

Achieving Normative Objectives in Prospective Payments Systems¹

Ref: 019

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Paper for the 70th Health Economics Study Group, University of Birmingham

Aims - Over the course of the last 25 years, the provision of secondary care in western countries has been dominated by the move to prospective payments systems. The NHS in England recently implemented a prospective payments system in the form of 'Payments by Results'. Although prospective payments systems are based on retrospective cost or charge data, adjustments have been made to encourage or discourage certain clinical behaviours or outcomes. This paper will consider using normative pricing and structures in general to achieve sought after goals in secondary care.

Examples of 'normative structures' utilised in these systems are adjustments made for economies of scale, quality incentives, information-delivery incentives and bonus payments for treating low-income patients. From an economics perspective, normative pricing is a tool that can help to maximise further the government's objective function in a quasi-market such as healthcare.

Methods - This discussion paper will develop approaches to normative pricing and highlight some of the potential gains and issues surrounding its introduction, using examples from various contexts.

Conclusion - We aim to show that normative pricing can be utilised in a prospective payments system framework to deliver a variety of government objectives.

¹ The views expressed in this paper in no way reflect those of the Department of Health and belong exclusively to the authors themselves. The authors retain sole responsibility for any remaining errors.

Introduction

Over the last 20 years, Prospective Payments Systems (PPS) have become synonymous with the provision of acute secondary healthcare services in the developed world. As the name suggests, a PPS reimburses a provider prospectively for a provided service; in economics terms, the supplier is paid (ex post) for a produced service. Although on paper this does not appear a particularly revolutionary idea, this has to be put in the context of the historical provision of health services, and, in particular, of defining a product and subsequently a price. Taking the NHS in the U.K.² as an example, the provision of healthcare mainly took the form of block contracts to providers, which would entail a defined budget constraint for the financial year with the objective function defined by the Commissioners. With price and price competition out of the equation, the market could only clear through quantity adjustment; with payment for activity not an issue, there was no incentive for the provider to respond positively to an increase in demand. As the market was typically supply constrained, the response of providers to the ever increasing expansion of demand was to increase waiting lists.

This fits with the post-war move to welfare states, universal insurance and non-market approaches to healthcare. Providers, in the forms of hospitals, were not organised as a business, they were run to respond to the health needs of the population and improve social welfare with the mantra of 'free at the point of use'. The initial stumbling block to reforming this system was not the requirement of massive cultural change, but the need for defining a standardised product. At the most basic level, a patient will enter a hospital for a service. There are a number of settings and a number of methods of entrance that will influence the service provided and then impact significantly on the cost. Following on from this, a patient will receive a number of services during her stay, which could involve a number of diagnoses and procedures; this will be serviced by a team made up of nursing and medical staff with the amount of contact and time dependent on the severity of the diagnosis and the particular characteristics of the patient.

² The NHS is now split into the constituent countries of the U.K. Prospective Payments Systems, in the form of Payment by Results, have only been applied to the NHS in England.

The aim of this paper is to examine the role normative pricing could have in a PPS. To that end, section one explains the context of current systems, while section two goes on to present a formal model of normative pricing and section three provides a commentary on where normative pricing could be implemented in the Payment by Results system.

Section 1 – Current Prospective Payment Systems

In the late 1970s, Robert Fetter of Yale University developed Diagnosis Related Groups (DRG) as a method for standardising best practice care. DRGs attempted to standardise groups of diagnoses and their respective (best practice) procedures, with respect to a care pathway. So, for example, under hip replacement would be included the various diagnoses requiring hip replacement with the associated procedures. Although the initial aim was for DRGs to be utilised for best practice, the realisation that they defined a bundle of care that could reflect a product led to them being utilised for reimbursement. Initially used in the U.S. under Medicare reimbursement, DRGs were the currency for the payments system with each DRG characterised by clinically similar activity that was iso-resource. In the case of the U.S., where purchaser (insurer) and provider were split in a private system, it was then a situation of forming prices. To date, purchasers have typically formulated prices with respect to historical charge (price) data under negotiation with providers. In the U.K., the Department of Health collects actual cost data (Reference Costs) by Healthcare Resource Group (HRG), which are conceptually similar to DRGs, from each provider within the NHS – this data is obviously historical and reflects past practice. Under Payment by Results, the Department of Health then uses this cost data to calculate national tariffs for each HRG. The prices, or tariffs, are typically benchmarked on the average reported cost for each HRG and therefore the prices are average cost-based. This type of reimbursement system has universally become known as Casemix funding. The reference to ‘Casemix’ is a result of the DRGs reflecting a mix of diagnoses and procedures; DRGs will therefore mirror a variance in patient needs.

From its inception, Prospective Payments Systems were related to economics and economic theory. From the theory of regulation, Shleifer (1985) coined the term ‘Yardstick Competition’ as a form of regulation, in comparison to the standard at the

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time of price capping regulation. Under Yardstick competition, the regulator sets a price that is benchmarked on the prices or costs of the local providers. In the statement of his theory, Shleifer uses the example of the DRG funding system in the U.S. to illustrate his theory. By benchmarking prices on the costs of providers, this creates pseudo-competition between the providers as they attempt to get their costs below the benchmark. This brought both a form of competition and a market approach to regulatory price-setting. The regulatory trend that has been witnessed in the U.K. is a move away from price capping, in the form of RPI-X regulation, to Yardstick competition/benchmarking. In a Hayekian sense, the regulatory prices utilise the local knowledge encompassed in locally reported costs. Hayek (1945) unambiguously points to the market as an information-processing device that generates global knowledge, in the form of prices, from the local knowledge and practice of individual players in their own areas. Although Hayek, and Austrians, would never like to see their theoretical ideas abused by relating them to regulatory theory, what Yardstick competition attempts to do is very similar. As opposed to a regulator that centrally calculates prices, under Yardstick competition the regulator merely processes the local prices and costs that are reported by providers.

In the NHS in England, a PPS-style system was set up in 2003/04 and termed Payment by Results (PbR). PbR is a casemix funding system for acute secondary care and incorporates inpatients, outpatients and accident & emergency services. HRGs were available for inpatients services with over 500 groupings lending themselves to over 1,000 tariffs in electives and non-electives. As mentioned previously, the tariffs are calculated on the basis of average cost, as reported in the Reference Costs; the National Tariff will reflect the reported Reference Costs from two years in the past, as a result of the time taken for reporting and the requirement to provide tariffs in advance of the financial year. Despite being based on actual cost data, the National Tariff reflects historical clinical behaviour. This, however, is pretty much standard practice with most PPS-style systems used internationally. As with all regulatory systems, the dominant incentive is for providers to get their costs below average or get ahead of the frontier.

Section 2 – The Economics of Normative Pricing

The current Payment by Results system, although largely based on actual cost data, does include a few normative structures designed to improve incentives. Understandably, given that the system is in its early days, these structures have been straightforward with limited implications. Examples include a combined day-case and inpatient price to incentivise day-cases where appropriate and the front-loading of reimbursement for outpatient attendances, which involves taking a proportion of the cost of follow-up outpatient attendances and adding it to the price of the first attendance. Normative pricing more broadly can be defined as pricing based on standards or ‘norms’ and is associated with what a price should or ought to be rather than reflecting current practice. The pricing system can also be used to incentivise certain behaviours or practices or to provide incentives for efficiency.

As the system becomes more mature, it will be possible to implement more sophisticated normative structures to fine-tune incentives. It is natural, therefore, to try to learn lessons from other industries that have introduced normative pricing to gain an insight into its potential and the difficulties that may surround it. The U.S. telecommunications industry provides such an example.

As outlined in the first section, Payment by Results can be viewed as a form of price regulation, which is designed to support choice for patients and improve competition that promotes quality amongst providers. Introducing the national tariff reduces the need for price negotiation between Primary Care Trusts and providers. In the U.S. telecommunications industry, access and interconnection of the network are barriers to competition. The incumbent, due to its sole access to the infrastructure, has overwhelming market power and little incentive to allow potential entrants access to the network and therefore the market. Normally antitrust law would intervene in such anti-competitive behaviour. Whilst this works well in most industries, the highly specialised nature of telecommunications and, indeed, healthcare makes industry specific regulation more effective. Evolution in the way the U.S. telecommunications industry has been regulated has resulted in normative pricing taking centre stage in the role of breaking down the barriers to entry and improving competition.

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Many forms of price have been considered in the regulation of U.S. telecommunications industry. Unsurprisingly, given the prevailing paradigm through the 20th century, the starting point was cost-based pricing, although it was not marginal costs but rather incremental costs that were used as the basis of prices. Incremental costs are traditionally defined as the additional resource costs of providing extra units of output to the supplier and any costs that may fall on other parties. The rationale for this being that marginal costs are relevant to the decision to expand output, and incremental costs are relevant to the decision of whether or not to enter the market. Economic theory predicts that incremental costs can be welfare optimal, but only if the technology relevant to the market does not exhibit economies of scale and/or scope. In addition, prices based on incremental costs should not encompass any perverse incentives, i.e. there must be no regulatory incentive problem. Clearly, the conditions for incremental costs to be welfare optimal are not satisfied in either healthcare or telecommunications. Indeed, if these conditions were satisfied then there would be no need to regulate the market. To put these problems in perspective, it is often noted that normative prices used in the telecommunications industry are not far from the incremental prices they replace.³

There is another, more general problem, which was encountered when using actual cost data. As was found in the U.S., the burden of data collection is considerable to obtain costs that reflect a market based on rapidly changing technologies. As such, the inevitable lag between collection and a useable set of data means a requirement for adjustments for the progress of technology. In addition, actual cost data in regulation is known to produce weak incentive effects, current inefficiencies and consequent distortions of cost measurement become endemic in the model. Burton, Kaserman and Mayo (1997) show how regulated monopolists have an incentive to overstate common costs relative to attributable costs in order to circumvent the intended effects of the regulation they inform.

The problems highlighted in the industry are interesting because some form of data collection will always be needed in order to inform a price whether it is normative or

³ See Vogelsang (2003) for a survey of these.

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otherwise. Minimising these problems has to be a priority for developing the system. The Federal Communications Commission's (FCC) answer was to use the firms' existing cost models, which reflect very accurately the conditions of the specific firm and technology to create their own Hybrid Cost Proxy Model⁴. This meant that they were able to obtain an idea of the relative economic costs facing firms, free of overall inefficiencies that would be reported in actual cost data. It is able to provide benchmarks, which are not firm or location specific and is therefore able to provide strong incentives. This can then be combined with a normative adjustment, an example being a mark-up on the price, which acts as a tax on access to new entrants and levels the playing field for the incumbent.

These general problems with price regulation can be considered in the context of the National Tariff. It is currently based on actual cost data and a few normative structures are put in place in order to improve incentives. However, this will not remove the inefficiencies contained in the data. A solution analogous to that of the FCC would be to build a proxy model based on a method of production and then attach costs to that. This would improve incentives within the tariff by making them more accurately targeted and abstract from the inefficiencies⁵ in the system.

The economic model below illustrates the change in the incentives providers face between an actual cost based tariff and a normative tariff. The model defines a normative tariff as a bottom up costing of the best practise way to deliver treatment. This is defined by a third party, who is external to the price setter (the government) and the provider of healthcare, as both would have incentives to distort best practice and therefore the price. Although the government is best placed to set the price in view of the overall budget constraint, they are unlikely to be best placed to provide a view on the best clinical practice. Any one provider on the other hand will want to define best practice as close to their own method of operation as possible in order to give themselves a comparative advantage in the short term whilst other providers reconfigure their services.

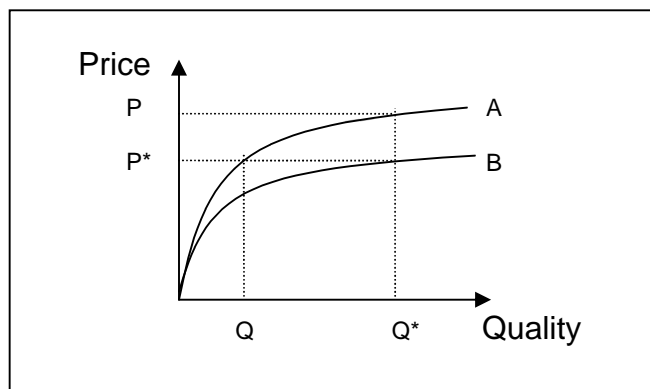
⁴ In order to ensure that it is appropriate to combine them in a hybrid model consistent accountancy methods are stipulated.

⁵ Note that inefficiency does not imply inflated cost. It can refer to spending too much or too little on a treatment. Spending too little may lead to repeat visits at higher cost than the marginal cost of getting it right the first time.

Consider the introduction of a normative tariff (p^*) derived by bottom-up costing of best practice from the perspective of the provider. Best practice could be anything from defining the course of drugs administered and observation period to the appropriate staffing of a clinic. As such, the normative price could be above or below the level of the existing tariff, i.e. the cost of best practice might be above or below the cost of average practice.

If we examine the relationship between the levels of resource employed, which we will assume is synonymous with price, and quality of care for a particular treatment or HRG, it is likely to exhibit diminishing marginal returns. Employing more resource will not return proportional increases in levels of the quality of care. Figure 1 shows the relationship between price (or tariff) and the quality of care for a particular treatment.

Figure 1: Normative Price below Tariff



The graph shows the diminishing marginal relationship between price and quality. The tariff (P) equates to a quality of care Q^* for a given trajectory of care (A). A trajectory of care is defined as the relationship between the price paid for a treatment and the quality of care received by the patient for a given method of delivering care. Trajectory B represents a different trajectory or a different way of delivering the same care.

If the graph represents a clinic delivering one particular treatment to patients then trajectory A may represent a clinic staffed by five doctors and 1 nurse, on the other

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hand trajectory B represents a clinic staffed by 2 doctors, 2 nurses and a receptionist. The five doctors are able to see more people at a time but are unable to manage the demand for their services as efficiently as the second clinic, which has lower staff costs. Both still provide the same treatment and hence the same resource/quality trade-off is present so the curves are the same shape, however, trajectory B is lower than trajectory A.⁶

A normative price is represented by P^* , which delivers the same quality of care but for a lower price. The provider suddenly faced with being remunerated at P^* will start to deliver care at Q if it does not move on to trajectory B. The outcome of the best practice normative tariff, for those providers that are not currently on the trajectory, depends on the decision to move trajectory.

This decision is dependant on transaction costs and competition. Whilst one type of transaction cost has been removed from the provider – search and information costs associated with defining best practice are now incurred by the third party – others remain. There are transaction costs associated with moving trajectories – costs of service reconfiguration, new equipment and retraining staff. All of these are likely to be fixed costs incurred over the short term. Assuming quality of care is observable by the patient, the provider stands to gain revenue in the future by moving from A to B. By moving from A to B, more patients will choose to be treated by the provider than if it had stayed on trajectory A.

The decision of the provider to move trajectory is based on whether the discounted increased future revenue associated with the difference in quality ($Q^* - Q$) outweighs the one-off fixed transaction cost (C). This can be expressed in a mathematical model. Patients choose the provider based on the quality of treatment they will receive; the demand curve for a particular treatment facing the provider can, therefore, be expressed as⁷:

$$n = f(Q) \tag{1}$$

⁶ Consider also an example where a provider carries out a treatment in a day case setting (trajectory A) rather than an outpatient setting (trajectory B).

⁷ This is in keeping with the findings of the Rand report “Understanding patients’ choice at the point of referral”.

The revenue that the provider will receive for the treatment will be the tariff or price multiplied by the number of treatments. The change in total revenue resulting from the move from Q to Q^* in Figure 1 is represented by equation (2).

$$\Delta TR = (p^* \cdot n^*) - (p^* \cdot n) \quad (2)$$

Where n^* is the number of treatments associated with the level of quality Q^* . If the provider is characterised as slightly myopic in the consideration of future revenue flows and would prefer a smaller pay out quicker than a larger payout far in the future then, we can model their discounting of future income as a hyperbolic discounting function. Therefore, if the discounted rise in future revenue is greater than the transaction cost (C) then they will opt to change trajectory (condition (3)).

$$\frac{t \cdot [(p^* \cdot f(Q^*)) - (p^* \cdot f(Q))]}{(1 + \rho \cdot t)} \geq C \quad (3)$$

Where t is the time from the introduction of the normative tariff (p^*) and ρ is the discount rate of the provider⁸. Although the model has been developed here as a normative price below the cost based tariff ($p > p^*$), it is equally true for the reverse scenario ($p^* > p$).

To abstract slightly, the model illustrates a ‘change of technique’ in the production of a good. In a perfectly competitive market, the price mechanism would incentivise cost-reducing changes in technique. In healthcare, no such developed mechanism exists. The model illustrates how normative pricing can force through changes in technique.

Consider this proposition by Anwar Shaikh:

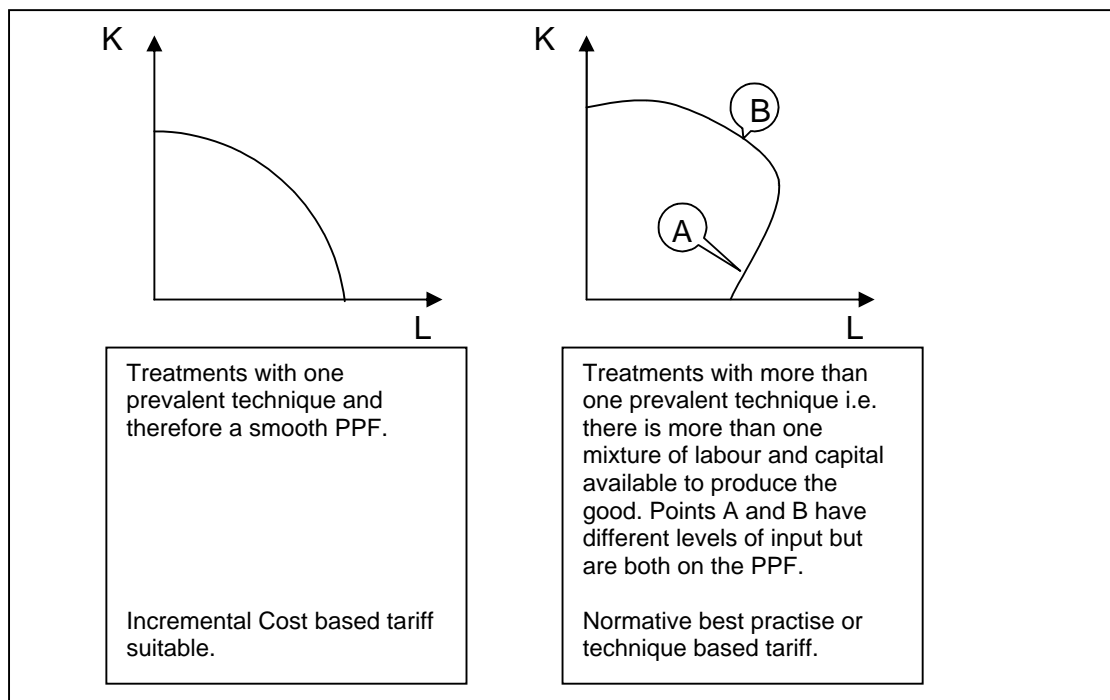
⁸ $t=0$ when p changes to p^* . $\rho=0$ indicates the provider values future revenue like it was present revenue.

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“With respect to mechanisation, the role of competition is a very specific one: it acts as a ‘filter’, weeding out any potential techniques which do not reduce costs. And so the question naturally arises, what is the scope and effect of this filtering process?”

In effect, normative pricing ensures that this aspect of competition has taken place, a result that would not necessarily happen under an actual cost-based tariff, which encompasses only current techniques and therefore yields no incentive to consider alternatives.

The model shows that incremental costs for price regulation of certain treatments will not be welfare optimal due to the regulatory incentive problem. In particular, incremental cost based prices will be welfare sub-optimal for treatments where there is more than one technique that could be employed to yield the same result – in economics terms, treatments which do not have a smooth production possibility frontier. It implies that the production possibility frontier of this type of treatment will not be smooth and will not be best represented by a Cobb-Douglas function. Instead, the production possibility frontier of a treatment that has more than one possible technique will be kinked.



This example illustrates that there are two points on the production possibility frontier where for the same amount of labour different levels of capital can produce the same amount of good.⁹

For normative pricing to work in practice, the technique that is being advocated as well as the costing evidence must be made clear to providers so that the available benefits of this approach can be fully realised. The extent of these potential benefits will depend on the extent to which Q is observable amongst patients and therefore the demand curve faced by the provider.

Section 3 –Normative Pricing for Payment by Results

As we noted previously, a Prospective Payments System provides incentives to be efficient: those providers whose costs are above average will have to reduce their costs otherwise the reimbursement they receive will not cover their costs. The system incentivises clinical practices and innovations that reduce the cost of delivering services. However, one of the criticisms of a tariff system based on actual average cost is that it provides no incentive to improve quality or even reimburse providers at an appropriate level for any additional costs associated with delivering a higher quality of service. Normative pricing can be seen as a means of ensuring that the tariff can support the achievement of quality services. The pricing system can also be used to incentivise certain behaviour or practice.

Normative pricing can be used as a lever to help deliver more technically efficient services. From an economic theory perspective, normative pricing can also be utilised to promote allocative efficiency through incentivising the redistribution of resources to more cost effective or clinically effective treatments. This can be with reference to outcome measures such as Quality-adjusted Life Years (QALYs). Changing prices normatively adjusts the incentives and disincentives for certain clinical behaviour. By adjusting prices for a group of related clinical practices, those HRGs that deliver improved cost effectiveness can be incentivised. By adjusting prices in line with

⁹ Where we define the good produced in terms of the quality of care given to the patient.

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relative cost effectiveness, allocative efficiency can be improved, potentially leading to improved outcomes and better use of resources.

The approach to normative pricing for PbR can take many forms, with respect to what the pricing system is being designed to deliver. It is important for normative prices to be evidence-based. We argue that normative pricing could be used to better reflect clinical practice. As was suggested in the previous section, treatment for the same clinical condition can take a number of forms, or, economic terms, techniques. These techniques could reflect staffing levels, procedure methods and/or the form of the care pathway. As defined by a third party, a technique can be characterised as clinical best practice, which can then be related to PbR and normative tariffs.

In many cases, day surgery is being promoted as not only the most appropriate clinical method, but also the best quality of care. For those HRGs where day surgery is appropriate and/or show a strong trend rise in day surgery, a day case tariff reflecting day case costs only could be appropriate. In the current Reference Cost collection, cost data is collected for day cases in Admitted Patient Care. Day Case tariffs would entail utilising solely day case data in forming the tariffs, i.e. not taking accounting of inpatient data. As there will be a variable cost element to Reference Costs, relying on day case data will typically entail a reduction in tariffs, as compared to the current tariffs.

A similar approach is that of efficient tariffs, which suggests changing the benchmark that the National Tariff is based upon. The current benchmark is the average, or 50%; a more efficient tariff could base tariffs on the sample of Reference Costs that represents the top quartile of providers and, therefore, reflect the most efficient providers. Although efficient tariffs would, in some sense, be evidence-based, it is important to be mindful that efficiency in these terms takes no account of clinical outcome. An efficient provider may not be implementing clinical best practice or characterised by good outcomes.

There are many interpretations of what constitutes clinical best practice. In England, an attempt has been made to standardise best practice through the National Institute of Clinical Guidance (NICE), the NHS Institute for Innovation and Improvement (NHS

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Institute) as well as through the production of National Service Frameworks. There are also additional best practice guidelines provided by other healthcare organisations, including the Royal Colleges. These guidelines set out the standards of clinical and care pathways that are consistent with delivering quality services, both in terms of process and outcome.

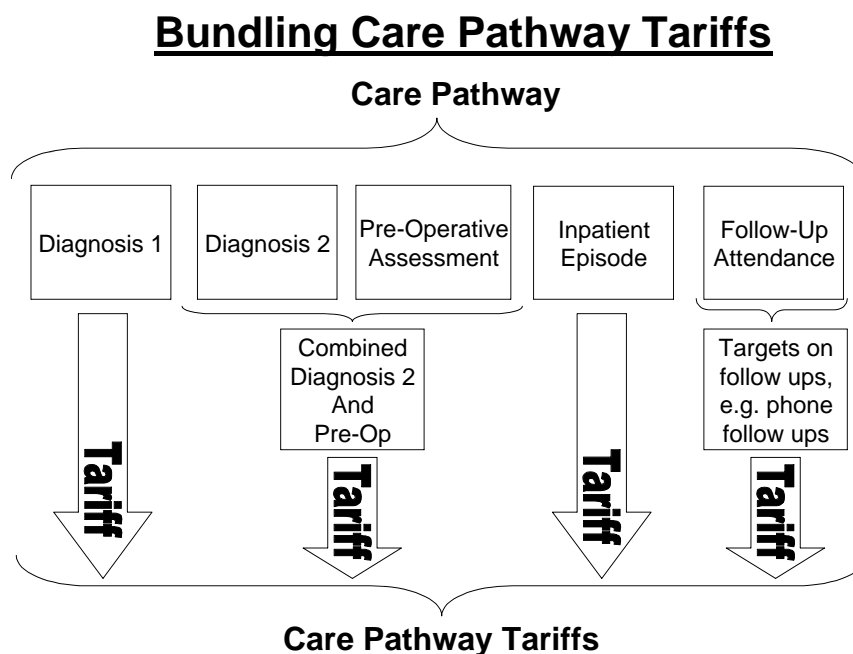
The three that identified above offer different ways of explaining and presenting best practice. However, they provide potential templates that could be utilised for normative pricing, which can be related to the previous example of the FCC's Hybrid Cost Proxy Model. At a very simple level, best practice tariffs would entail pricing the agreed upon clinical best practice guidelines. As opposed to the genre of efficient tariffs, this approach to normative pricing would require developing sites and programmes to (sample) cost best practice. The sample data that would be provided can then be used as a basis for the normative tariffs. It should be noted, however, that there are only some elements of defined best practice that relate to the HRGs, tariffs and PbR. For example, in many cases, the NHS Institute defines best practice as admitting a patient on the day of surgery. The assumption that this practice leads to a reduction in average length of stay by one day can be piloted, costed and priced. Similar statements of best practice in terms of metrics that relate to PbR can be incorporated into a normative price.

In the forms of day case, efficient and best practice tariffs, normative pricing aims to incentivise the implementation of an underlying change in clinical behaviour by basing a price on this clinical change. It is important that the normative prices are transparent – in other words, it is made explicit the clinical guidance that the prices are based on. It will also be imperative to design a transition path that creates balance as well as designs incentives in such a way as to provide incentives to implement the underlying guidance early.

Normative pricing as an approach has two dimensions: pricing and products. As we have discussed, a normative price can be calculated based on a number of forms. But a normative (care) product bundle can also be defined. In its very nature, the Casemix system attempts to bundle an optimal mix of diagnoses and procedures. However, this is very much focussed on clinically similar health services that are iso-resourced. The

bundling of products is not in terms of facilitating purchasing, provision or the delivering of a quality service in terms of process and outcomes. At its very simple level, Payment by Results provides an incentive to increase activity, this could result in increasing the number of attendances on a care pathway. Each spell or attendance in acute secondary care will entail a separate reimbursement under the current National Tariff. For relatively straightforward procedures, casemix differences may be apparent in the number of pre-intervention and post-intervention attendances as well as through increased complexity or cost for the procedure itself. A normative product could take the form of bundling care pathway tariffs, which, essentially, would offer a discharge price for a patient once she enters the acute setting. As with the best practice tariffs, the first stage would require the development of best practice care pathways. These care pathways would assume the number of separate attendances. Based on the pathway and target assumptions, care pathway tariffs could then be formulated for the pathway as a whole, as shown in Figure 2.

Figure 2: Bundling Care Pathway Tariffs



As with the approach to best practice, care pathway tariffs can attempt to price those assumptions that relate to the structure of the national tariff. For example, there are many care pathways where the best practice is for a telephone follow-up after surgery.

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Setting a target on the amount of follow-ups performed by phone call can be costed and priced into a care pathway tariff. Again, similar to best practice tariffs, the approach to care pathway tariffs would require piloting to define the best practice care pathways and to subsequently calibrate the prices.

Care pathway tariffs ultimately provide better tools to the purchaser (commissioner). It becomes simpler for the commissioner to monitor the care pathway for a patient as well as make a payment on the whole care service provided to the patient. Although a care pathway tariff would reflect a 'typical patient', as is the way with Casemix systems, the care pathway tariffs could provide a number of care pathway tariff options, which would reflect different targeted assumptions, and hence reflect differences in casemix.

By providing a gradual multi-year transition path from the current tariffs to the normative tariffs, providers would be given a clear signal about when the normative tariffs will be fully implemented and the tariffs they will be reimbursed over the interim medium-term period. The advantages of this approach would be that it helps reduce the destabilising effect of implementing normative tariffs through providing a window to implement the underlying clinical best practice. Providers would also be clear of the tariffs they will be reimbursed by over a number of years and so should aid medium-term planning. In a similar fashion to how regulation works, the incentive to providers is to implement best practice guidance early. This is illustrated in Figure 3 for a normative tariff below a cost-based tariff.

Figure 3: Transition Path from Cost based tariffs to a normative tariff

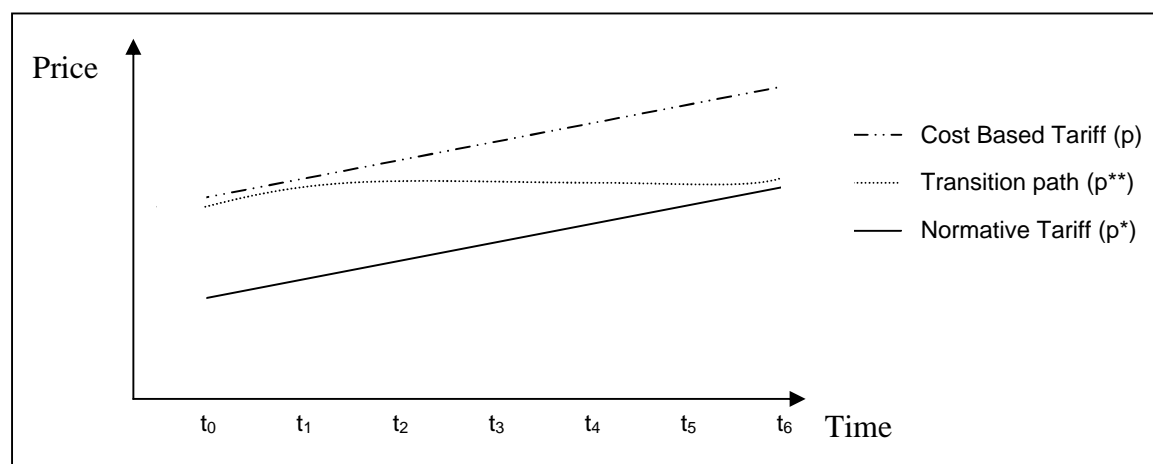


Figure 3 shows the nominal path of tariffs over a number of time periods. They slope upward due to the yearly increases in inflation. Assuming hyperbolic discounting on the part of the provider, a transition path will be most effective if the distance from the cost-based tariff is small at first increasing in a non-linear manner. This type of path will maximise the discounted future revenues that the provider weighs up against transaction costs, as discussed in the previous section. A provider that implements the best practice guidelines or reconfigures their service at time t_0 will accrue profit equal to the area between the transition path and the normative tariff. Under these conditions, the decision to switch is characterised by:

$$\frac{t \cdot [(p^{**} \cdot f(Q^*)) - (p^* \cdot f(Q^*))]}{(1 + \rho \cdot t)} - C \geq \frac{t \cdot [(p \cdot f(Q^*)) - (p^{**} \cdot f(Q^*))]}{(1 + \rho \cdot t)} \quad (4)$$

Where p^{**} is the price under the transitional tariff and it is assumed that if the provider does not implement then it continues to deliver the same level of quality (this could be because the government observes Q and states that delivering that standard is a pre-requisite for providing this treatment). Equation (4) states that in order for the best practice guidelines to be implemented the net benefits of switching must outweigh the foregone revenue of not doing so. Over time, the benefits will decrease so the transition path must be designed so that the benefits are derived earlier on and therefore discounted less. With hyperbolic discounting, a smaller benefit accrued in the short term can be valued higher than a larger benefit in the longer term. A transition path such as that in Figure 3 would mean discounting less a large proportion of the benefit and discounting more a large proportion of the foregone revenue. Figure 4 shows the trade-off between discounted benefits and costs over time for a transition path like that of Figure 3.

Figure 4: Trade-off between Discounted Benefits and Costs

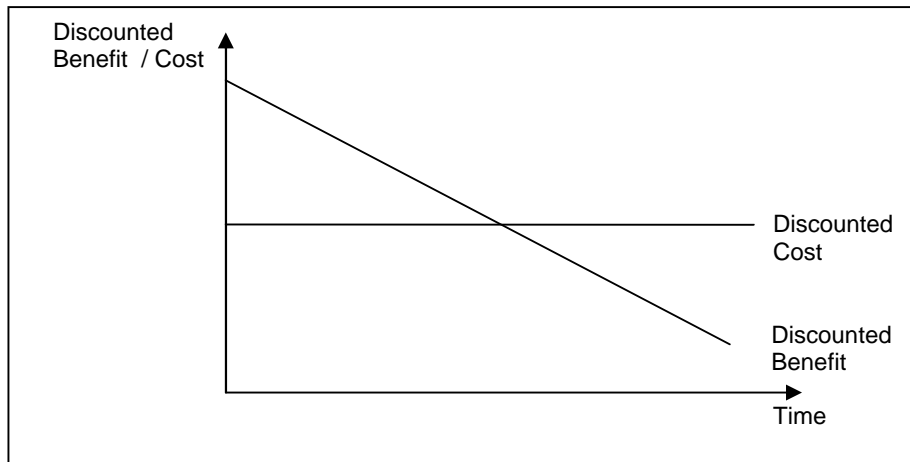


Figure 4 shows that by introducing a transition path with hyperbolic discounting, the provider will discount less the large benefits from switching techniques early or the small amount of forgone revenue from not switching techniques. This means a large benefit at the start to those that switch early, which decreases over time. In comparison, the cost associated with not switching can be seen up front, because, although the cost is small at first, it will increase hyperbolically, which will be counteracted by the discount rate and resulting in a straight line. The transition path has helped to incentivise the switch of technique and to switch early, increasing overall welfare by treating more patients efficiently.

Conclusion

Normative pricing has been widely discussed as a mechanism for helping to deliver quality services or to achieve payor objectives. It is concerned with pricing against a standard or a 'norm' and is associated with what a price should or ought to be rather than reflecting current practice. As such, it can help to improve the incentives produced by entirely cost-based Prospective Payments Systems, whether it be to improve the incentives for efficient care or to deliver a certain quality of care. Normative pricing, however, may not be appropriate to improve incentives across the board. Normative pricing may be more appropriate for those areas that allow for standardisation; it could also be difficult to couch clinical best practice in terms that relate to HRGs and PbR.

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The implementation of normative pricing must be concerned with the decision of the provider to implement the best clinical practice and to this end the incentives for uptake must be examined. Transition paths are adept at doing this and provide certainty over future funding flows, although it does require some knowledge of the provider's discounting function.

We have attempted to develop a discussion in this paper on the use of normative pricing in Prospective Payments System. Our discussion has argued that normative pricing can be utilised to improve the incentives that are provided by a Prospective Payments System.

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