector and specifically on inpatient and day care. Also, developments continue to be constrained by the status of information systems (recording activity and cost data) and coding classifications.

Despite applications within Western Europe since early 1990s, we do not have good evaluation studies in the European context: studies of the impact of DRG-based payment systems on incentive effects, on performance, on the quality of care etc.

To conclude I quote from Rudolph Klein (2003), who suggested that:

*"For the outside world, the US health care scene is....a kind of supermarket where they can shop selectively. But having shopped, they also adapt....the crucial element is the local environment and context – and the extent to which imports fit, or can be made to fit, local needs."*

I think Klein is right. Many of the concepts, techniques and tools have come across the Atlantic – the Pacific as well – but they are being adapted locally to fit the local environment.



**REFERENCE**

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## 6 DISCUSSION OF CHAPTERS 4 AND 5

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The discussion covered the following points:

- The extensive international take-up of DRG-based pricing;
- The risks of using DRG payments for 100% of hospital revenues;
- Impact on the quality of care;
- How strong will incentives prove to be?
- Hospital closures and financial instability;
- Involving clinicians and linking HRGs to clinical guidelines;
- Setting prices at other than average cost and the scope for payers to change prices.

**James Raftery (University of Birmingham):** I want to structure my comments under five themes: general comments about international experience; picking up on Egil Kjerstad's and Miriam Wiley's contributions on the European experience; something on the effects of case mix funding; a few points on problems; and some on opportunities.

The international experience on case mix systems and DRGs provides an extraordinary and very interesting example of a health technology that has been taken up right around the world very quickly and implemented in slightly different ways. Another interesting background point, evident in some of the literature, is that these case mix systems were developed originally against the wishes of clinical organisations. Both in the US and in England commitments were initially given to clinical organisations that case mix would not be used in contracting. Of course, personnel and governments change.

In terms of the European experience, which previous speakers have described, the most striking aspect is that no country discussed today relies entirely on activity-based payments to fund their hospitals. Tom McGuire's outline of the US system, showing that only a small proportion of hospital funding comes from activity-based funding, is important. It contrasts with the intentions of both the English and German governments to fund hospital services 100% by activity-based payments. This is very ambitious. Pushing the approach as far as one

can is an interesting way of checking what the limits to it might be, but may well encounter problems along the way. Most countries have, as Miriam has pointed out, some proportion of funding based on activity but all have either global or historical budgets as well. The balance of those elements is often adjusted.

With regard to the effects of case mix funding, three issues have been studied at a micro level: efficiency gains, access gains and quality gains. The evidence suggests that efficiency has improved. Access has probably also improved because length of stay has been reduced and more patients have been treated. However, most of the analyses have been before-and-after studies. Egil Kjerstad's Norwegian analysis is particularly useful because it includes a quasi-control. Generally, the evaluations are open to methodological criticism, not least because they ignore the impact on quality of care. This is a major omission: it cannot simply be assumed that there is no effect on health outcomes.

The macro effects of introducing case mixed systems have been less studied, including whether policy objectives have been achieved. It is important that the Department of Health evaluates the impact of its payment by results policy, not least if they are going to rely more on such funding than does any other health system.

Problems: there are many minor problems which are capable of being accommodated. The data are poor, the case mix detail is debatable and HRGs will have to be adjusted for specialised cases. The costs of teaching, research and development, new technologies and so on, will have to be separated out. The danger is that we will become focused on these kinds of detailed problems and avoid the main issues.

One major problem is that we do not know much about the effects of incentives, which are very strong given use of average cost as the basis of payments per case in England. Because average costs are much higher than marginal costs, some trusts are going to be big gainers, others big losers. How will policy deal with those? Do we really want to put that strong a signal into the system? How will these incentives

44 affect organisations and the people working in them? We have virtually no models in economics of how hospitals respond as organisations. They cannot, without evidence, be assumed to behave as rational firms (the standard economics assumption).

Hospital closures: the Department of Health is clear that hospitals will be allowed to close. But will it be politically acceptable that hospitals be allowed to close? For example, take Kidderminster, a small town in the West Midlands. After it lost its Accident and Emergency department, the junior government minister who was the local MP lost his seat at the next (2001) general election, replaced by a retired consultant from the hospital. The whole town appears to believe that their hospital has closed, even though the hospital continues to function, albeit in changed ways. The number of patients treated has not gone down. Public perceptions can be very different from reality.

A final problem is how to deal with patient pathways, with 'joined-up' patient care. There is some scope for 'unbundling' HRGs to deal with that, but this will require a lot of work.

Opportunities exist, not least to gain clinical involvement, which will be vital if the policy is to work at all well. This big task needs to be sold in the context of disease management and improving health outcomes. I see very little sign of that happening. Another facet of clinical involvement is the interface with clinical guidelines. Scope exists for linking HRGs to guidelines, particularly when defining HRGs for complicated cases, but that requires clinical involvement. Taking advantage of such opportunities will require PCTs to be much more creative about purchasing with HRGs.

**Peter Smith (University of York):** It has been implied in all the discussion so far that HRG or DRG prices should mirror average costs. But DRGs could in principle be very powerful instruments for changing the pattern of care within a country: pricing above cost to encourage some forms of care or pricing below cost to discourage others. Are any countries tweaking their DRG prices to affect the pattern of care delivered?

**Miriam Wiley:** You do see that sort of adjustment being applied around switching between inpatient and day case treatment and increasingly now between day case and outpatient treatment, such as in Australia and Denmark, but not everywhere.

**Bob Dredge:** Just to clarify: in England although tariffs are based on average reference costs that does not mean that tariff has to equal reference costs. Ministers have reserved the right to use the tariff as an incentive or a disincentive for certain areas of reinforcing policy, although I am not aware that this has yet happened.

**Richard Fordham (University of East Anglia):** One thing that concerns me is the option for governments to vary how much they pay per DRG point from one year to the next. We have seen this happening in Australia. Yet hospitals cannot change their costs rapidly from year to year, so they could find themselves going from a profit situation one year to no profit the next.

**Adrian Towse (Office of Health Economics):** That brings me to my question about the Norwegian approach described by Egil Kjerstad: it was not quite clear what the negotiating mechanism is. If the local funder in effect says to a hospital "I need so many DRG points; let us talk about how much we are going to pay you for it", that sounds very like a block contract negotiation.

**Egil Kjerstad:** In Norway the price per DRG point has normally been adjusted upwards every year. The relative weights given to the different DRGs can also be adjusted, sometimes at short notice. For example, there is a surgical procedure for soft palates – when you snore too much – which used to be priced at about £1,800 per operation. There was a small hospital outside Bergen that specialised in this. They even contracted with a private surgeon so that he went up there and they did these operations one after the other, once every month. Then a newspaper article appeared about this private surgeon and about his earning a lot of money. In a matter of days the Minister of Health cut the price to £500.

46 Concerning the provider-purchaser negotiations: in Norway, as the price of each DRG is fixed in each period, the negotiations can only be about quantities provided.

**Miriam Wiley:** Payers are not out to do damage to their health care systems, but rather to do the best they can with the funds available to provide the services that the population needs, where they need them and when they need them. When governments and other payers make changes to payments systems or to DRG classifications, they appraise the projected impact so as not to inconvenience or provide disincentives. Policy makers should be given credit for that.

## 7 NHS SYSTEM RESPONSES TO PAYMENT BY RESULTS

NIGEL EDWARDS

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I think there is a general consensus in the NHS that payment by results is a good idea. But there are, nevertheless, concerns.

Let us start with some tests for this policy:

- Will it achieve what it is supposed to?
- Does it have clinical engagement?
- Are appropriate supporting strategies in place?

There are some significant problems under a number of these headings, but all or most of them are fixable. Timing may be more of an issue.

It is very noticeable that the payment by results policy has multiple objectives, not all of them mutually consistent:

- Efficiency;
- Increase access;
- Care in the right place;
- Supporting diversity;
- Excluding price from negotiations.

This seems to reflect the genesis of this policy, which is a classic case study in the multiple streams model of policy making, where several different policy entrepreneurs have different objectives they want to see achieved.

One of the problems with policy in this area is that many of the people who are discussing it in the so-called 'top team' do not concern themselves with detail and do not necessarily understand how the policy translates into the realities of clinical life on the ground. That is not surprising. You probably do not get to be a strategic health authority chief executive or a director of something in the Department of Health if detail is your thing. That is often quite

48 helpful! Unfortunately, however, the payment by results policy hinges on a number of issues which look like trivial and rather technical details but which have huge ripples through into the rest of the health care system.

Furthermore, the behavioural issues underlying this policy are as important as the technical ones. However, most of the discourse on this policy is about technical matters, not about behaviour.

### **Tariff design**

We know that DRG-based payment is intended to produce a significant efficiency gain. However, the implementation of the system in the English NHS is likely to produce quite the opposite effect. Hospitals with costs below the HRG tariff level (i.e. below national average costs) when summed across all their activity will be given a surplus by the payment by results system. Managers of those trusts are eager to get their hands on the extra money, in order to employ more staff or catch up on overdue maintenance work, for example. But trusts with above average costs will need to be bailed out. The result of all of that is that we will put money into trusts that are cheaper but we will find it extremely difficult to get money out of the trusts that are more expensive.

Research by Jacobs and Dawson (2003) at the University of York Centre for Health Economics suggests that NHS trusts have struggled to achieve, and often have not achieved, relatively modest cost improvement targets. The requirement to reduce costs in this policy is much more ambitious and there is no particular reason to believe that organisations will be any more successful at achieving cost reduction targets than they have been in the past. Many of the traditional routes for making savings are also precluded by this and other policies.

There is an obsession with the use of averages in planning in the NHS, e.g. for length of stay. But averages are often an unhelpful measure in health care and setting prices equal to average total costs of course means that they exceed average variable costs, which leads to the



perverse incentives described by Tom McGuire in Chapter 2. If we really want to move commissioning to being a clinical dialogue about prospectively costed patient pathways, then the right approach is first to cost the normative best practice pathways and then to start using them as the basis for pricing.

The HRG pricing system so far proposed for the English NHS does not actually line up with policy objectives. If we are trying to shift care away from hospital and into non-hospital settings, or if we are trying to incentivise elective surgery to reduce waiting lists, then why do we not set the tariff to coincide with our policy objectives? Although that is being done with day cases, by paying the same for a day case as for an inpatient case for the same treatment, we are not using the tariff more generally to incentivise achievement of policy goals.

The purpose of imposing a common tariff for HRG payments was to exclude price from the negotiations between PCTs and hospitals, and to enable politicians to argue that they are not re-introducing the NHS internal market of the 1990s. But Bob Dredge has said, in Chapter 1 of this book, that the Department of Health is considering using the market forces factor to adjust prices from place to place, so we have not excluded price. He has also talked, in Chapter 3, about unbundling HRGs, but what is unbundling apart from providing a calculus for having a price negotiation? We may have excluded pricing from negotiation in the short term but my guess would be that there are 600 NHS Directors of Finance out there working out right now how to put it back in.

Tom McGuire has already discussed dealing with outliers and inliers. Another issue arises from the fact that an HRG may lump together a range not only of different individual cases but also of more or less specialist treatment. If a hospital has a skew towards more specialist work within the HRG, it may have large amounts of income at risk from very small numbers of specialised cases. I am concerned particularly about those providers who have specialist, 'tertiary', work mixed in with their ordinary 'district general hospital' work. Their

50 pleas that their work is more specialist and so needs higher funding are treated with suspicion, but there is nevertheless some truth in their arguments about the costs of tertiary care. Specialist paediatric care is a particular area of concern as the HRGs in this area are completely inadequate to describe their activity.

There are uncontrollable, as well as controllable, cost differences between hospitals. Bob Dredge has described the use of ‘market forces factors’ to try and deal with them. But we do not fully understand why providers’ costs differ and we can be sure that the ‘market forces factor’ does not fully capture all differences. We have not worked through the implications of dealing with that. One possible approach may be to price on the basis of average variable costs, so that not all of a hospital’s income is riding on its activity level. This would allow greater flexibility in covering fixed costs that are either not immediately controllable or are controllable only over a period of several years.

A particularly interesting point is how to deal with the costs of capital. For the HRG prices, not only do we use an average price, which means we average together everything from the most dangerous to the most leading edge practice within the price, but we have also priced it on the basis of current capital stock in the NHS, about 40% of which has been written down to zero value in the books. We are effectively saying that we think it appropriate to have prices based on a hospital system that still uses Nissen huts in some places to deliver health care. That seems odd but we do not have a mechanism for dealing with any increased costs that a hospital incurs if it is ahead of the curve in terms of capital replacement. Potential investors in Private Finance Initiative (PFI) schemes in the NHS need to consider what the HRG tariff implies for a hospital’s ability to pay for a PFI contract.

### **Supporting policies**

With the creation of the first ‘foundation trusts’ on 1st April 2004, the NHS in England is starting to move towards a financial regime that will allow trusts to hold surpluses and deficits. One of the biggest problems with the 1990s NHS internal market was the absence of the

ability to hold reserves and the absence of a banking function. Foundation trusts, however, will have the ability to hold reserves. Even as the number of foundation trusts increases, PCTs will be left with a problem, however. This follows from the fact that if it is desired to move care from one place to another, then running costs may double, at least in the short term. Most major changes in the way care is delivered cannot take place within one year. But PCTs are required to be in annual financial balance. So it is difficult for the PCT to make the change, however beneficial.

For trusts whose costs currently exceed average reference cost levels, achieving efficiency savings so that they do not make persistent financial deficits will be difficult. If your costs are, say, 9% above reference costs – and numerous hospitals are in that position – then you have to make a 9% cash releasing cost improvement over three years. That is pretty challenging. It is even more challenging if at the same time you also have to make a further 1% cash releasing cost improvement and another 1% efficiency improvement, as is required by the Department of Health's Public Services Agreement (PSA) with the Treasury. That could mean having to achieve as much as a 15% efficiency improvement over the course of three years. In other systems where DRG-based payment has been introduced and there have been one-off efficiency gains as a result, they have not necessarily already had the history of 20 years of 1% – 2% efficiency improvements every year that the NHS has had.

Because of the speed with which 'payment by results' is being implemented, I am not sure that trusts are up to speed on linking the reimbursement system to their internal budgeting systems. That linkage is necessary for incentives within a trust to match the incentives being placed on the trust as a whole.

However, the biggest issue concerning supporting policies is about commissioning. At the policy level there has been a lot of optimism about the capability of commissioners, PCTs, to deal with HRG-based payment. But I do not recognise that when I meet many of the people

who are doing it and I think this optimism is beginning to ebb away. This is not true across the board; there are some PCTs that are managing to do the sort of commissioning required. But I think there is a major void in terms of the capacity, techniques and tools that people have to estimate what is likely to happen, to understand the risks, to model the consequences and to deal with some of the behavioural issues that go along with payment by results. Development of commissioning policy has always been a low and under-resourced priority in the Department of Health. That does not augur well. Commissioning policies and approaches, and indeed even the definition of what commissioning is, are not properly adapted to the task that results from payment by results.

### **Behavioural issues**

Gaming could be a problem. Tom McGuire played down its significance but it depends what you mean by gaming. One of the first responses of trusts is probably going to be to start to recruit coding clerks. In Australia when DRG-based payment was introduced coding went from a clerical job to a graduate profession and the salary doubled. That is an entirely rational response, whether or not it is called gaming.

A second behavioural problem is unilateralism. With payment per admission, acute trusts have an incentive to admit patients to hospital. Acute trusts are given targets by the Department of Health to ensure maximum waiting times in A&E; so what is the most logical thing to do? Open a ward, admit patients and send the PCT the bill. That is not gaming but it is certainly unhelpful and it could eventually result in the local health community going bankrupt.

The HRG tariff for outpatient orthopaedics at a London hospital X is £450; whereas they currently charge £80. Introducing the fixed tariff has removed their incentive to cooperate with local innovations to manage referrals. So the likely consequence is the withdrawal of co-operation with the local health economy. The way the HRG payment system has been designed seems to produce a polarisation

between primary and secondary care. Because prices are set at (average) full cost we have a zero sum game. If a PCT manages to prevent a patient being admitted, the hospital loses and the PCT wins, and vice versa if the patient is admitted. Since we are trying to establish collaboration and since the lesson of chronic disease management is to build integrated services across primary and secondary care, constructing a system which polarises primary and secondary care is unhelpful.

Finally, as long as the HRG tariff does not cover all health services, there is a major risk that the non-tariff services will end up paying for the ones that are on tariff. If you provide mental health care services you are in big trouble until they are included in the tariff.

### Conclusions

I support the aim of paying providers for the work they do but, as is clear from the preceding comments, believe that changes are required to many of the specific aspects of the payment by results policy as currently formulated.

Once it had been decided to introduce payment by results there was an argument for doing this quickly but I think the policy is being rushed. I am full of admiration for Bob Dredge and his team at the Department of Health for the speed and sophistication with which they are approaching it. But there does seem to be a major problem with the under-resourcing of the development and implementation of this policy both nationally and locally. It is important to make this policy work.

I reiterate that I am behind the policy. But there has not been enough debate outside the NHS finance community. It is an accountants' playground but there is no clinical engagement yet. Payment by results has become a sort of black box in the corner of many acute trusts with only three people understanding it and they are not allowed to travel together.

So, my proposals for proceeding with payment by results are:

- re-think pricing so that it is not a fixed price; it should be flexible downwards. The obsession with the fixed price is political, not technical; it is unhelpful and it needs to change;
- we need a more careful approach to implementation. That might mean taking a bit longer, although I appreciate the need to implement rapidly. Currently we are implementing a policy on which we have not completed the debate;
- invest much more in commissioning, to produce much more capable commissioning, with whole sets of new tools, techniques and approaches;
- think much more about behaviour;
- involve more people in developing the policy and, in particular, engage the clinicians.

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## 8 CHALLENGES OF IMPLEMENTING A FIXED PRICE REGIME: LESSONS FROM THE ROMAN EMPIRE

ANDREW STREET

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Insights into this policy reform can be gained not only by comparing with other contemporary health care systems. A different take on the payment by results reform is revealed by looking at ancient history. One thousand seven hundred years ago a similar fixed price system was introduced across the Roman Empire by the Emperor Diocletian in the year 301 AD.

Diocletian was concerned to ensure that his vast army could afford food, clothing and equipment at a time of high levels of inflation throughout the empire:

*"Immoderate prices are so widespread that the uncurbed passion for gain is lessened neither by abundant supplies nor by fruitful years"*  
(from Diocletian's Edict on Maximum Prices, Graser, 1940)

Instead of increasing the wages of his soldiers, Diocletian decided that the solution was to set prices:

*"It is our pleasure that the prices listed in the subjoined summary be observed in the whole of our empire in such a fashion that every man may know that permission to exceed them has been forbidden him"*  
(Graser, 1940)

The incentive regime that Diocletian adopted was very severe: if you exceeded is maximum prices, you risked execution!

Diocletian's price list was extensive. Here are a few examples. You could buy a turtledove in good condition for 16 denarii. Prices were quality-adjusted, so if it was just a wild turtledove you paid a little bit less, 12 denarii. You could buy a pocketful of snails for 4 denarii. Tanned seal skins attracted a high price, 1,500 denarii; I have no idea why they were priced so much higher than the 60 denarii for tanned lynx skins. You could get a Britannic hooded cloak for 600 denarii.

56 We do not know on what basis Diocletian's maximum prices were determined. The prices being set in the NHS are not maxima – services may not be sold to PCTs at prices either below or above the fixed tariff – and are based on reference (mean) cost data. Essentially they are derived from a formula that looks like this:

$$T_i = \delta_i [p\bar{C}_i + (1 - p)\bar{D}_i]$$

where

$T_i$  = tariff price for HRG  $i$

$\bar{C}_i$  = average inpatient reference cost for HRG  $i$

$\bar{D}_i$  = average day case reference costs for HRG  $i$

$p$  = proportion of elective activity undertaken on an inpatient basis

$\delta_i$  = inflationary factor for HRG  $i$

The tariff is based on the average reference costs for inpatient care for each HRG and the average reference cost for day cases, weighting these two averages according to the proportion of activity nationally that is undertaken in inpatient and day case settings respectively. So there are strong incentives under the payment by results regime to undertake work in the cheaper, day case, setting.

Then there is an adjustment to the reference cost information by an inflationary factor, which is designed to take account of the two-year time delay between the date for the reference cost submissions being returned and the prices being published. This adjustment is specific to each HRG. There is a further adjustment, not shown in the equation above, which may or may not feed through into individual tariffs, and that is the 'market forces factor'.

In financial year 2003/04, such tariffs were applied to 15 out of the more than 400 HRGs. I have looked at these 15 HRGs in some detail



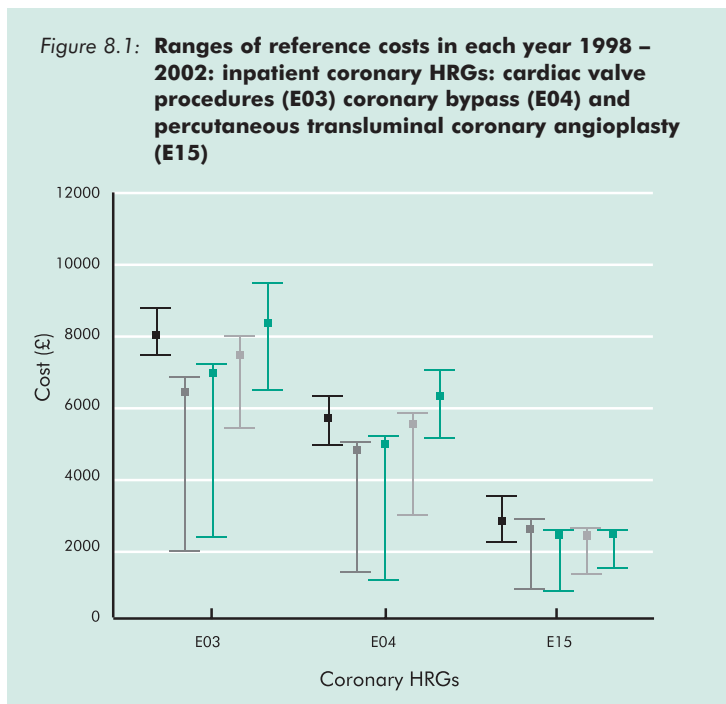
to see what sort of financial instability may arise as a result of using these prices in practice. The instability will be greater if the reference cost data exhibit:

- a high degree of skewness, as that may indicate that there are systematic differences among providers in their costs of provision or in their within-HRG case mix;
- large changes in the mean year on year; or
- substantial variation among providers. If there is substantial variation, that may be indicative of influences on costs due to factors other than just the providers' efficiency, e.g. different approaches to allocating costs between different services they provide.

Figures 8.1 and 8.2 illustrate my analyses for seven of the 15 HRGs. Each figure shows, for each of the five years for which NHS reference cost data are available, 1998 – 2002, the mean reference cost, which is the square, and the inter-quartile range for a number of HRGs. Similar data are available for the other HRGs and for day cases (where relevant).

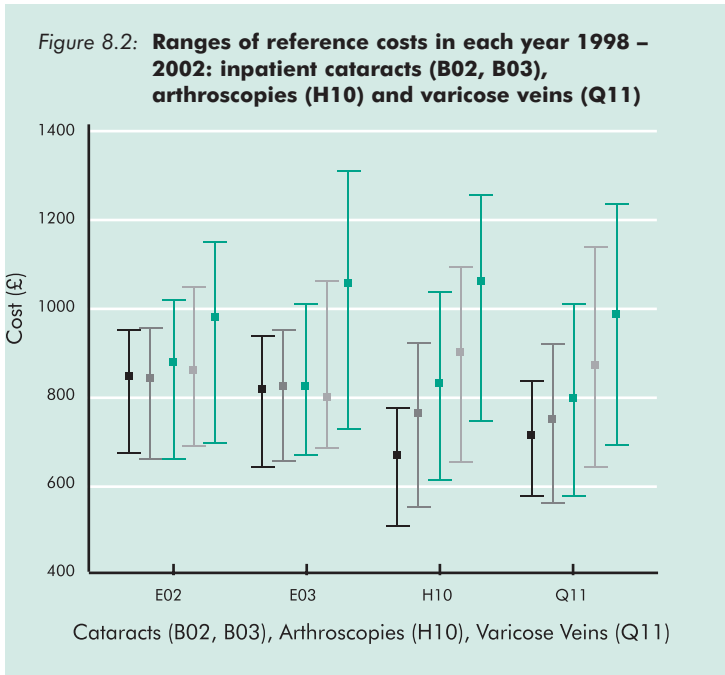
The first thing to observe in Figure 8.1 is that the mean reference cost is a long way from the middle of the inter-quartile range. In other words for these HRGs we have a skewed distribution of costs with a tail of providers recording costs that are a long way below the mean. That raises a number of questions. First of all, why are we basing the tariff on the mean cost, when doing so means that some providers will receive large windfall gains. The PCTs are just going to be paying money over the top for nothing; they just lose out under this system. Would not the median be a better way to set prices or, if we want to encourage efficient practice, why do we not base prices on best practice costs?

The next question raised by Figures 8.1 and 8.2 is what is going on in the providers at the high end of the cost distribution? By imposing a



mean cost tariff, we are essentially saying that these providers are considered inefficient and they are going to lose out. But is that actually the case? Those providers may be different in systematic ways. Could it be that these are seeing a much more complex case mix? This may well be the case for, say, coronary bypass (E04) or cardiac valve procedures (E03) because those HRGs are fairly large amalgams of procedures, each covering around 50 different procedures. There are currently adjustments to the HRG price for specialised hospitals, and the HRG system is being reviewed, hopefully to take these things into account.

The next thing to notice from Figures 8.1 and 8.2 is how the mean costs and inter-quartile ranges of cost are changing over time. We can



ignore the 1998 costs because there was only partial coverage in that year and the standard of costing in that first year of NHS reference cost calculation was poor. Since 1999, there has been a large increase in unit costs for many of the HRGs, and that is for a variety of reasons. As a result of the Government’s public spending strategy there has been rapid growth in the money pumped into the NHS, and that seems to be feeding through to these unit costs because patient throughput is not rising in line with the funding. It may be that resources are being spent on worthwhile ends such as ensuring that access targets (shorter waits) are being met, but that is not clear in this type of pricing system. We probably need to be a bit more imaginative about making sure that the things we are actually spending money on and where our political priorities lie somehow inform the pricing regime.

The Government had expected that over time, consistency in coding and costing methodologies would increase and hence variations in recorded costs between providers would narrow. There has not yet been any general reduction in the variation of HRG reference costs, however. For some HRGs, as in Figure 8.2, the variation shown by the inter-quartile range, has increased over time; for some other HRGs, as in Figure 8.1, the variation has gone down; but overall there has not been a general reduction.

Returning to the Diocletian edict on maximum prices, let us consider what the benefits to the Roman soldier were. Unfortunately, the Diocletian edict proved a disaster. I found a piece by Lacantius, who admittedly had a bit of an anti-Diocletian agenda of his own, as you can tell from the title of his essay, “On the manner in which the persecutors died”. Lacantius said of the effect of the edict:

*“Much blood was shed for the merest trifles; men were afraid to display anything for sale, and the scarcity became more grievous and excessive than ever”*

Essentially the maximum price system meant that some traders could not cover their costs. Farmers stopped farming less productive land with a consequent reduction in the food supply. Similar effects were observed in other parts of the economy. A policy that was designed to make goods affordable failed because suppliers went out of business and goods became unavailable where previously they had been expensive.

There is a danger that the same sort of thing may happen with payment by results in the NHS in England today. There are likely to be elements of cost that are outside the control of providers and that are not compensated for sufficiently by the market forces factor or by some other means in the pricing structure. For example we know that large efficient hospitals will have different cost structures from small efficient hospitals. But is the size of the hospital something that hospital managers have control over or is it largely politically determined?

What are the benefits to the English patient? The payment by results' policy is designed principally for one reason: to augment patient choice so that patients are able to choose providers knowing that funding will not be an obstacle; money will follow patients. But if we have a repeat of what happened in Diocletian's time, if some hospitals decide to withdraw some services and some hospitals go to the wall, as has been threatened, then patient choice will not be augmented because the services will not be available. The implications of the threat not to bail hospitals out under this regime need to be explored explicitly.

Finally, I found a comment on the Diocletian experiment in the Reverend H.H. Milman's notes on Gibbon's *The Rise and Fall of the Roman Empire*. Milman was writing his notes in 1871. His verdict on the Diocletian policy was that "The whole edict is, perhaps, the most gigantic effort of a blind though well-intentioned despotism, to control that which is, and ought to be, beyond the regulation of government." I hope that such a verdict is not in future pronounced on the NHS 'payment by results' fixed price scheme.

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## 9 DISCUSSION OF PAYMENT BY RESULTS IN THE NHS IN ENGLAND

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The discussion covered numerous points, with particular emphasis on:

- Whether high cost hospitals will be allowed to exit;
- Perverse incentives and unintended effects;
- Synchronising payment by results with moving PCTs to fair shares funding levels;
- Flexible versus fixed pricing;
- Positive correlation between a hospital's costs and the social deprivation of the population it serves; and
- Unexplained cost differences between hospitals.

**John Appleby (King's Fund):** Nigel Edwards and Andrew Street have confirmed the existence of multiple objectives for the payment by results policy including: supporting patient choice; fair and transparent pricing; rewarding efficiency; and encouraging improvements in quality. To these can be added at least three others: creating direct incentives for increasing the volume of services where growth is needed in order to improve access; bearing down on the national variations in cost and efficiency; making it easier for the NHS to account to the public for where money is being spent and to answer questions about value for money. To repeat what Tom McGuire said earlier: this is too lengthy a set of objectives for one policy to deal with.

There are also considerable uncertainties and risks inherent in the new reimbursement system. For example, will the policy actually be allowed to drive NHS hospitals out of business? Will a PFI hospital with a 30-year contract with a private consortium be allowed to exit the market; will a foundation trust hospital? Is it the case that PCTs will not be forced to place contracts with foundation trusts and PFI hospitals?

One positive indirect effect of fixing prices is that PCTs will have more time to concentrate on purchasing decisions guided more by quality considerations than price. However, we do not know to what extent providers – or purchasers – will feel the imperative to engage in non-price competition. What motivates them; what is in their

objective functions? There may also be a disincentive to improve quality if that requires investing in innovative and possibly more costly interventions, medicines or modes of care and which increase a provider's costs.

If an increased volume of activity is meant to be one of the outcomes of the payment by results system, is it really going to happen? It is not clear that volume in the aggregate will increase; it could stay the same or reduce. Activity could increase in unsought areas and decline in priority areas. The incentives introduced by payments by results mean that we have to look in detail at the impacts on provider behaviour before assuming activity will increase. This means understanding how providers may start dropping certain activities and switching to other areas. Of course, providers are not operating in isolation but are in a system with other providers and purchasers. This will complicate their behavioural responses and lead to variations in responses across the country dependent on the particular set of local circumstances individual providers face. I would be very interested to know whether the Department of Health has tried to work through models of provider and purchaser behaviour in the sort of detail and sophistication which would allow any predictions of volume changes to be made with any confidence.

Further, while the new system has been advertised as having 'fixed' prices, in fact there will be considerable variation from provider to provider. The market forces factor means that there are many prices, not just one, for each HRG to take account of unavoidable cost differences across the country. There is a 35% – 40% difference across the country on individual HRG prices in 2004/05. The hospital with the smallest market forces factor is in Cornwall; the hospital with the highest is St Mary's, Paddington, in London. I cannot quite see London PCTs shifting their contracts to move patients from London to Cornwall, but they might well be willing to move contracts around between London hospitals and there is quite a significant price variation – up to 20% – just across London. Is that an appropriate incentive for purchasers? And what happens to contracting for quality?

There are other perverse incentives. Payment by results introduces an incentive for providers to reduce costs. But could cost cutting start to erode quality? Providers also have an incentive to shift costs onto patients in other parts of the NHS.

Hospitals being in overall financial surplus or deficit is not, it seems to me, the main issue. A more important point is that every hospital will have some HRGs on which they are making a loss and others on which they are making a profit. The issue is not about the whole hospital so much as about how hospitals deal with these individual profits and losses within their portfolio of activities.

My final point is that the introduction of payment by results is a very high risk strategy. There are many complex issues here and many complex behavioural responses are possible. While in theory the incentives look clear, how key actors in the system respond to these incentives is not so clear; while there will be positive, desirable responses, there are just as likely to be negative or undesirable responses.

**Peter Spilsbury (Birmingham and the Black Country SHA):** In Birmingham and the Black Country our PCTs are currently £100 million under their fair shares allocation of funds for the year. Our trusts are typically below reference cost, typically in financial balance, and we have the lowest waiting times in England. But we have poor health outcomes. We have the worst perinatal mortality rates in the country. In the East Birmingham PCT area the potential years of life lost measure is twice that of the best PCT in the country. Under the current payment by results transition proposals, our PCTs will have to pay our trusts higher prices than hitherto for the same work. Even if the PCTs have their purchasing power maintained by being given more funds to bring them closer to their fair shares allocations, not one penny will become available for them to spend on improving the health of their population. Furthermore, there is currently no parallel policy to ensure that PCTs are moved to their fair share level of funding over the same timescale as payment by results is implemented. Why not?



**Carol Propper (University of Bristol):** I think the commissioners (PCTs) are going to get a big shock: they are going to face very big price changes. But NHS commissioners had a similar experience when the internal market was introduced in April 1991. So there is 13 years' worth of practice of commissioning in the system. I think that, consequently, the shocks might smooth themselves out more quickly than they did in the internal market. It would be interesting to know how fast health care purchasers in the US react to big price shocks of the kind that reference costs are going to introduce in the NHS.

**Tom McGuire:** In the US we have nothing like the NHS commissioning arrangements. When US doctors are given capitation amounts, such as when they are made to do commissioning on behalf of their patients, they are very tough customers. They have cut back on health care costs. If you let the doctors keep the money they save, then you can expect big changes. If you make them spend the money, the effect will be much diminished.

**Nigel Edwards:** The quality of commissioning across the NHS is variable and in parts of the country is of really high quality. But some aspects of commissioning are seldom done well. For example, not many commissioners are buying years of care for chronic disease or fully-integrated care pathways. Not many PCTs have their GPs fully involved in commissioning via practice budget holding rather than through the Professional Executive Committee. Commissioning has been a relatively low priority for policy-makers ever since the NHS internal market was introduced. Just contrast how much more organisation and development effort has gone into establishing NHS foundation trusts compared with commissioning, for example.

A noteworthy feature of the payment by results system is the emphasis it will place on planning. A paradox of the NHS internal market in the 1990s was that it was assumed that because we had a market, there was less need to plan. One of the things that really strikes you about meeting a US health care provider is the amount of effort they put into planning. I suppose it is a bit like Napoleon's approach

66 to planning: he said “plans are nothing, planning is everything”. Planning is about understanding the environment and where you are in it, what the options are and where they take you. We do not plan in a meaningful way in many NHS organisations. The payment by results system, paradoxically, although it is full of market mechanisms, may require us to do more planning if it is to work.

Another point is that the full cost nature of the HRG tariffs does have one upside to set against its many downsides, which is that, contrary to some comments made earlier, it is very unlikely that a provider will exit from providing a service. A provider cannot afford to stop even what appears to be a loss-making activity on a reference cost basis because of the contribution it is making at the margin to their overheads.

Another aspect of exits is also worth reflecting on. A hospital may get to the point where it is forced to shut down completely because of persistent, large deficits. Policy makers cannot rely on the invisible hand of the market to shut the appropriate hospital. The market is pretty indiscriminate. It may well shut a hospital regarded as highly strategically important, in exactly the right place, providing an extremely central service to a very politically sensitive population in a marginal constituency, for example! The invisible hand of the market will choose hospitals for closure because of the way they are run and because of the cost structure they happen to inhabit. It may even select them for reasons which are not related to their underlying efficiency or strategic importance. Hence, there needs to be some kind of planning to avoid unwanted closures.

It may also be – and this is a testable hypothesis – that hospitals that serve the most deprived populations have higher costs than hospitals that serve less deprived populations. The problem is that if you give everyone a standard price, there is no way for PCTs that are funded for having more deprived populations to get that extra money to their providers.

**Peter Smith (University of York):** We did an analysis, some time ago admittedly, on the relationship between length of stay and population characteristics. There was very clearly a relationship by which deprived populations tend to have longer lengths of stay.

**Adrian Towse (Office of Health Economics):** We started out by learning how widely used a ‘technology’ DRG-based payment is and that it can lead to cost savings and increased activity. We then heard that there are lots of problems but they are in principle fixable. But now the discussion seems almost to be saying that DRG-based pricing is so flawed that it is not even worth thinking about. My sense of where we were earlier was that actually this is a good policy instrument but we need to be extremely careful that we do not make it too high-powered. There are many subtle and important differences in the ways that other countries have introduced DRG-based payment and perhaps we need to think about some of the elements that other countries have used that we appear not to be adopting here. The key question is then: what are the aspects of payment by results in the NHS in England that need to be changed so that it can work much better?

**Peter Spilsbury (Birmingham and the Black Country SHA):** The central need is to have more flexibility throughout the system. The idea that the current tariff price represents ‘the right price’ seems to me to be wrong. The tariff is the arithmetic mean of existing costs across the country; costs that are, in many instances, for different care pathways. This means that the notion of a fixed national price that is above competition is a bit of a myth; the variation is in what you get for the fixed price. So, finding ways to deliver flexibility is justified – the extra money that might come to provider trusts in Birmingham and the Black Country under payment by results is not theirs as of some absolute right.

By focusing on Birmingham and the Black Country, perhaps I could illustrate where flexibility might arise. Many of the hospitals there are going to receive windfall gains, as their costs are below average NHS

reference cost levels. A sensible approach would be for the commissioners (PCTs) and the public to be empowered to be active and say: “Right, you are getting this extra money for the same activity. What are you going to do with it? Demonstrate to us the benefits. Agree the usage with us.” The key issue is surely: where does the public interest lie?

We also need the ability to disaggregate the tariff to support, for example, chronic disease management, but without increasing bureaucratic complexity. Finally, the variability that exists in care pathways, the drive of NHS policy towards plurality of provision, plus the drive to direct resources into improving health and reducing health inequalities, all argue for the tariff to become a maximum price rather than a fixed price. I would like to see that migration in policy over time.

**Peter Smith (University of York):** I too would like to see the tariff being a maximum price rather than a fixed price. I would also like to see a timetable for moving PCTs to fair share funding that matches the timetable for implementing payment by results. If the transition to the payment by results tariff is over three years, so too should the transition to fair shares funding of PCTs.

**Adrian Towse (Office of Health Economics):** If people had to choose just one thing they would like to change in the payment by results policy, what would it be?

**Nigel Edwards:** I agree with Peter Smith: I would have a maximum price which is flexible downwards rather than fixed prices.

**James Raftery (University of Birmingham):** I think I would go with price flexibility as well.

**Diane Dawson (University of York):** I too would say price flexibility, because all the points that were made earlier were effectively saying that you need to leave some room for manoeuvre for the things that

we do not understand and/or do not know how to manage in the short term. Price flexibility is important for that.

**Tom McGuire:** I have a slightly different wish, which is that the appropriate authorities would, if possible, construct a discharge level database that could be used to simulate the effect of the current policy. Then we could see the nature of the redistributions that would take place not just across hospitals but across regions and even across services in hospitals, whatever dimensions we are concerned about. That kind of model would show where the gaps are, and we could then see what tweaks in the payment formula are needed to try to address them. We need that simulation model, or something very close to it, if we are to be able to address any of these questions.

**Diane Dawson (University of York):** Most of those data exist and have been published.

**Adrain Towse (Office of Health Economics):** As an economist, I think the idea of payment by results is great, as long as we do not make it too high-powered. We need to give ourselves some time to work out what the potential consequences are. As the non-executive director of a large teaching and research NHS trust that is 8% above average reference costs, I feel even more concerned that we do not make it too high powered to start with.

It would be a good idea to start with some kind of two-part tariff, with one part paying for fixed overheads and the other for costs that vary with output. It is understandable that ministers are reluctant to go down a route that leads back to price negotiations with individual trusts. But without that, given that we do not understand all the reasons for the variability in costs between providers and that market forces do not correct for all of the underlying differences, we have a big problem. Basically, we are saying that all cost differences other than those we pick up through the market forces factors are due to efficiency differences, and that we can get rid of these in three years. I think that is an incredibly strong statement on which to base a

policy. The implication of basing policy on that is either that hospitals start to go under or we start fudging round the edges. If you think we are going to have to fudge round the edges, then it would be better to have a more structured approach at the start that recognises that cost differences are not all down to efficiency and will not be eradicated within three years. Maybe one way round this issue is to have a two-part tariff.

**Bob Dredge:** The discussion has raised interesting and important issues concerning the policy of payment by results. Many are issues that the Department of Health has thought about and is working on.

There has been much discussion of flexible, as opposed to fixed, pricing. There are benefits to that which economists would argue about in terms of market efficiency. However, ministers are very clear that there is to be no price-based competition in this new system if it can be avoided. Equally the new NHS is about services for patients and not preserving institutions. Paying fixed costs or using two-part tariffs risks putting institutions, not patients, first.

The Department is concerned about the accuracy and sensitivity of the HRG-based tariff given that it will determine the large majority of hospitals' income, but we do have three full years of transition to iron out problems. As you know, the first wave of foundation trusts in 2004/05 will take forward payment by results ahead of other NHS providers and we will be working alongside them and their PCTs to see what the policy really means in practice before we go into the major big bang of including all NHS trusts in 2005/06.

Carol Propper made the point that this is a big shock to the NHS; it is meant to be. The cosy relationship between local PCTs paying whatever the local trusts say they want is not going to continue.

Payment by results is going to happen in the NHS in England; no-one should be in any doubt about that. The planned timetable will not be relaxed. The NHS will have had five years to implement this

policy from when it was announced to when it is going to be fully in place. Five years in terms of policy implementation is a long time, and is literally a lifetime in parliamentary terms. Furthermore, HRG-based payment is not rocket science and it is not new: there is plenty of international experience and we are learning from it.

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