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Establishing a Fair Playing Field for Payment by Results

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Establishing a Fair Playing Field for Payment by Results

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Table of contents

Glossary

Affordability	An HMT criterion used to approve ISTC bids: the financial ability of the health economy to support the scheme/ programme
ALB	Arm's Length Body
ASA	American Society of Anaesthesiologists (physical status grade)
ASC	Ambulatory Surgical Centre (US)
AT	Acute Trust
BMI	Body mass index
CATS	Clinical Assessment and Treatment Services
CfH	Connecting for Health
CNST	Clinical Negligence Scheme for Trusts
DRG	Diagnostic related group (similar to HRG)
DNA	Did not attend
Dual tariff	Payment made /received by SoS to/from ISTC providers equal to the difference between PCT payments and the contract price
ECN	Extended Choice Network
ESA	Electives Services Agreement
FCE	Finished consultant episode
FT	NHS Foundation Trust
FTFF	FT Financing Facility
GFV	Guaranteed Fixed Value (Guaranteed percentage x Contracted Base Costs)
HCC	Healthcare Commission
HMT	Her Majesty's Treasury
HOPD	Hospital outpatient department (US)
HRG	Healthcare resource group
IDPI	Immediate deduction performance indicator
IM&T	Information Management and Technology
IMD	Index of Multiple Deprivation
IS	Independent sector
ISTC	Independent sector treatment centre
ITN	Invitation to Negotiate
ITU	Intensive therapy unit
LT	Long term
MFF	Market Forces Factor
Monitor	The independent regulator of NHS Foundation Trusts
Need	An HMT criterion used to approve ISTC bids: the requirement of the health economy for the scheme/programme as assessed by Strategic Health Authority (SHA) capacity mapping exercises.
NHS Equivalent Cost	The cost that would be incurred by an averagely efficient NHS Trust delivering the identical activity at the same location (as compared to an Independent Sector provider)
NHSPN	NHS Partners Network
PASA	Purchasing and Supply Agency

PAYG	Pay-as-you go (pension scheme)
PBC	Prudential Borrowing Code that governs FT borrowing
PBL	Prudential Borrowing Limit, specified in the PBC
PbR	Payment by Results
PCT	Primary care trust
PDC	Public dividend capital
PFI	Private finance initiative
PwC	PriceWaterhouseCoopers
SHA	Strategic Health Authority
SoS	Secretary of State
ST	Short term
VfM	An HMT criterion used to approve ISTC bids: Value for Money is assessed by the percentage variation between NHS Equivalent Cost and the bidder price
WACC	Weighted average cost of capital, a method of calculating rate of return
WMD	Weighted mean difference. 'Difference in means' is a standard statistic that measures the absolute difference between the mean value in the two groups in a trial and is used as a summary statistic in meta-analysis when outcome measurements in all trials are made on the same scale. Analyses based on this effect measure are termed weighted mean difference

Executive Summary

Overview

A key element of the reform agenda for the health service has been to encourage a plurality of provision for NHS patients and so improve the quality of care. In introducing plurality, the Department of Health is committed to establishing a 'fair playing field'. This means that the objective of competitive neutrality across NHS and Independent Sector (IS) providers of NHS services ('a *level* playing field') is tempered by the obligation upon the public sector to act in the public interest. This fair playing field must be supported by the system of reimbursement – called Payment by Results (PbR) – that is being implemented to fund NHS patients. PbR is a prospective payment system in which prices for treating particular types of patients are fixed in advance by the Department of Health rather than being negotiated locally. As prices are fixed, any competition between providers should be on the basis of the *quality* of services, rather than their *cost*. Fixed pricing regimes require that:

1. The unit of service / treatment is defined accurately.
2. Prices are determined on a fair basis.

Why might NHS and IS providers be eligible for different payments?

In general, there are three grounds on which IS providers might be subject to differing financial arrangements than NHS providers under a fixed pricing regime:

1. To encourage entry and participation by IS providers;
2. Because NHS and IS providers face different unavoidable costs;
3. Because NHS and IS providers are delivering different services.

Differential arrangements to encourage participation might be justified if NHS and IS providers face different barriers to entry. These arrangements are not likely to persist once entry has been achieved and hence do not have implications for the design of PbR. Consequently this issue is not considered at length.

The second justification for differential payments is that NHS and IS providers may face different operating constraints that are beyond their control (i.e. unavoidable) which impact on their costs of production. These different constraints imply that providers will incur different costs in providing the same services – even if they are equally efficient. Broadly these constraints fall into two categories:

- Regulatory constraints
- Production process constraints

In sections 4 to 5, we identify and examine the nature of each potential constraining factor on NHS and IS providers, and recommend how these might be addressed to ensure a fair playing field. To this end, we ask two questions:

- What is the differential impact of each unavoidable factor on NHS and IS providers?
- Should these unavoidable factors be accounted for within a fixed pricing regime, and if so, how?

The third justification arises if NHS and IS providers treat different types of patients, and the classification system used to define a 'unit' of service is insufficiently refined to identify these differences. This would not be a problem if differences were random, where it is a matter of chance whether any particular patient is more or less expensive than the average patient in the service category to which they are classified. With sufficiently large volumes, these differences cancel out. Problems arise if the differences across providers are systematic, with one type of provider more likely to treat low-cost patients and another to treat more high-cost patients.

Section 6 considers whether there is evidence of systematic differences in the type of activities undertaken by NHS and IS providers that are not recognised by the definitions of services (HRGs) on

which payments are based. There are two elements to this analysis. First, we consider the extent to which explicit exclusion criteria have been adopted by IS providers. Second, we undertake empirical analysis of HES data to identify differences in patients in specific HRGs across IS providers, NHS treatments centres and NHS hospitals.

How might differential payments be made under PbR?

Financial arrangements under PbR can be modified in two ways if there is evidence that providers face different unavoidable costs or provide different services:

- ***Price adjustment.*** This involves allowing price to vary in line with the collective influence of the unavoidable factors or to be adjusted to compensate for inaccurate service descriptions.
- ***Specific payments.*** This would involve making specific payments (charges or rebates) to compensate for the influence of each specific unavoidable cost factor.

Price adjustment to correct for unavoidable constraints is not recommended because it undermines the integrity of a fixed pricing regime and distorts purchasing behaviour.

Specific payments for unavoidable costs have the advantage of greater transparency and allow adjustments to be factor-specific rather than based on provider characteristics, such as ownership type. The form of these payments will vary according to the factor under consideration and the amount will be provider specific.

Where there is evidence that different types of service are being provided and this is not accurately reflected by the classification system used to define services, price adjustment is recommended.

Which factors drive cost differences between NHS and IS providers?

We investigate each factor hypothesised to drive cost differences between NHS and IS providers, in order to assess the extent to which these can be considered unavoidable or provide evidence of the provision of different types of service. Factors that are within the provider's control are not candidates for compensatory arrangements under PbR. Each factor investigated is listed in Table 1, together with a summary of how these might be addressed – if at all – under a PbR regime.

Our analysis allows us to categorise each factor into one of five classes:

- Those factors which are not unavoidable – these are not exogenous constraints and do not imply an unfair or uneven playing field. As such no correction is required under PbR. Examples are corporation tax and pension contributions.
- Those factors which are unavoidable, but where correction is best made through standardisation of regulatory arrangements, rather than by financial compensation. Examples are inspection regimes and access to the indemnity arrangements (NHS Litigation Authority).
- Those factors that require specific payments to be made. We recommend only four types of specific payments – VAT, MFF, capital costs for PFI and payments for R&D, teaching and training. These payments will be provider-specific, and will depend on what VAT is incurred in providing NHS care, where the provider is located, the net additional cost of PFI payments, and how much R&D, teaching and training is undertaken.
- Those factors that are best handled by introducing two-part tariffs, so that there is better risk sharing between providers and purchasers in the context of demand volatility. The requirement upon the NHS to have capacity available on stand-by necessitates such arrangements. The form of such arrangements needs to be assessed on a service by service basis.
- Those factors that entail price adjustment – this being the adoption of exclusion criteria for services conducted in treatment centres. As these exclusion criteria are provider-specific, a provider-specific reduction in tariff should be negotiated that reflects the number and type of exclusion criteria.

Table 1: Summary of recommendations

Factor	Recommendation
Regulatory constraints	
Corporation tax	No change.
VAT (on contracted out services)	Long term: seek VAT exemption for IS providers in their provision of NHS services Short term: work with IS providers to assess current VAT liability in providing services to NHS patients
Monitoring and performance management regime	Registration/monitoring: address as part of market entry negotiations not activity-based payment arrangements. Legislation has proposed to standardise requirements Reporting: standardise requirements
Contracting issues	Contractual arrangements: no adjustment Ensure that IS providers make accurate HES returns Synchronise payment timing
Production process constraints	
Cost of capital	Harmonise relevant accounting guidelines across sectors Access to capital: no adjustment needed Cost of borrowing: Providers face a range of options, so it is unclear whether the playing field is fair. This matter requires further detailed investigation by relevant specialists. PFI: identify the magnitude of the problem and make specific payments to compensate for these. Consider taking legal advice on the nature of these contracts which appear inflexible.
Costs of labour	Recruitment: relax additionality rules Pay levels: no adjustment Pension provision: no adjustment
Geographical differences in input prices – Market Forces Factor	Review the current basis for calculating MFF, taking into account its appropriateness to IS providers Make MFF payments to both NHS and IS providers, paid directly by DoH, after consideration of the locational constraints faced by IS providers
Economies of scale and scope	Continue with separate payments for emergency and elective patients Consider extending use of two-part tariffs
Access to cheaper inputs	NHS Litigation Authority: resolved once current Health and Social Bill enacted NHS Purchasing and Supply Agency: no adjustment NHS Connecting for Health: no retrospective compensation but harmonise arrangements across NHS and IS for future IT programmes Arm's Length Bodies: no adjustment
Provision of other outputs	Ensure transparent, separate and full funding of R&D, teaching and training services
Type of service / treatment	
Exclusion criteria	Price adjustment to HRG-tariff to reflect direct selection of less costly patients. Regular review of the HRG system may be desirable. Any exclusion criteria operated by NHS TCs should be made transparent.
Casemix	The evidence suggests there are casemix differences between patients treated in hospitals and treatment centres. Whether these differences reflect differences in the cost of provision needs to be established. Improve the quality of HES data submitted by IS providers and NHS TC reporting in the provider code field.

Conclusions

Differentiated payments under PbR are justified on the grounds that providers face different operating constraints, which imply that providers will incur different costs in providing the same services.

Ownership status is not necessarily a sound basis for making differentiated adjustments for unavoidable factors. Instead, provider-specific adjustments should be related to each constraining factor according to the degree to which the factor impacts each provider's costs. Of course, the average net effect of these factors may differ significantly between IS and NHS providers, but this will be because of the association of these factors with ownership type.

These specific payments should be made directly by the Department of Health, rather than via PCTs so that purchasing behaviour is not distorted.

Both the exclusion criteria and the analysis of HES data imply that casemix is less complex in treatment centres than in NHS hospitals. We recommend that ISTCs (and NHS TCs that adopt

exclusion criteria) are paid a lower price for the services they provide when exclusion criteria are in place. This price reduction will be provider-specific, varying to the extent to which exclusion criteria are adopted.

If tariffs are to continue to be based on average costs, consideration should be given to extending the Reference Cost collection to IS providers so that the costs incurred by these providers can inform the price. This is particularly important for services where a large proportion of activity is undertaken by IS providers.

Efforts should also be made by IS providers to improve the completeness and quality of their HES returns.

1. Introduction

A key element of the reform agenda for the health service has been to encourage a plurality of provision for NHS patients. The intentions are to drive up quality through an expansion of the options available to patients wishing to exercise choice, to increase the amount of capacity available to NHS patients, to reward efficiency and to foster innovative and alternative ways of organising and providing health care.

In pursuing the aim of allowing care for NHS patients to be delivered by the independent and voluntary (or 'Third') sectors, the Department of Health is committed to establishing a 'fair playing field'. This means that an objective of competitive neutrality across the public and private sectors (achieving a 'level' playing field) should be tempered by the need to meet the NHS' social objectives. These social objectives constrain NHS providers to reinvest surpluses and to offer universal access, so they cannot be selective about whom they treat and are obliged to offer a broad range of services, including accident & emergency.

The method by which care for NHS patients is funded is central to achieving both competitive neutrality and social objectives. Funding arrangements in the NHS are being reformed under 'Payment by Results' (PbR), the core principle of which is 'equal pay for equal work', irrespective of where that work is undertaken. Initially, PbR was applied to the NHS hospital sector. But it is being introduced progressively, so that it will apply to all providers of care to NHS patients and to an increasing range of services. Essentially, PbR amounts to a 'fee-for-service' funding arrangement, where there are two key questions for consideration:

1. How should the service be defined? Health care services are difficult to define and patients have very different care requirements. This makes it difficult to agree service definitions and to determine whether different providers really are doing 'equal work'.
2. How should the fee be determined? The Department of Health wants payments to be 'fair', and recognises that providers may face unavoidable costs in providing services and meeting social obligations that ought to be taken into account when determining what constitutes 'equal pay'.

The Department has commissioned research to investigate these matters in relation to the promotion of plurality of provision. Specifically, research was required to:

- establish which factors drive significantly different cost structures for the different types of organisation;
- on a quantified basis, produce a set of weighted factors that any new tariff system would need to take into account (the work should quantify factors but should not produce a revised tariff);
- identify potentially perverse incentives either with the current system or with the proposed solution;
- identify any anticipated changes in the economic factors over time;
- consider whether it is appropriate to apply the Market Forces Factor (MFF) to organisations outside the NHS; and
- consider the implications of casemix differences in a separate, but related, phase of work.

This report is structured as follows. In the next section, we provide a descriptive account of the recent involvement of the IS sector in providing care to NHS patients. We then consider the grounds on which funding arrangements might be differentiated between the NHS and IS, and how these payments might be incorporated into Payment by Results.

In sections 4 and 5 we consider each source that might give rise to unavoidable costs; section 6 provides an analysis of types of service (casemix).

2. The Independent Sector and the NHS: recent history

Historically, independent sector provision of health care for NHS patients was commissioned on a locally-negotiated, 'spot purchasing' basis. However, in 2002, the process for national commissioning was initiated. Informed by a national capacity planning exercise, the Independent Sector Treatment Centres (ISTC) Programme was introduced to create targeted additional capacity for NHS patients (Department of Health, 2002). The stated aims are to achieve local and national NHS targets (e.g. waiting times), broaden the choice for patients, promote innovative delivery models, support the shift from secondary into primary care and promote efficiency through increased competition (Department of Health, 2002). Originally, the programme was expected to provide around half a million procedures annually at a cost of over £5 billion (Barron and House of Commons Health Committee, 2006). To date, around 600,000 patients have benefited from this additional capacity delivered in various settings such as mobile units, newly built facilities, refurbished NHS facilities or existing independent sector facilities.[1] Recently, the government appears to have scaled back its plans to expand the use of IS providers for NHS patients (Timmins, 2007).

The programme has been implemented in two phases: Wave 1 and Wave 2 (Phase 2). Wave 1, for which bidders were announced in September 2003, is expected to provide up to 171,000 episodes annually over five years with investment of approximately £1.6 billion (Brailsford, 2006). Over the five-year period, Wave 1 also plans to deliver over 600,000 MRI scans delivered by 12 mobile MRI scanning units.[2] In March 2005, a further £3.75 billion investment was announced under Phase 2 to commission elective surgery (17 schemes) and diagnostic capacity (7 schemes) expected to provide up to 250,000 elective procedures and 1.5 million diagnostics annually.[3] This second wave also introduced an Extended Choice Network (ECN) of IS providers expected to deliver up to 150,000 procedures annually on an ad hoc basis (Barron and House of Commons Health Committee, 2006, Healthcare Commission, 2007a).

Specialities covered by Phase 2 Electives include ENT, General Surgery, Gynaecology, Ophthalmology, Trauma and Orthopaedics, and Urology.[4] In addition, Phase 2 Electives includes Clinical Assessment and Treatment Services (CATS), which offer integrated care in the form of triage, assessment, diagnosis and treatment (Barron et al., 2006b, Department of Health, 2007d). As well as ECG, MRI scans and endoscopies, ISTC Phase 2 Diagnostics covers the national Positron Emission Tomography/Computed Tomography Procurement, which is expected to deliver 20,000 procedures annually.[5]

2.1 Procurement methods for ISTCs

The central IS procurement method has evolved and the process reported here is for Phase 2 electives. Bidders expressing an interest in the procurement announcement are required to provide specific data. Informed by these data, the DoH then shortlists the bidders who receive an Invitation to Negotiate (ITN). Bidders that sign the ITN then enter the 'Bid Evaluation Phase' (Barron et al., 2006b), in which Bidders supply specific financial and pricing information, including financial models incorporating a series of deterministic sensitivity analyses (Department of Health and Central Clinical Procurement Programme team, 2007):

- Stage 1: Bid Receipt
- Stage 2: Evaluation
- Stage 3: Clarification
- Stage 4: Bidder Convergence
- Stage 5: Final Evaluation
- Stage 6: Preferred Bidder Selection
- Stage 7: Finalization: Contract signed

[1] http://www.treatmentcentres.org.uk/default/patients.aspx, accessed 10/09/07
[2] http://www.treatmentcentres.org.uk/default/shaspcts/programmes/wave1.aspx accessed 10/09/07
[3] http://www.treatmentcentres.org.uk/default/providers.aspx, , accessed 10/09/07
[4] http://www.treatmentcentres.org.uk/default/providers/electivesprocurementstatus.aspx, accessed 10/09/07
[5] http://www.treatmentcentres.org.uk/default/providers/diagnosticsprocurementstatus.aspx, accessed 10/09/07

Box 1: Overview of the evaluation /clarification stages

The evaluation covers four themes:

1. Assessment: requirement-by-requirement examination of the bid
    a. Performance
        i. Service offered (as stated by Bidder)
        ii. Service expected (highest level of service in which Assessor has confidence)
        iii. Service options (additional to the main proposal)
    b. Costings
        i. Effective prices (set of prices risk-adjusted to reflect various revenue/activity guarantee and referral rates scenarios)
        ii. NHS equivalent cost (see Box 2)
    c. Risk
        i. Financial (robustness)
        ii. Legal (risk of failure to reach contract finalisation)
        iii. Service delivery (e.g. failure to achieve patient referral rates)
    d. Timings (how proposed commencement date relates to target)
2. Consolidation: aggregation of assessment results to give summaries for each of the four domains
3. Bid differentiation analysis: further investigations undertaken to improve differentiation between bids (if required)
4. Approval: (by the CD Central Clinical Procurement Programme Executive) to proceed to convergence.

An overview of the evaluation /clarification process is presented in Box 1. Of primary interest for this report is the *assessment* theme, which contains four dimensions known as 'primary procurement parameters' (Department of Health and Central Clinical Procurement Programme team, 2006). Based on the evaluation results, two to four Bidders are selected who then progress to the 'Convergence' stage. Convergence involves "difficult and resource-intensive negotiations" (§5.4.6), and "the evaluation methodology (…) is designed to be useful for convergence and later stages of negotiations" (Department of Health and Central Clinical Procurement Programme team, 2006) (§3). Further reductions in contract price may be secured during negotiations to commercial close (Department of Health and Central Clinical Procurement Programme team, 2007).

HM Treasury uses three criteria to approve Phase 2 ISTC bids (Department of Health, 2007b):

1. *Affordability*, the financial ability of the health economy to support the scheme/programme. This is informed by the 'Effective price' assessment (see Box 1)
2. *Value for Money (VfM)*, assessed by the percentage variation between NHS Equivalent Cost and the bidder price
3. *Need*, the requirement of the health economy for the scheme/programme as assessed by Strategic Health Authority (SHA) capacity mapping exercises.

The NHS Equivalent Cost Methodology shows how the DoH takes into account a range of factors that explain why bidder price and tariff may diverge. The methodology (see Box 2) is applied to "create a level playing field cost comparator" for clinical activity in the NHS and IS:

> If the price bid by an IS provider is equal to the NHS Equivalent Cost, then that price should reflect the cost that would be incurred by an averagely efficient NHS Trust delivering the identical activity at the same location (Department of Health, 2005a).

Table 2: Quantified economic/ cost adjustments

Adjustment	***Scheme with Capital Development***	***Scheme without Capital Development***
Direct Tax	*+ 4 %*	*+ 2%*
VAT	+ 3.5 %	+3.5%
CNST	-1%	-1%
Total Generic	+6.5%	+4.5%
Scheme Specific	+/- Specific Adjustment	+/- Specific Adjustment

Source: Department of Health. Independent Sector Procurement Programme - Wave 2 NHS Equivalent Cost Methodology. London: Commercial Directorate, 2005 (Department of Health, 2005a) (Annex 4)

The DoH has produced quantified estimates of the generic economic adjustments (point 2 in Box 2), which are made on a global basis across all HRGs in all schemes (Table 2). Specific adjustments are provider-specific and made on a scheme-by-scheme basis. These adjustments are made for the

purposes of evaluating the Value for Money of the bid; they do not represent actual changes to the tariff paid to providers by PCTs.

Box 2: NHS Equivalent Cost Methodology (Phase 2)

NHS Tariff as baseline

1. Adjustment for patient pathway, so that entry/exit points are matched and the patient cohort is similar
    a. To reflect the cost PCTs would pay for services outside of the Tariff procedure for additional services such as physiotherapy
    b. Where a provider is delivering all, or a discrete part, of the case mix as day case only, a downward adjustment is made to reflect the reduced cost.
2. Adjustment for economic conditions (see Table 2)
    a. Generic economic adjustments: tax, CNST
    b. Cost-base adjustment: provider-specific factors *
        i. payments made on behalf of the provider;
        ii. costs of complying with CfH;
        iii. capital charges incurred by NHS bodies for ISTCs;
        iv. specific risk taken by ISTC from the NHS;
        v. patient transport costs, where these provided by the NHS for clinical reasons
3. Adjustment for geographic cost differences: application of MFF to:
    a. HRG tariff for main procedure *plus*
    b. pathway adjustment *plus*
    c. economic adjustments
4. Adjustment for Tariff inflation
5. Adjustment to Net Present Value (if appropriate)

- *NHS Equivalent Cost*

$$VfM = \frac{\text{(bid price – NHS equivalent cost)}}{\text{NHS equivalent cost}} \times 100$$

Sources: Department of Health. Independent Sector Procurement Programme - Wave 2 NHS Equivalent Cost Methodology. London: Commercial Directorate, 2005 (Department of Health, 2005a); Department of Health. Independent Sector Programme Phase 2: Electives. Full Business case for scheme X. 2007 (Department of Health and Central Clinical Procurement Programme team, 2007).

* we understand from the DoH that the use of cost-base adjustments has not, in practice, been applied to phase 2

The VfM methodology takes no account of factors such as profit, risk transfer, contract management costs, residual value or some capital charges (where these relate to ISTCs located on NHS-owned sites) (Department of Health, 2005a). However, bidders involving a Public Sector Relevant Organisation are required to adjust their bids to take account of any potential cross subsidisation (Department of Health, Unpublished, Department of Health, 2006e). Some contracts may include provision for Residual Value (RV) payment, especially if the asset is newly acquired. RV may be taken into account in the VfM assessment if the RV is not deemed to be fair. Where no NHS tariff exists (e.g. for diagnostics or CATS), an independent cost review assesses VfM and the price is confirmed with PCTs. Sensitivity analyses are undertaken to explore the risk of under-referrals (relative to contracted volumes); changes to the retail price index; and varying tariff inflation rates (Department of Health and Central Clinical Procurement Programme team, 2007).

The Department of Health estimates that the ISTC programme under Wave 1 was about 11.2% *above* the NHS Equivalent Cost, whereas VfM under Phase 2 is expected to be 10.2% *under* NHS Equivalent Cost (Department of Health, 2007b).

2.2 Payment terms

There have been three contract types for IS providers with varying payment terms (Table 3).

Contracts for Wave 1 IS providers included a revenue stream that was guaranteed for five years and settled on a ‘Take or Pay’ basis, meaning that a minimum level of revenue (‘Minimum Take’) is guaranteed to Providers in return for delivering the contracted services: in sum, Wave 1 provider revenues are underwritten by the PCTs (Department of Health and Central Clinical Procurement Programme team, 2007). Providers and PCTs may agree substitute procedures equivalent to those procedures set out in the original contracted casemix, in order to provide additional flexibility for PCTs

and help them manage changing local healthcare requirements during the life of the contract (Department of Health, 2006b).

Table 3: Payment terms for ISTC providers, by contract type

Contract type	Price determinant	Comment
Wave 1 ISTCs	Price ≈ tariff + provider-specific adjustment; Guaranteed volume	Tariff adjustment justified as reward to early entrants for signing up. Activity guaranteed so that IS providers could secure funding from banks
Phase 2 ISTCs	Price ≈ tariff + care pathway amounts + MFF + GFV + other net deficits (contracted revenues *less* PCT payments)	In addition to the standard HRG tariff, PCTs may make a payment to reflect the actual pathway procedures used where these differ from the tariff procedure (e.g. outpatient appointments or physiotherapy services). MFF payable is based on both tariff and care pathway amount. The Guaranteed Fixed Value (GFV) is contractually payable by the SoS for Health where PCTs fail to meet referral commitments. It is based only on IS provider fixed costs ('Base Cost') and is payable on a reducing basis over the contract term. Finally, the SoS pays any remaining shortfall in the contracted revenues, such as CNST payments and VAT.
IS-ECN	Price= tariff	Introduced because more activity was being undertaken on a spot contract basis, which was hard to track centrally. ECN is capped at £200m

Sources:
Street A. Interview with David Lighterness, Commercial Directorate, 23/4/07 (Street, 2007).
Department of Health. Independent Sector Programme Phase 2: Electives. Full Business case for scheme X. 2007 (Department of Health and Central Clinical Procurement Programme team, 2007)

Under Phase 2, provider prices are calculated by bidders and based on expected costs. Those meeting the VfM criterion outlined above are candidates for approval and the contract price is agreed by negotiation between the DoH and provider. The payment mechanism for Phase 2 is as follows (Department of Health and Central Clinical Procurement Programme team, 2007):

- PCTs pay the NHS tariff price for activity and any additional care pathways actually provided by the IS Provider. This 'PCT Payment' is paid into a central DoH Clearing Account and then distributed to providers.
- The DoH is responsible for meeting the contract payments due. Therefore, the SoS for Health benefits from, or funds, the differences arising from the PCT Payment and the IS Provider contract prices (the 'Dual Tariff')
    a. The MFF, paid from the DoH clearing account
    b. The Guaranteed Fixed Value' (GFV), a proportion of the contracted price for guaranteed contracted volumes. This is funded from a 'Risk Pool' (surpluses from the clearing account)
    c. Other factors that are implicit in the contract price but excluded from the PCT payment. These are also centrally funded from the Risk Pool and include CNST contribution, economic adjustments (tax, VAT) and cost base adjustments.
- Performance Indicators (Immediate Deduction Performance Indicator, 'IDPI') have been introduced into the ESA (Electives Services Agreement). These are a range of non-clinical performance indicators, breach of which will result in instant deductions from payments due to the Provider.

Because the PCTs are not signatories to the contract they have no obligation to make referrals – and hence payments – at the contracted volumes. PCTs therefore have less incentive to refer up to contracted levels.

The third contractual type has been introduced to counter the growing trend toward 'spot purchasing' as patients increasingly exercise choice. Traditionally, the DoH has paid historical 'spot-purchasing' rates of between 40% and 100% above NHS Tariff (Barron et al., 2006a)(Ev 147);(Barron and House of Commons Health Committee, 2006). Instead of spot purchasing, the Extended Choice Networks allows specification of payment terms in advance. To be a member of the ECN, existing IS providers

– those established under Phase 2 – must be registered with the Healthcare Commission (HCC); fulfil the IM&T requirements; report specific data; be approved by the CNST administrator; and meet agreed service standards (Department of Health, 2006f).

The ECN operates under 'pure' PbR, where providers are paid the fixed tariff. In the next section of this report we consider whether it is indeed appropriate to apply the same tariff to both NHS and IS providers or whether PbR arrangements should be moderated to account for ownership type.

3. Plurality and PbR

3.1 The grounds for making differentiated payments between IS and NHS providers

In general, there are three grounds on which the independent sector might be subject to differing financial arrangements than NHS providers under a fixed pricing regime:

1. To encourage entry and participation by IS providers;
2. Because NHS and IS providers face different unavoidable costs;
3. Because NHS and IS providers are delivering different services.

First, the government may think it necessary to pay a premium for participation if NHS and IS providers face different barriers to entry. These arrangements are not likely to persist once entry has been achieved and hence do not have implications for the design of PbR.

Entry premium payments might reflect start-up costs associated with entering the market, such as investment in facilities and IT and staff recruitment, and recognise that initial levels of activity may be insufficient to cover these costs. This is of particular concern given that market entry is being encouraged to address *excess* demand in an area, evidenced by waiting lists. This may limit the amount of activity that IS providers are able to attract away from existing NHS providers. The premium might be weighted in favour of early entrants, and phased out as providers became established. Such premiums were paid to Wave 1 IS providers.

That said, premiums are not the only mechanism by which participation can be encouraged. An alternative would be for the Department of Health to offer guaranteed payments in recognition that initial levels of activity may be lower than expected for reasons that are not fully within the control of IS providers. In the current climate, the most obvious reason is because GP referral patterns are slow to change which, in part, may be due to delayed take-up of Choose & Book. Guaranteed payments reduce the exposure of IS providers to financial risk if referrals are not forthcoming. These arrangements have been introduced for Wave 1 IS providers (with revenues underwritten by the PCTs) and for Phase 2 providers (under the GFV). However, there is no entitlement to a guaranteed level of income or volume of demand for services provided under the ECN (Department of Health, 2006f) and we understand that no further significant central procurement of IS activity is planned.

The second justification of differential payments is that NHS and IS providers may face different operating constraints that are beyond their control (i.e. unavoidable) which impact on their costs of production. An objective of the Department of Health should be to design incentives for providers to strive for efficiency, allowing for the different operating constraints that they face. The implications of these constraints are that, for providers that fully efficient, either they face different production possibility frontiers or they face different costs of attaining the same production possibility frontier. Broadly, these unavoidable constraints fall into two categories:

- Regulatory constraints, such as different tax regimes;
- Production process constraints, which impact on the costs of inputs

Table 4 lists the potential constraining factors that we have identified. The degree to which the cost consequences of these constraints should be compensated for through the payment systems depends on the extent to which they are unavoidable. Some constraints, such as the tax regime, might be completely beyond the provider's control. It may be possible for providers to limit their exposure to other constraining factors, such as the amount of pension contributions for which they are liable.

Table 4: Taxonomy of unavoidable factors potentially effecting cost differentials between NHS and IS providers

Category of Factor	Factors	Topics included
Regulatory regime	Corporation tax	
	VAT	
	Monitoring and performance management regime	1. registration and inspection 2. reporting requirements
	Nature / history of contracts with NHS commissioners	1. contractual arrangements 2. payment timing
Production process	Cost of capital	1. ease of access 2. cost of access
	Costs of labour	1. recruitment costs 2. rates of pay 3. pension contributions
	Geographical differences in input prices – Market Forces Factor	
	Economies of scale and scope	
	NHS monopsony power – access to cheaper inputs	1. contributions to the NHS Litigation Authority (CNST) 2. NHS PASA 3. CfH 4. other arms length bodies
	Production of other outputs/services	1. R&D 2. teaching 3. training
Differences in casemix	Casemix	Ability to engage in patient selection - exclusion criteria - quantitative analysis

In sections 4 to 5, we identify and examine the nature of each constraining factor on NHS and IS providers, and recommend how these might be addressed to ensure competitive neutrality. To this end, we ask two questions:

1. What is the differential impact of each unavoidable factor on NHS and IS providers?
2. Should these unavoidable factors be accounted for within a fixed pricing regime and, if so, how?

Third, the NHS and IS providers may treat different types of patients, and the classification system used to define a "unit" of service may be insufficiently refined to identify these differences. This would not be a problem if differences were random, where it is a matter of chance whether any particular patient is more or less expensive than the average patient in the service category to which they are classified. With sufficiently large volumes, these differences cancel out. Problems arise if the differences across providers are systematic, with one type of provider more likely to treat low-cost patients and another treating more high-cost patients.

Section 6 considers whether there is evidence of systematic differences in the type of activities undertaken by NHS and IS providers that are not recognised by the definitions of services (HRGs) on which payments are based. There are two elements to this analysis. First, we consider the extent to which explicit exclusion criteria have been adopted by IS providers. Second, we undertake empirical analysis of HES data to identify differences in patients in specific HRGs across IS providers, NHS treatments centres and NHS hospitals.

3.2 The form of compensating payments

Reimbursement for the treatment of NHS patients is under PbR arrangements whereby a fixed national price (tariff) is paid for a patient having a particular type of service. For the moment, we assume that these services are well-defined (we return to this in section 6). These prices are currently calculated as the average of Reference Costs reported on a mandatory basis by all NHS providers. If tariffs are to continue to be based on average cost, consideration should be given to asking IS providers to make Reference Cost returns as well.

There are several potentially unavoidable factors that give rise to some providers facing different costs to other providers. For instance, NHS providers face different factor prices because of local market conditions, which are corrected by means of the Market Forces Factor (MFF). Similar constraints may apply to IS providers.

There may be further unavoidable factors that are related to the ownership status of the provider – i.e. whether it is an NHS or IS provider. Failure to account for the unavoidable cost factors through the reimbursement mechanism would mean that NHS and IS providers are not competing on an equal basis. There are two broad approaches to refining PbR arrangements in order to compensate providers for differences in the unavoidable costs that they face.

1. ***Price adjustment.*** This involves allowing price to vary in line with the collective influence of the unavoidable factors.

2. ***Specific payments.*** This would involve making specific payments (charges or rebates) to compensate for the influence of each specific unavoidable cost factor.

In Technical Appendix 1 we demonstrate formally that these approaches provide equivalent incentives to providers, and that equivalence holds under different assumptions about the form of the production function.

3.3 Price adjustment

The first option is make an adjustment to the tariffs (prices) for each HRG to reflect the differential costs faced by NHS and IS providers (Department of Health, 2005a). There are two key problems with using this approach under a fixed pricing regime.

First, taken to its extreme, price-adjustment entails that prices are provider-specific. In other words, this fundamentally undermines the integrity of a fixed price regime.

Suppose there are two providers, an NHS provider (*k*=1) and IS provider (*k*=2). Under a system of fixed national tariffs, the activity related revenue (*R*) of a provider *k* takes the form:

$$R_k = \sum_J \bar{p}_j Q_{jk}$$

where $\bar{p}_j$ is the national tariff for service *j* and Q_{jk} is the amount of activity of service *j* provided by provider *k*. Here the difference in revenue received by providers is solely a function of the amount and mix of activity performed – not of the unit price.

If differential prices are offered according to the ownership status of the provider, the revenue function becomes:

$$R_k = \sum_J \bar{p}_{jk} Q_{jk}$$

In a system with only two providers, this is equivalent to provider specific pricing – which, by definition, is at odds with a fixed pricing regime.

Second, and consequently, price adjustment distorts purchasing behaviour toward providers with lower adjusted prices. This is demonstrated formally in Technical Appendix 2. We show that this distortion holds irrespective of whether compensation is made by adjusting prices or by making specific payments via PCTs. This is undesirable given that the intention is to remove the influence of unavoidable cost differences from the purchaser's decision.

3.4 Specific payments

The alternative is to make payments directly to each provider, in addition to their activity related payments. The size of these specific payments is related to the extent to which the provider displays the factor in question. There are two key advantages of specific payments. First, the payment regime is consistent across all provider types, with payments made according to cost-specific factors, rather

than other provider characteristics (such as ownership status). It would also allow consistency with MFF adjustments, provided that current arrangements are retained (see discussion in section 3.5).

Second, the basis for making specific payments can be specific to each factor, set out in a transparent fashion, and easily updated on a periodic basis.

Under a system of specific payments, the provider revenue function would become:

$$R_k = \sum_J \alpha \bar{p}_j Q_{jk} + \mathbf{Z}_k$$

Where $\mathbf{Z}_k$ is a vector of payments to provider *k* for each unavoidable cost factor. The tariff $\bar{p}_j$ would be reduced by a proportion α reflecting the share of total funds to be distributed on the basis of activity and that funded through direct payments. The bulk of this report is devoted to determining what payments should be included in this vector.

There are two ways in which these compensatory payments can be made to providers:

1. Specific payments can be made directly by the Department of Health to the provider. This would entail top-slicing the sum of money that is allocated to PCTs through the resource allocation formula.
2. The PCT could be instructed to 'top-up' the price paid for services to each specific provider according to the extent to which they are subject to each unavoidable factor.

Both approaches require calculation of how much money is to be disbursed on the basis of specific payments and how much on the basis of activity. But we believe that direct payments by the Department of Health have the advantage of greater transparency and lower transaction costs. This type of arrangement is consistent with international practice (Street et al., 2007, Aballea et al., 2006).

There are two disadvantages with the second approach. First, as already mentioned and demonstrated in Technical Appendix 2, payments made via PCTs risk distorting their purchasing behaviour. Second, there is also a risk of 'gaming' if PCTs are allocated funds on the basis of predicted rather than actual flows. There must be some means to ensure that once adjustment monies have been received, the PCT spends them as anticipated rather than seeing them as a potential source of cost saving, realised by referring fewer patients than expected to providers with high adjusted prices.

3.5 The Market Forces Factor

As mentioned, the cost influences of unavoidable factors faced by NHS providers are currently corrected by means of the Market Forces Factor. We believe that any form of compensatory payments that are made on the basis of ownership type should be consistent with how MFF payments are made at present, so these deserve consideration at this point.

At present, the MFF corrections under Payment by Results take the form of specific payments to providers made directly by the Department of Health:

> The MFF adjustment is paid directly from DoH to providers although the money is top-sliced from PCT allocations to 'neutralise' the impact on PCT budgets of patients exercising choice of provider. So, PCTs pay the same tariff regardless of the location of the provider but the provider receives the equivalent of tariff adjusted by the MFF (Department of Health, 2006c)(§3.61)

We believe this arrangement should be retained, and to serve as the model for any payments that are made in order to ensure a fair playing field.

However, the Department of Health is considering "reverting to the position where PCTs pay the tariff x MFF". The DoH suggest that this would introduce greater simplicity and transparency in the payment system, introduce more effective efficiency incentives around non-elective services, and better align incentives for PCTs in commissioning services (Department of Health, 2006c)(§3.72).

However, the basis on which these claims are made is not laid out. We believe the reverse to be the case.

- The information requirements for calculating MFF (and any other) payments are the same, irrespective of whether payments are made directly to providers or indirectly via PCTs.
- Making price adjustments (e.g. in the form 'tariff x MFF') is straightforward only when the extent of exposure is proportional to activity. For many unavoidable costs this is unlikely to be the case, so forcing these into an activity-based pricing adjustment would be a complicated undertaking. Exposure to unavoidable costs should be quantified on the basis of their cost drivers and compensated accordingly.
- A system of direct payments is more transparent than one in which each HRG price has to be adjusted according to each provider's exposure to the collective influence of the unavoidable factors. Rather than transparency, this promises opacity because the resulting adjusted price cannot easily be disentangled by third parties. For an example of the transparency of specific payments, see the current funding arrangements for Victorian hospitals, where the size of each grant to each hospital is reported.[6]
- It is not apparent why the DoH believes why 'tariff x MFF' would introduce *more* effective efficiency incentives around non-elective – or indeed any types of – services. We demonstrate formally (Technical Appendix 1) that price adjustment (eg 'price x MFF') and specific payments provide equivalent incentives to providers.
- Rather than better aligning incentives for PCTs, 'tariff x MFF' is likely to distort PCT commissioning behaviour. If implemented, price adjustment would be specific to each provider, taking the form γ_k. This would mean that, for hospital *k*, the actual unit payment would differ from the national price, so the price paid for service *j* provided by hospital *k* would be $\gamma_k \overline{p}_j$. It is easy to see that this leads to a breakdown of the fixed pricing regime, by introducing provider specific prices equivalent to $p_{jk} = \gamma_k \overline{p}_j$. Essentially, local pricing would have been re-introduced by the back door. As we have demonstrated (Technical Appendix 2), this risks distorting PCT behaviour on the fairly benign assumption that they would respond to price signals.

For these reasons, we believe that the current system under which the DoH makes direct MFF payments to providers should be retained, and extended should other specific payments be merited to ensure a fair playing field.

3.6 Summary

This section has explored the grounds on which differentiated payments might be made. While 'entry premiums' made be justified to encourage market entry, these do not imply that changes need to be made to the funding regime.

Ongoing differentiated payments are justified on the grounds that providers face different operating constraints, which imply that efficient providers will incur different costs in providing the same services.

Under Payment by Results, financial compensation for these unavoidable factors should be made in the form specific compensatory payments. The form of these payments will vary according to the factor under consideration and the amount will be provider specific. This is in line with international practice and has advantages of simplicity and transparency compared to price adjustment.

Ownership status is not necessarily a sound basis for making differentiated adjustments. Instead, provider-specific adjustments should be related to each constraining factor according to the degree to which the factor impacts each provider's costs. Of course, the average net effect of these factors may differ significantly between IS and NHS providers, but this will be because of the association of these factors with ownership type.

[6] http://www.health.vic.gov.au/pfg/pfg0708/pfg0708.pdf, accessed 3/12/07

Payments should be made directly by the Department of Health, rather than via PCTs so that purchasing behaviour is not distorted.

If tariffs are to continue to be based on average costs, consideration should be given to extending the Reference Cost collection to IS providers so that the costs incurred by these providers can inform the price. This is particularly important for services where a large proportion of activity is undertaken by IS providers.

4. Regulatory factors

4.1 Corporation tax

Currently, both for-profit and not-for profit IS providers with corporate status are required to pay corporation tax, with the tax rate varying by profit level. From April 2008, the main rate fell to 28%.[7] Asymmetric tax rules between the public and private sectors can be considered a form of state aid equivalent to an indirect subsidy (Office of Fair Trading, 2004). To reflect this taxation asymmetry, the NHSPN (Kendall and NHS Partners Network, 2007a) has suggested that the IS tariff should be upwardly adjusted by 5%. The approach currently used by the Commercial Directorate when evaluating the private sector bids is akin to a form of price adjustment. PwC (Department of Health, 2005a) has recommended that the size of the adjustment to the price should vary according to the extent of capital development:

- 4% adjustment in the case of new build
- 2% adjustment if there is negligible capital expenditure

We begin our assessment with a review of the current rates of corporation tax, which are reported in Table 5.

Table 5: Levels of corporation tax

Rates limits and fractions	Financial year starting 01/04/2006	Financial year starting 01/04/2007
Main rate of corporation tax*	30%	30%
Small companies' rate (SCR)**	19%	20%
Marginal small companies' relief (MSCR) lower limit ***	£300,000	£300,000
MSCR upper limit ***	£1,500,000	£1,500,000
MSCR fraction	11/400	1/40
Special rate for unit trusts and open-ended investment companies	20%	20%

* The 30% rate applies to the whole profit. The main rate of corporation tax applies when profits (including ring fence profits) are at a rate exceeding £1,500,000, or where there is no claim to another rate, or where another rate does not apply.

** SCR can be claimed by qualifying companies with profits at an annual rate not exceeding £300,000.
For companies with ring fence profits the small companies' rate of tax on those profits remains at 19% and the MSCR fraction 11/400 for financial year starting 1 April 2007. Ring fence profits mean the income and gains from oil extraction activities or oil rights in the UK and UK Continental Shelf.

*** in effect, profits within these bands are charged at a marginal rate of tax of 32.75%

Sources:
http://www.hmrc.gov.uk/rates/corp.htm, accessed 26/11/07
http://www.ukincorp.co.uk/s-A5-uk-corporation-tax.html, accessed 26/11/07

In principle, there are three grounds on which differential tax exemptions might be granted:

1. Taxation subsidies might be provided to public providers to compensate them for difficulties in raising capital (Hansmann, 1981). However, this is probably best dealt with directly through harmonisation of arrangements regarding capital funding. We shall return to this issue in section 5.2.
2. Public and not-for-profit providers are constrained to reinvest any surpluses they make whereas for-profit providers are able to distribute profits among shareholders, justified as a return on investment.
3. Public providers have to meet broader social objectives, such as guaranteeing universal access, which are not required of IS providers.

Given that corporation tax is levied as a proportion of profits, it does not distort decisions about how to organise production because a company's aim to maximise profits is not affected by the imposition of

[7] http://www.hmrc.gov.uk/stats/corporate_tax/menu.htm, accessed 12/11/07

a tax on profits. However, it *could* impact upon IS investment decisions, because corporation tax lowers the returns to private investment, and this may induce lower levels of investment in delivering care to NHS patients than is desirable. But whether this makes any practical difference depends on the gains that might be made from alternative use of the investment funds. This alternative is likely to be in an area that is also subject to corporation tax. If that is the case, current arrangements with respect to corporation tax are non-distortionary. If, however, IS providers are to be exempt from paying corporation tax on their NHS activities, this would introduce investments distortions by increasing the returns from NHS-related activities relative to alternative investment opportunities.

The position of for-profit IS providers is that they have obligations to their shareholders but are otherwise unconstrained regarding how profits are spent. However, some IS providers, such as BUPA[8] or the Nuffield hospitals, are not-for-profit companies. BUPA is a company limited by guarantee which means it has no share capital. A company limited by guarantee has members, rather than shareholders. The members of the company guarantee/undertake to contribute a predetermined sum to the liabilities of the company which become due in the event of the company being wound up. This means that its profits are not distributed to its members but are retained to be used for the purposes of the guarantee. The company cannot distribute its profits to its members, and is therefore *eligible to apply* for charitable status, but it may instead choose to retain its corporate status (as BUPA has done). If there are any surpluses, a charity will not be charged corporation tax, while a non-charitable company limited by guarantee may be.[9] Publicly available BUPA accounts for 2006 confirm that the company did indeed pay tax on these surpluses and that it reinvested taxed surpluses in the company (BUPA, 2007).

To be granted charitable status, an organisation is required under the Charities Act (2006) to demonstrate that it has charitable purposes which are for the public benefit; guidance on what this involves for fee-charging organisations, such as healthcare providers, is expected later in 2008.[10] Some IS not-for-profit healthcare providers already have charitable status. For example, the London clinic,[11] a leading private hospital, receives an estimated £4 million in tax breaks thanks to its charitable status.[12] Our understanding is that not-for-profit providers that have elected to retain their corporate status *could* apply for charitable status. Therefore, the payment of corporation tax is a choice – is not unavoidable – and so does not require an adjustment to tariff or a lump sum compensation payment.

In summary, then, corporation tax is unlikely to distort either investment or production decisions, and IS providers can avoid corporation tax by adopting charitable status. This implies that, even though some IS providers are liable for corporation tax, this does not constitute grounds for special arrangements to be made to the PbR funding regime.

Factor	Recommendation
Corporation tax	No change.

4.2 VAT

In common with NHS providers, IS providers do not have to pay VAT in the provision of clinical services to NHS patients. However, NHS providers can claim back VAT on certain contracted-out services (e.g. catering, childcare, laundry, purchasing and procurement services) whereas IS providers cannot reclaim this cost (Department of Health, Unpublished, CBI and Serco Institute, 2006, PriceWaterhouseCoopers LLP, 2005b). This has lead to charges of “major inconsistencies”, with IS providers facing higher levels of irrecoverable VAT than the NHS (PriceWaterhouseCoopers LLP, 2005a).

Based on audited figures from members of the NHS Partners Network covering the last three years, the NHSPN estimate that VAT charged to IS providers adds about 6% to the price (Kendall and NHS Partners Network, 2007b). In a report published in July 2005, PriceWaterhouseCoopers (PwC)

[8] In autumn 2007, BUPA sold 25 hospitals to a private equity firm. BUPA is therefore no longer an IS provider for NHS patients. http://business.timesonline.co.uk/tol/business/industry_sectors/health/article2441744.ece, accessed 12/12/07
[9] http://www.ukincorp.co.uk/s-18-uk-guarantee-company-formation.html, accessed 26/11/07
[10] http://www.charitycommission.gov.uk/news/pbnewsindex.asp, accessed 04/12/07
[11] http://www.thelondonclinic.co.uk/patients/about_the_london_clinic/our_charitable_status.aspx, accessed 04/12/07
[12] http://www.guardian.co.uk/society/2004/aug/06/hospitals.health, accessed 04/12/07

recommended that the DoH request data from the Treasury on VAT reclaimed by Trusts to inform their estimate (PriceWaterhouseCoopers LLP, 2005a). In assessing value for money, the DoH uses a figure of 3.5% above tariff to take account of the cost differential (see Table 2). This figure appears to be based on a subsequent analysis by PwC to which we do not have access (Department of Health, 2005a).[13]

Current policy by the Department of Health states that if irrecoverable VAT were to be incurred, then "there will be no revision to the Service Charge or any additional amount payable for the Appointed Services" (Department of Health, 2006f). However, under Phase 2 of the ISTC programme, VAT charges are taken into account in the assessment of whether the IS bidder price represents value for money.

The application of differential VAT rules by ownership type is anti-competitive. As such, efforts should be made to ensure that NHS and IS face a level playing field by allowing for this exogenous imposition on IS providers. There are three main options for adjusting for VAT liabilities:

1. Harmonisation of tax rules.
2. Adjust the tariff to reflect differential VAT rules.
3. Make specific compensatory payments to IS providers.

The simplest way to achieve tax neutrality is by harmonization of tax rules by enabling IS providers to reclaim VAT on contracted out services where these relate to care for NHS patients. This approach would level the playing field at the source of the problem, without introducing potential inefficiencies and obviates the need for adjustments to tariff (both actual adjustments and those undertaken as part of the VfM procurement exercise). This would require approval from HM Treasury.

The information demands of the second option are substantial. In order to quantify the impact of VAT upon tariff, we would need information for each HRG on the mean amount of VAT incurred by IS providers that relates to services on which the NHS is VAT-exempt (catering, laundry, purchasing and procurement services etc). A percentage increase in tariff that would compensate IS providers for this factor could then be estimated. IS hospital accounting systems would almost certainly include some figures on VAT but access to this information is likely to be limited. Even if data were available, the imposition of VAT is unlikely to be reported separately by service and (even less likely) allocated down to HRG level. The alternative is to use estimates based on commercial data, such as those provided by the NHS Partners Network (Kendall and NHS Partners Network, 2007a). However, if the data underpinning these estimates are not transparent, they should not be used to inform quantified estimates.

The third approach requires less information, as a global (rather than HRG-specific) re-payment to cover VAT can be made. The size of the re-payment would need to be based on audited accounts, and would require the Department of Health to work with IS providers to assess their VAT liability in providing services to NHS patients.

Factor	Recommendation
VAT (on contracted out services)	LT: seek VAT exemption for IS providers in their provision of NHS services ST: work with IS providers to assess current VAT liability in providing services to NHS patients

4.3 Monitoring and performance management regime

The CBI and the Serco Institute have advocated 'regulation neutrality', with public organisations subject to the same regulatory environment as their private and voluntary sector competitors (CBI and Serco Institute, 2006). At present, it is argued that there are "major inconsistencies in the way in which government regulation… [applies] to public, private and voluntary providers" (CBI and Serco Institute, 2006). The Health and Social Care Bill proposes that the same requirements apply to all providers whether in the public or independent sectors (Department of Health, 2007a), to be overseen by a single regulator, the Care Quality Commission. It is anticipated that these requirements will be fully implemented by April 2010.

[13] The document cited is "NHS ISTCs, Value for Money Taxation Adjustments." PwC, August 2005.

Currently, there are two key areas of difference in the monitoring and performance management regimes that NHS and IS providers face:

1. Registration and inspection requirements
2. Reporting requirements

4.3.1 Registration and inspection requirements

Registration of providers acts as a barrier to entry to the health care market, and is justified on the grounds that patients are not well-enough placed to assess the quality of care and the adequacy of treatment.

IS and NHS providers currently face "substantially different" market entry requirements and there are significant differences in the licensing regulations faced (Department of Health, Unpublished). There are two reasons for these differentials:

1. Unlike NHS providers, IS providers have to pay registration fees to the Healthcare Commission
2. IS providers have to satisfy higher minimum standards and face more stringent inspection regimes.

IS providers are legally required to be registered with the Healthcare Commission (HCC) (Healthcare Commission, 2007b). The government requires the HCC to recover the full cost of registration and this has precipitated recent increases in fees charged. While IS organisations have to pay these fees, NHS providers do not.

The registration process requires IS providers to comply with national minimum standards (Healthcare Commission, 2007a). These standards are "more prescriptive" than those faced by the NHS (Department of Health, Unpublished). In the NHS, assessment is based on the government's 'standards for better health': core standards, which all NHS providers are expected to meet, and developmental standards, which are designed to stimulate improvement. ISTCs are privately owned and managed and, as such, are registered and inspected as providers of independent healthcare, using the 'national minimum standards'. However, as they generally provide services exclusively to NHS patients, *their sponsors (PCTs) are responsible for ensuring that they provide care in line with the standards for better health* (Healthcare Commission, 2007a). Therefore, in effect ISTCs need to comply with the same standards as those of NHS providers *and* with the "more prescriptive" national minimum standards (Department of Health, Unpublished).

This implies that IS providers face higher entry costs than their NHS counterparts. The NHS Partners Network estimates that annual inspections by regulatory bodies, including the HCC, CNST, HSE and Commercial Directorate, add about 2% to annual costs. Costs may be higher depending on pharmacy and sterilization standards expected in the independent provider context. Reporting requirements from regulatory bodies such as the HCC, CD, HSE, Royal Colleges, NPSA, SHAs and PCTs are estimated to add a further 1% additional cost per annum (Kendall and NHS Partners Network, 2007b). NHS providers also incur costs arising from their 'annual health check' undertaken by the Healthcare Commission, estimated to range from £48k to £95k depending on organisational size (Department of Health, 2007a).

While these costs can be considered exogenous, they do not imply that they should be compensated through a differentially higher price paid to IS providers under PbR. These costs reflect fixed costs of market entry and continued participation, but do not vary by the level of activity. As such, if these are to be compensated, this should be through a premium for participation (section 3.1) rather than by a price adjustment. In due course, registration and inspection regimes are to be standardised, and this is the most appropriate way to ensure equal treatment of providers (Department of Health, 2007a).

4.3.2 Reporting requirements

NHS providers are required to provide activity data for Hospital Episodes Statistics. From April 2006, the HCC required the IS to produce the same dataset as the public sector. This potentially raises a fair playing field issue as IS providers incur investment costs (IT systems and resources) in order to

provide this information (Department of Health, Unpublished). In addition, there may be training requirements for IS staff to use new software and to ensure accurate coding. Reflecting on the poor quality of reporting amongst some IS providers, the HCC has recommended that the Information Centre for Health and Social Care takes a more active role, providing guidance in the use of the key national systems for submitting data and tools to support IS providers (Healthcare Commission, 2007a). However, if this recommendation were taken forward, it is unclear whether IS providers would be charged for this service.

Although provision of HES data is costly to IS providers, NHS providers are also having to make greater investments in IT systems and improvements to their coding procedures as a consequence of the requirement for accurate patient-level data under PbR. Studies estimate that the increased administrative burden of PbR is in the order of £100k per hospital per annum, much of which is driven by higher costs of data collection (Audit Commission, 2005, Marini and Street, 2007). This implies that there may be little difference between NHS and IS providers in the costs of providing HES data.

In addition to providing HES data, other regulatory bodies such as the Commercial Directorate (e.g. key performance indicators), Health and Safety Executive, Royal Colleges, National Patient Safety Agency (NPSA), SHAs and PCTs require data from IS providers (Kendall and NHS Partners Network, 2007b). For example, IS providers are mandated to report information for the National Joint Registry data set on hip and knee replacements, and are charged to do so. In contrast, reporting is not mandatory for NHS providers and no charge is made (Healthcare Commission, 2007a). Reporting of serious untoward incidents by NHS providers should be made to SHAs and to the NPSA via electronic links. For IS providers, these data are reportable to the HCC, the Sponsor, the Commercial Directorate and the NPSA (for which there is currently no electronic access for IS bodies)(Healthcare Commission, 2007a).

But while IS providers have different reporting requirements imposed upon them, this does not imply a higher burden overall. This is because NHS providers are required to provide information returns to the DoH which are not required from IS providers – such as the Reference Cost returns.

On balance, therefore, it is unclear that different reporting requirements systematically favour one group of providers over another. Rather than attempting to estimate and compensate for the cost of differential reporting requirements, it would preferable to standardise arrangements where appropriate. This should happen with the adoption of the current Health and Social Care Bill.

Factor	Recommendation
Monitoring and performance management regime	Registration/monitoring: address as part of market entry negotiations not activity-based payment arrangements. Legislation has proposed to standardise requirements Reporting: standardise requirements

4.4 Contracting issues

4.4.1 Contractual process

The bidding process for Wave 1 ISTCs and Phase 2 ISTCs has been costly. The NHS Partners Network provided us with an estimate of an average of £2m per site (for bidding *and* commissioning), suggesting that this adds around 10% to the price of an average 5 year contract (Kendall and NHS Partners Network, 2007b). However, these procurement phases have been concluded, replaced by ECN arrangements under which IS providers are reimbursed on the basis of the tariff.

Under ECN arrangements, IS and NHS providers are likely to face similar costs of contracting, and the tariff allows for these costs. NHS providers have large contracting departments and the costs incurred by these departments are taken into account in the estimation of reference costs on which the tariff is based (Department of Health, 2007c)(§7.5.7).
We recommend that differential payments should not be made under PbR to reflect contracting costs. This recommendation is based on the following:

1. Contracting costs are not fully exogenous – organisations have discretion over how their contracting functions are organised;

2. It is not apparent that contracting costs differ according to ownership type under ECN arrangements;
3. Any form of compensation for contracting costs incurred would distort efficient contracting behaviour.

4.4.2 Payment timing

Currently, the payment terms for public and independent sector bodies differ "substantially" (Department of Health, Unpublished). While NHS providers are paid a given amount at the same time each month, IS providers are required to submit invoices, for which there is a 30-day settlement period (Department of Health, Unpublished). In addition, it is unclear how, whether or when 'uncoded' activity reported in HES for NHS patients by IS providers is reimbursed.

Differential timing of payment might favour some providers over others. However, this can be resolved quite easily either by

1. Synchronising payment timing for all providers; or
2. Allowing interest to be charged by those providers that receive late payment.

Supposing that IS providers are paid later than NHS providers, interest would be calculated as follows:

$$\bar{p}_j Q_j (1+r)^{(d^{IS} - d^{NHS})}$$

The IS provider should be paid for HRG *j* the tariff $\bar{p}_j$ times the number of patients treated Q_j capitalized at daily interest rate *r* for the number of extra days corresponding to the delay between the date the IS provider is paid (d^{IS}) and the date the NHS provider is paid (d^{NHS}).

Obviously, synchronisation of payment timing is likely to be the more cost-effective solution in the longer term.

Factor	**Recommendation**
Contracting issues	Contractual arrangements: no adjustment Ensure that IS providers make accurate HES returns Synchronise payment timing

5. Production process factors

5.1 Introduction

In this section we consider a number of influences that have the potential to give rise to differences in the costs of producing health care between the NHS and the independent sector. We consider the following influences in turn:

1. Costs of capital
2. Costs of labour
3. Geographical variation in input prices
4. Economies of scale and scope
5. Access to cheaper inputs
6. Production of non-patient related outputs

5.2 Cost of capital

Prior to the 1990s, capital – assets with a life of more than one year – was considered a 'free good' in the NHS and other public services (Gaffney et al., 1999). To ensure that balance sheets reflected the value of the capital invested in a trust, the 'public dividend capital' (PDC) was introduced (Palmer and King's Fund, 2006). The PDC appears as a liability on trusts balance sheets; however, the PDC is not a real debt but rather a type of equity stake.[14] All NHS trusts pay an annual payment to the Treasury, called the dividend on PDC, calculated as a fixed percentage of the trust's net fixed assets. However, because tariffs are based on the average of both recurrent and capital costs, the tariff tends to systematically under-fund new capital stock (Palmer and King's Fund, 2006). New hospitals – or those with significant new capital programmes – are likely to have higher-than-average capital costs compared to older hospitals whose historic capital costs may be largely written off. To ensure the value of the capital reflects market values, all NHS hospitals are 'revalued' every five years, and this revaluation appears as a liability on the balance sheet and also in the expenses (as depreciation). As the tariff reflects both the PDC dividend and the depreciation paid by trusts, IS providers receive a 'capital cost' component as part of the tariff. However, unlike NHS Trusts, IS providers make no corresponding dividend payment to HM Treasury.

There appears to be a difference between NHS organisations and IS providers over accounting processes. Correspondence from the NHSPN suggests that, in order to comply with HCC regulations, IS providers are required to depreciate assets at a faster rate than NHS providers and the NHSPN estimates that this adds 2 to 3% to tariff (Kendall and NHS Partners Network, 2007b). If this is the case, then it would be worthwhile harmonising relevant accounting guidance across sectors.

In addition to the general problem of how best to account for capital legacies, there are differences in the costs faced by NHS and IS providers of financing capital. Capital is typically financed in one of two ways: debt, where providers borrow from public or commercial lenders; and equity, where capital is raised by stakeholders who expect a reward for their investment in the organisation (PriceWaterhouseCoopers LLP, 2005b). This section considers two important aspects of the cost of capital: first, the ease of access to debt or equity; and second, the cost of accessing debt (the interest rate) or equity (the rate of return).

5.2.1 Ease of access to capital

Debt funding is important – and often critical – for the capital requirements of a business (Department of Health, Unpublished). Several factors determine the costs of capital providers incur (Table 6). Among the public hospitals in the NHS, we distinguish between those who have Foundation status and those who do not. Compared to standard public hospitals, Foundation hospitals have more flexibility in decision-making, including greater discretion over investment.

[14] http://hm-treasury.gov.uk/media/8/C/FRAB(75)04_Classification_of_PDC.pdf, accessed 06/12/07

Table 6: The costs of capital: differences between and within types of provider

		Public sector: NHS Trusts	Public sector: Foundation Trusts	Private sector
Access to finance		Regulated by SHA PFI Non-PFI: (1) DH capital allocation (2) Surpluses	Regulated by Monitor PFI Non-PFI: (1) DH capital allocation (2) Self-raised debt (3) FT Financing Facility (4) Surpluses	Commercial options including reinvestment of surpluses/ profits
Financing implications	Maintenance of assets	PFI: contracts or leases Non-PFI: Trust responsibility	PFI: contracts or leases Non-PFI: Trust responsibility	Provider responsibility
	Depreciation	PFI: within contract Non-PFI: depends on remaining asset lifetime / market value (periodic revaluation)	PFI: within contract Non-PFI: depends on remaining asset lifetime / market value (periodic revaluation)	Depends on remaining asset lifetime / market value
	Servicing of debt	PFI: within contract (8%) Non-PFI: (1) PDC (6% net assets) (2) Not applicable	PFI: within contract (8%) Non-PFI: (1) PDC (6% net assets) (2) Interest on debt (3) Fixed % increment above the National Loan Fund rate (4) Not applicable	Interest on debt Commercial rate of return (dividend on equity)
Revenue implications		Non-PFI /PFI: tariff includes average of current expenditure on all above components. PFI schemes may have greater financial costs that are incurred by a proportion of Trusts. These Trusts are locked into long-term lease, with non-negotiable payments representing an exogenous cost. As a result, PFI Trust costs are likely to be higher than tariff. Under PFI contracts, Trusts can no longer close wards, postpone routine maintenance etc. Trusts that do not have PFI contracts have more flexibility to defer expenditure.	As for NHS Trusts, but may have more choice over whether to opt for PFI. Interest payments may be higher than 6%	If provider has undertaken major new capital build, tariff – based on average costs – will not fully cover cost. However, providers may be able to transfer assets to the NHS or to sell them.

PBC: Prudential Borrowing Code; PDC: public dividend capital; PFI: Private Finance Initiative
Sources: (Monitor, 2005, PriceWaterhouseCoopers LLP, 2005b, Pollock et al., 2002, Gaffney et al., 1999)

Historically, the UK government – facilitated by the NHS Bank – has provided funds to NHS Trusts who have therefore not needed to raise debt for their operations (Department of Health, 2005b, PriceWaterhouseCoopers LLP, 2005b). Since 1997, most new major capital investments for the NHS have been financed under the Private Finance Initiative (PFI). Under PFI, private consortia design, build and, sometimes, manage new projects. Contracts typically last for 30 years, during which time the building is leased by the NHS Trust.[15] Hospitals pay annual charges averaging between 8 per cent and 11 per cent of their income to these private consortia (Gaffney et al., 1999, Shaoul et al.,

[15] http://www.dh.gov.uk/en/Procurementandproposals/Publicprivatepartnership/Privatefinanceinitiative/index.htm, accessed 11/10/07

2008, Pollock et al., 2002). These payments cover the cost of leasing the new facilities and of procuring non-clinical services (Shaoul et al., 2008). PFI may give rise to budgetary inflexibilities as hospitals are 'locked into' long-term contracts which offer contractors little incentive for efficiency (National Audit Office, 2008, Shaoul et al., 2008).

Both NHSTs and FTs make use of the private finance initiative (PFI). In addition, NHS Foundation Trusts (FTs) have been granted greater financial and operational freedoms as part of the government's policy of earned autonomy. This means that FTs have more discretion than traditional NHS Trusts over how they manage their capital positions and they can borrow subject to the Prudential Borrowing Code (PBC). Set out by Monitor, the independent regulator of FTs, the PBC is intended to assist FTs to "maintain prudent capital positions relative to their revenues and costs" (Monitor, 2005). Nonetheless, FTs do not have full freedom to borrow to a commercially optimal level because the PBC sets a borrowing limit determined by various financial ratios (Monitor, 2005). This limit, known as the Prudential Borrowing Limit (PBL), is specified in each FT's terms of authorisation and is reviewed at least annually. The PBL covers both the maximum amount of long-term borrowing,[16] and the amount of any approved working capital facility.[17] As private sector providers are not subject to such limitations, FTs could be considered disadvantaged in competition against the private sector.

In addition to the limits on borrowing embodied in the PBC, FTs may also find it difficult to borrow from the commercial sector because lenders cannot adequately judge their creditworthiness and may have concerns about the impact of reforms such as PbR (PriceWaterhouseCoopers LLP, 2005b). It seems unlikely that FT assets can constitute an adequate security for loans from commercial lenders (Hansmann, 1981).

In view of the problems of ease of access to commercial lending, the DoH has set up the FTFF (FT Financing Facility) to establish 'arm's length' lending terms for commercial activities. The FTFF offers a rate that is a fixed percentage increment above the National Loan Fund (NLF) rate, although there is scope for this rate to be revised if it is deemed to be non-competitive. Core activities related to protected assets, where competition with the private sector is not envisaged, continue to be funded at a lower rate still based on NLF (PriceWaterhouseCoopers LLP, 2005b). Therefore, when comparing the FTs' future financing costs for activities open to competition, "this will in principle not be a subsidy so long as the activity has been correctly identified in the lending process as commercial so that the relevant rates apply" (PriceWaterhouseCoopers LLP, 2005b). The PBC also authorises loans in respect of working capital requirements. Such short term lending is not available from the DoH and will therefore be sourced from the private sector. Consequently, loans for working capital do not represent any additional State subsidy.

5.2.2 Cost of accessing capital

Regarding debt funding for activities that are in competition with the private sector (such as services provided by ISTCs), FTs may borrow at a rate equal to the NLF rate plus a variable increment. One source reports this increment to be 3% (PriceWaterhouseCoopers LLP, 2005b). As this rate can be modified if it is deemed anti-competitive, it appears that measures for securing a level playing field already exist and there is therefore no requirement for further adjustments to payment arrangements.

Regarding equity, IS providers are required by their stakeholders to make a commercial rate of return (PriceWaterhouseCoopers LLP, 2005a) which typically ranges from 5.5% to 15%, depending on the level of risk (CBI and Serco Institute, 2006). Although there are similar expectations on public sector organisations that are in competition with the private sector (CBI and Serco Institute, 2006), FT are required to generate a return of just 3.5% on PDC (adjusted for the cost of whatever debt they raise) which appears to be lower than a standard private sector comparator (PriceWaterhouseCoopers LLP, 2005a).

The methods that can be used to calculate the rate of returns vary considerably in their complexity and level of precision (Commonwealth Competitive Neutrality Complaints Office, 1998). Weighted average cost of capital (WACC) is an approach that takes into account the cost and market values of

[16] Long-term borrowing excludes PFI and Public Dividend Capital (PDC) which are both classified as 'off balance sheet' and are therefore not subject to the PBL

[17] Working capital facility is a short-term borrowing facility used by FTs for cash flow purposes

both debt and equity. Alternatively, if managers are able to estimate the business's market risk, a target rate of return set using a broad-banding approach may be appropriate. This method includes two components: a base cost of capital set at the long term bond rate (the risk free rate), and a premium for each level of market risk (see Table 7) (Organisation for Economic Co-operation and Development, 2005).

Table 7: Typical rate of return targets for low, medium and high risk businesses

Market risk of the business	Nominal pre-tax target at a long term bond rate of 5%	Nominal pre-tax target expressed as a premium over the long term bond
Low risk	8	Bond plus 3 percentage points
Medium (average) risk	10	Bond plus 5 percentage points
High risk	12	Bond plus 7 percentage points

Source: Commonwealth Competitive Neutrality Complaints Office. Rate of Return Issues. Canberra: CCNCO, 1998, p.11

PriceWaterhouseCoopers used WACC formula to estimate an 'adequate' rate of return on capital for private organisations, i.e. a return sufficient to ensure that providers of capital will not direct their capital into alternative investments of equivalent risk (PriceWaterhouseCoopers LLP, 2005a). Based on the WACC methodology, a private organisation such as an ISTC would be expected to make a return on capital of 6.1% in order to satisfy investors (PriceWaterhouseCoopers LLP, 2005b). The difference between the estimated commercial rate of return of 6.1% and the NHS rate of 3.5%, multiplied by the value of capital, would be the effective subsidy of NHS hospital costs if the 3.5% is not considered a reasonable return on equity (PriceWaterhouseCoopers LLP, 2005b).

5.2.3 Implications for Payment by Results

A level playing field requires that there is neutrality between private and public sectors in terms of both access to capital and the cost of capital.

Access to capital

In terms of access to capital, NHS and IS providers have a range of options: both NHS trusts and FTs have access to PFI; FTs have additional capacity to raise loans subject to their PBL; for-profit IS providers can access equity and loans; and NHS trusts, for-profit and not-for-profit IS providers can reinvest surpluses. As government policy is that NHS Trusts will, over time, evolve to Foundation status, there appears to be no need for the playing field to be adjusted further. Equally, it appears that there are arrangements to ensure that the cost of servicing debt (loans) can be competitively neutral. We have, however, been unable to establish whether this is the case in practice.

Cost of capital

As the PbR tariff is based on national average costs, it will only partially compensate hospitals for PFI payments because only a fraction of public providers incur PFI charges. Therefore, tariff will systematically underfund providers who incur this type of capital cost. Whether providers can avoid these costs depends on the nature of their contracts. Private providers, who do not operate under public service obligations, may be able to transfer ownership of facilities such as newly built treatment centres to the NHS (Gainsbury, 2008). However, the scope for public hospitals to terminate PFI contracts is limited and generates unavoidable affordability pressures (Pollock et al., 2002). Although there is central financial support for the first few years of PFI operation (Department of Health, 2006d)(§118), affordability pressures could prove unsustainable in the longer term. In consequence, the possibility of a systematic and critical difference between public and private providers with respect to the nature of these fixed costs cannot be ruled out.

Besides PFI, providers face a range of options that appear, in part, to depend on whether they are NHS trusts, FTs, not-for-profit or for-profit. Therefore, it is very difficult to establish with any degree of confidence what the current arrangements are, what rates apply and, consequently, whether or not the playing field is fair. This matter requires further detailed investigation by specialists in this area.

Potential solutions

If PbR systematically underfunds NHS trusts and Foundation Trusts who have PFI contractual obligations, then affordability pressures could prove unsustainable in the longer term. As capital costs

are fixed and do not vary with the level of activity, adjustments to the PbR tariff are inappropriate. Non treatment-related payments could be made to compensate providers for the shortfall between provider income and cost. One option would be to extend central financial support – currently offered on only a short-term basis – to address affordability gaps, to ensure public providers are not forced into reducing exposure to capital repayments that could adversely affect patient care.

With regard to non-PFI debt, the potential options to achieve neutrality relating to the cost of debt include (Department of Health, Unpublished):

1. Change the lending rate for FTs so it is equivalent to that available to the independent sector
2. Change the target rate of return on capital for FTs so that this is equivalent to commercial rates
3. Achieve debt neutrality by calculating the difference in the actual cost of borrowing (cost of debt) and the cost a business would incur if it were borrowing as a non-government entity (benchmark cost of debt) and neutralise in one of two ways:
   a. pay a debt neutrality charge to central government; or·
   b. factor into tariff /payment mechanism

It appears that option 1 already exists: the interest rate charged by government to FTs can be modified if it is deemed anti-competitive. Option 2 may be feasible if it is possible to limit this to contestable services provided by FTs. However, it is not clear whether increasing the target rate of return to commercial levels would be possible unless the limitations imposed by the PBC on the debt-equity ratio were also relaxed. Pursuing this option would, however, imply greater risk for tax payers and ultimately may threaten the capacity of NHS providers to offer a comprehensive range of services. As such, relaxation of the debt equity ratio for FTs may not be in the public interest. PriceWaterhouseCoopers have estimated option 3 in relation to the rate of return (see above). The advantage of a debt neutrality charge is that a lump sum could be estimated on a provider-specific basis. Factoring the charge into an IS tariff may not be sufficiently sensitive to provider differences in the magnitude of debt and would therefore risk creating allocative inefficiency.

Factor	Recommendation
Cost of capital	Harmonise relevant accounting guidelines across sectors Access to capital: no adjustment needed Cost of borrowing: PFI issues: confirm that PFI represents a potentially serious financial risk to NHSTs and FTs. Identify the magnitude of the problem and make specific payments to compensate for these. Consider taking legal advice on the nature of these contracts which appear inflexible. Non-PFI issues: Providers face a range of options, so it is unclear whether the playing field is fair. This matter requires further detailed investigation by relevant specialists.

5.3 Costs of labour

There are three main types of cost differential with respect to labour costs:

1. recruitment costs,
2. pay levels,
3. and pension provision costs.

5.3.1 Recruitment costs

The principal reason why recruitment costs have differed between NHS and IS providers is that IS providers have been subject to 'additionality' rules imposed by the Department of Health when the procurement programme first commenced. The additionality principle was introduced to "conserve NHS clinical skills and encourage the independent sector to increase its capacity to help meet NHS access and waiting times targets" (Department of Health, 2006a).

For Wave 1 ISTCs, additionality was applied in the strictest sense: private providers were prohibited from employing persons who had worked in the past 6 months for the NHS. In Phase 2, the principle

of additionality was relaxed so that it applied only to a defined list of shortage professions, such as orthopaedics and anaesthetics.[18] Anyone on the shortage list could sell their non-contracted hours to the IS, provided that the proper discussions took place and relevant safety issues were resolved (Department of Health, Unpublished).

Additionality poses serious restrictions on competition. Indeed, it allows NHS providers to recruit the best professionals foreclosing private providers from access to essential inputs (Motta, 2004)(p.362). Access to these inputs is crucial in an environment where quality competition dictates profitability and therefore ability to enter and remain in the market. In sectors where there is a shortage of professional labour, the negative effect of this restraint on contestability will be especially high.

The principle of additionality has led to a situation where wave 1 ISTCs "were overwhelmingly staffed by overseas clinicians" (Barron and House of Commons Health Committee, 2006). This places an onus on ISTCs "to ensure that the staff they employ are competent" (Healthcare Commission, 2007a). A review by the House of Commons Select Committee on Health in 2006 recommended that "ISTCs use the same appointment procedures as the NHS. In addition, ISTC clinical appointments for overseas doctors should incorporate a standardised, independent assessment system based on competency" (Barron and House of Commons Health Committee, 2006). Recruitment costs associated with employing overseas clinicians are therefore likely to be higher than those of employing UK resident clinicians. However, because both NHS and IS employers recruit many staff from overseas, to all intents and purposes, they are in the same situation.

5.3.2 Rates of pay

Although the additionality rule was relaxed in Phase 2 so that it applied only to certain 'shortage' specialities, it seems that ISTCs will continue to be mainly staffed by overseas clinicians. There is anecdotal evidence that "the cost-base of UK doctors is not competitive; it is too high", and that the financial viability of ISTCs depends on their ability to employ non-NHS staff (Barron and House of Commons Health Committee, 2006)(§86). The NHSNP estimate that independent operators pay about 10% more to attract the same level of staff which is about 3-4% of the overall tariff (Kendall and NHS Partners Network, 2007b).

However, it is not clear that rates of pay are necessarily higher in the independent sector. Particular concerns have been raised about differential pay for consultant anaesthetists: in the NHS, these doctors are paid on the same scale as other consultants whereas IS providers have applied the practice typical of private hospitals by which "consultant surgeons are paid two-and-a-half times the fee per case that consultant anaesthetists receive" (Barron and House of Commons Health Committee, 2006)(§87).

Regulation (or de-regulation) of employment terms would help ensure a level playing field. Indeed, the DoH has given an assurance that if NHS staff were to be seconded into ISTCs then their NHS terms and conditions in respect to pay and pensions would be unchanged. However, the DoH has also noted that "there is no requirement to impose obligations on the private sector to engage any medical workforce on identical terms to the NHS, so Agenda for Change does not apply" (Barron et al., 2006a).[19] For non-contracted hours, the DoH considers that market forces would determine pay rates: rates would be negotiated by individual providers, who would need to offer pay competitive with that in the NHS to attract and retain staff (Department of Health, 2006a).

Recently NHS providers have been able to exercise greater flexibility over terms and conditions. An example of where this has been made possible is with the implementation of the new consultant contract – even though few providers have fully exploited these opportunities (National Audit Office, 2007).

On balance, therefore, it seems that both IS and NHS providers enjoy flexibility over rates of pay. Consequently, pay cannot be considered an exogenous constraint on providers, so no corrective action via payment arrangements is merited.

[18] http://www.publications.parliament.uk/pa/cm200607/cmselect/cmhealth/uc991/uc99102.htm (Q62), accessed 12/09/07
[19] Ev 106, Mr Bleddyn Rees, General Counsel, Commercial Directorate

5.3.3 Pension contributions

Representation has been made by the NHS partners' network to claim that the independent sector has to pay higher contributions in terms of pensions, as reported below.

> Pensions are probably the single greatest discrepancy between sectors in financial terms. The reason for this is that independent sector providers have to account for the future retirement costs of their employees whereas NHS providers only account for the costs of current retirees.
> Source: (Kendall and NHS Partners Network, 2007a)

Pension costs across sectors might differ because of differences in:

1. The type of scheme
2. The participation rate (enrolment)
3. The contribution rate
4. Subsidisation of administrative costs

5.3.3.1 Type of scheme

As pointed out in the NHS Partners Network letter (Kendall and NHS Partners Network, 2007a), NHS staff are enrolled under a 'pay-as-you go' (PAYG) scheme, while staff working in the independent sector tend to be enrolled under a 'fully-funded pension' (FFP) scheme.

The former scheme is based on redistribution across generations. Under PAYG current workers pay the pensions of those currently retired. The FFP scheme is based on contributions. Under FFP future pensions are covered by current contributions. PAYG schemes tend to more redistributive, with people on lower salaries (eg nurses) being better off than they would be under a FFP schemes – while the opposite is true for people on higher salaries (e.g. doctors).

Which system is more generous, for given contributions? The answer depends on three factors. Define g as the growth rate of the economy, n as the growth rate of the population and r as the real interest rate. Feldstein (1995, 2005) shows that PAYG is superior if $g+n>r$ (Feldstein, 1995, Feldstein, 2005b, Feldstein, 2005a). This condition is intuitive. If the population and economy are growing quickly, then the income of current workers will be higher and their future pensions will also be high.

In contrast, if interest rates are high but growth rates of economy and population are low, then current workers will not be so wealthy. Current workers would be better off investing their contributions in the financial markets/pension funds, where they can obtain an interest rate of r.

Given that neither scheme is obviously superior to the other and that the choice of which scheme to offer is not exogenous to the provider, it would be unwise to make an adjustment according to the type of scheme.

5.3.3.2 Participation rate

In the NHS, the vast majority of employees are covered by the NHS pension scheme (a small proportion decides not to participate). However, IS employees are much less likely to be enrolled in a pension scheme through their employer. There are two ways in which an IS provider might influence enrolment. First, while an IS provider may be mandated to offer such a scheme to all new employees, they may be under no obligation to encourage enrolment or to facilitate access to the scheme. In theory, organisations could informally discourage enrolment, for example by suggesting that alternative private pension provision would be in employees' best interests. Second, if an IS provider employs staff on a part-time basis (e.g. a clinician who also works in the NHS and so contributes to an NHS pension), the employee may choose not to contribute to the independent sector organisation's scheme. If either type of behaviour occurs, there are grounds for believing that the participation rate is lower for IS than NHS providers.

5.3.3.3 Contribution rate

The employers' contribution to the NHS pension scheme amounts to 14% of salary, with employees contributing 6% of salary. Employer contributions to independent sector schemes appear to vary considerably. A report by PricewaterhouseCoopers estimates that in contracted-out defined-benefit schemes the most common rates lie between 10% and 15% of earnings (PriceWaterhouseCoopers LLP, 2005b).

There is little rationale for compensating organisations on the basis of their contribution rates, as these are not outside the IS provider's control. Any price adjustment through PbR would introduce distortions into decisions about which pension scheme to offer to prospective employees.

5.3.3.4 Administrative subsidy

PricewaterhouseCoopers note that the NHS Pension Scheme is subsidised by the Department of Health, principally to cover administration costs (PriceWaterhouseCoopers LLP, 2005b). In contrast the administrative costs of other schemes are borne directly by the contributors.

The subsidy is not substantial however. The annual administrative costs of the NHS Pension Scheme in 2004 were £19.05m (PriceWaterhouseCoopers LLP, 2005b). Spread across 1.2 million NHS employees (Hawe, 2007), this amounts to £16 per employee.

Factor	Disadvantage	Recommendation
Costs of labour	Neither	Recruitment: relax additionality rules Pay levels: no adjustment Pension provision: no adjustment

5.4 Geographical variation in input prices - Market Forces Factor

Under Payment by Results, in addition to their activity-related payments, all NHS providers receive payments directly from the DoH to compensate for "unavoidable cost differences in delivering services in different parts of the country" (Department of Health, 2006c)(§3.59). The Market Forces Factor (MFF) is designed to take account of local market conditions, which are supposed to impact on the price of factor inputs, notably labour. The fundamental reason that NHS hospitals in England are eligible for the MFF is that they cannot locate where they wish – NHS hospitals operate in an historical context and are charged with serving their local population. In effect, NHS hospitals face locational constraints on their production costs that are outside their control. They cannot simply chose to operate in another part of the country where the price of factor inputs might be lower.

Representatives of the independent sector have argued that the MFF is a threat to competitive neutrality and requires refinement. There are three main issues to consider:

1. Is the basis for the calculation of the MFF sound?
2. Should IS providers be eligible for MFF?
3. How should MFF payments be made?

The first question is beyond the remit of the current report and is the subject of a separate review by the DoH. However, representatives of the IS have raised concerns about the calculation: "Independent providers with national footprints (e.g. Nuffield Hospitals) have also concluded that the MFF system embeds a cost variation that is far too great – in their experience working across many areas costs do not vary as much as MFF suggests, making it far easier to provide services sustainably in areas with high MFF and very difficult indeed to operate in areas with low MFF" (Kendall and NHS Partners Network, 2007a). These concerns might be addressed as part of the review.

As regards the second question, IS providers appear to be subject to similar locational constraints that face NHS providers. Given that the entry of new providers depends on local needs (one of the criteria to access the bids of potential providers is 'need' as determined by PCTs and SHAs) IS providers are only allowed to enter the market when there is a local lack of capacity. This suggests

that IS providers are indeed constrained in where they locate and, as such, ought to be eligible for MFF. If IS providers are thought to be less constrained than NHS providers in where they locate, MFF payments might be reduced proportionately. This would require a judgement to be made about how restricted IS providers are, and would probably need to be negotiated between the Department of Health and each IS provider on a case by case basis.

We addressed the third question in section 3.5 and repeat our recommendation that payments should be made directly by the DoH rather than via PCTs. This would avoid the distortions to purchasing behaviour that currently appear to exist, as concerns raised by the NHSPN illustrate.

> The Market Forces Factor (MFF) is the biggest short-term threat to an effective fair market under Choice, and we believe that the mechanism for paying MFF should be changed as soon as possible. MFF was introduced to allow for regional variations in cost whilst discouraging PCTs from commissioning on price. Unfortunately, this is not working. PCTs pay or receive balancing payments at the end of the year which reflect the actual MFFs spent against plan, and as such PCTs know that procuring from a provider with a low MFF will save them money. Further, the exclusion of the independent sector from the centrally-administered mechanism, obliging PCTs to pay upfront, provides a powerful disincentive for commissioners to use independent sector providers. Paying the MFF to independent providers up front will at least damage cash flow and can result in PCTs not being compensated for the MFF payments made (if work done exceeds plan). We have already seen examples of PCTs refusing to commission independent providers if MFF is included in the price, and commissioning based on price.
> Source: (Kendall and NHS Partners Network, 2007a)

Factor	Recommendation
Geographical differences in input prices – Market Forces Factor	Review the current basis for calculating MFF, taking into account its appropriateness to IS providers Make MFF payments to both NHS and IS providers, paid directly by DoH, after consideration of the locational constraints faced by IS providers

5.5 Economies of scale and scope

The development of treatment centres is predicated on the belief that they will be able to deliver care at lower unit cost than if it were provided in traditional hospital settings. In effect, a treatment centre can be thought of as analogous to a production line, where lower costs derive from two sources:

- Economies of scale, whereby the unit cost of treatment falls as volume increases. These economies generally result from high fixed costs being spread over a larger activity base.
- Specialisation (or diseconomies of scope), where it is cheaper to concentrate on providing a limited set of activities, rather than a diverse range of services

But while it may be possible to transfer some activities from hospital settings to treatment centres, where they can be undertaken at lower unit cost, this may have adverse consequences on the costs of the activity that remains within hospitals. The sources of rising costs are the mirror image of those that drive lower costs in treatment centres:

- Reduced capacity to exploit economies of scale, because the activity base in hospitals is reduced.
- Reduced capacity to benefit from economies of scope, with less scope for subsidisation of complex, costly activities by routine ‘bread and butter’ activities that have been transferred to treatment centres.

A systematic review of papers published before 1996 found that economies of scale were fully exploited in acute hospitals with 100-200 beds, and that diseconomies were evident in hospitals with 300-600 beds (Aletras, 1999). Despite this evidence, policy over the last ten years has been to encourage hospitals to merge, the consequence being that the average size of an NHS hospital has increased from 663 beds in 1994/5 to 770 beds in 2004/5. If the review findings still hold, this would imply hospitals are operating under diseconomies of scale.

Measuring economies of scope in health care is challenging, partly because there are no precise definitions of specialties/departments and also because it is difficult to establish the nature of the linkages between them. Economies of scope arise when it is less costly to produce a range of

services in combination rather than in isolation. So, for instance, if a hospital has an accident & emergency department, it would be cheaper for it also to have a trauma & orthopaedics department, instead of sending A&E patients requiring such care elsewhere. But in health care, there may be gains from specialisation, particularly in terms of patient outcome (Ferguson et al., 1997).

Of particular concern in the NHS is the mix between elective and emergency activity. Emergency activity is subject to a high degree of unpredictability on a daily basis. This means that, if emergency care is managed separately from other activities, facilities cannot be used at full capacity. For instance, Bagust *et al* estimate a substantial risk that there is no bed available for patient requiring emergency admission once bed occupancy rates exceed 85% (Bagust et al., 1999). But joint management of emergency and elective cases allows economies of scope to be exploited because there is a reduced requirement to hold stand-by capacity. Instead capacity is freed-up by cancelling admissions for an elective patient on those days where there is excess pressure to admit an emergency patient. In effect, hospitals are able to hold less stand-by capacity because they transfer the risk of beds being unavailable to elective patients – who may then remain on the waiting list for longer. However, NHS hospitals have been less able to employ this strategy because of the pressure to reduce waiting times. This has meant that, indeed, NHS hospitals have had to hold more stand-by capacity to deal with emergency cases than was the case in the past.

There are three strategies to deal with the cost implications associated with economies of scale and scope:

1. Differentiate the price according to setting. This has been adopted in the US, where procedures undertaken in TCs attract a considerably lower price than those performed in hospitals.
2. Pay a higher tariff for emergency activity, to reflect the high costs associated with holding 'stand-by' capacity.
3. Use 'two-part tariffs', consisting of a block payment plus a payment per unit of activity. Such payments have been devised to fund A&E departments, in recognition of their high fixed costs and volatile activity base.

The first option has been adopted in the US, where different payments are made for treatment conducted in Ambulatory Surgical Centres (ASCs) – which are analogous to treatment centres in England specialising in relatively few elective procedures – than for treatment in acute hospitals:

> The history of US payments for hospitals, hospital outpatient departments (HOPDs) and other inpatient and outpatient providers highlights the effects of payment system reforms on health care delivery. Contrary to many expectations, when DRG payments to hospitals were first implemented by the Medicare program in 1983, they did more than just reduced hospital lengths of stay; the larger immediate effect was a shift in treatment settings from inpatient treatment (paid through DRGs) into outpatient settings ... Between 2004 and 2007, ASC payment levels were cut dramatically, in many cases by 50% to 75% relative to HOPD levels (Ellis and Vidal-Fernández, 2007).

Table 8 shows that the differential prices across settings can be substantial, despite being for ostensibly similar activities. Typically treatment in ASCs attracts payment that is around a tenth of that paid for treatment in hospital. It is unclear whether these differential payments are based solely on production costs.

The drawback of introducing differential payments for the same treatment conducted in different settings is that it will undermine incentives to encourage providers to transfer care to the most cost-effective setting.

The second option of making differentiated payments for emergency and elective cases is already a feature of PbR. Moreover, if costs of emergency care increase as a consequence of having to hold more stand-by capacity available this will be reflected in the Reference Costs and in the future tariff.

Table 8: US Medicare payments for ten procedures in four settings, for 2008 in US$

HCPCS and Short Descriptor	Acute Care Hospital	Hospital Outpatient	Ambulatory Surgery Center	Physician's Office
Payment classification system used	MS-DRG	APG	ASC	RBRVS
Payment is for:	hospital only	full fee	full fee	full fee
54150 Circumcision	-	$1,277	$333	$136
45378 Diagnostic colonoscopy	-	543	446	248
37785 Ligate/divide/excise vein (Varicose vein procedure)	$13,927	1,513	510	199
28445 Treat ankle fracture	13,294	2,312	510	-
42260 Repair nose to lip fistula (Intermediate nose procedure)	6,892	1,425	630	382
49500 Repair of inguinal hernia	8,338	1,794	630	-
66985 Insert lens prosthesis (extraction and insertion of lens)	6,597	1,451	826	-
26531 Revise knuckle with implant	10,115	2,903	995	-
66982 Cataract surgery, complex	6,597	1,451	973	-
43653 Laparoscopy, gastrostomy	11,531	2,678	1,339	-

Source: (Ellis and Vidal-Fernández, 2007).

As regards the third option, two-part tariffs are being introduced for funding of A&E departments (and minor injuries units) in England. This funding arrangement is particularly suitable for services where capacity has to be held on stand-by to meet highly variable demand. In this context, two-part tariffs allow for better risk sharing between purchaser and provider. Arrangements for A&E departments are based on a 80:20 fixed:variable funding model, in which a grant covers 80% of (fixed) costs and 20% of revenue is related to (variable) activity up to a planned level (Department of Health, 2007d). (In actual fact, a 'three-part tariff' is being adopted because for activity above the planned level the A&E department is paid the full A&E tariff.)

This revenue function for A&E departments is illustrated below. Here *FC* represents the fixed grant, and $\hat{p}^{A\&E}$ is the national A&E tariff. Only 20% of the tariff is paid up to the level of planned activity $\bar{Q}$, and the full tariff is paid for activity beyond that planned. This means that the revenue function has a steeper slope beyond the planned level of activity. Consideration should be given to extending two-part tariff arrangements to other services where stand-by capacity is required, so that access can be assured when needs arise.

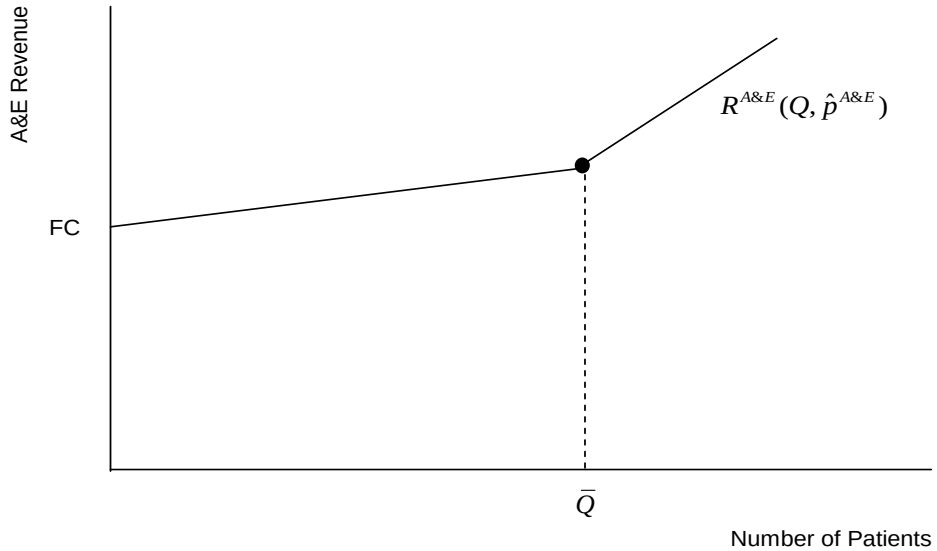

Figure 1: Revenue function for English A&E departments

Factor	Recommendation
Economies of scale and scope	Continue with separate payments for emergency and elective patients Consider extending use of two-part tariffs

5.6 NHS monopsony power – access to cheaper inputs

NHS providers benefit from being part of the larger NHS. This benefit is realised through various forms of collective action, of most relevance here being the ability to act as a monopsony purchaser of various inputs into the production process. A monopsony (single) purchaser is able to negotiate lower prices from suppliers than would be obtained by purchasers negotiating on an individual basis. The principal areas of benefit are in the purchase of services from arm's length bodies (Department of Health, 2004):

- insurance against clinical negligence claims, through the NHS Litigation Authority
- supplies through the NHS Purchasing and Supply Agency (PASA)
- IT services through NHS Connecting for Health (CfH).

5.6.1 NHS Litigation Authority

NHS organisations make contributions to the NHS Litigation Authority for the Clinical Negligence Scheme for Trusts (CNST) which covers medical malpractice claims. Equivalent coverage provided by CNST is estimated to be considerably less expensive than clinical negligence insurance from the private insurance sector:

> It has been estimated in the particular context of a comparison of clinical negligence insurance costs included in the IS-TC bids with CNST… that the cost of providing similar cover in the private sector would be approximately 16.7 times the cost of procuring this cover through CNST (taking into account run-off should the scheme be terminated). The CNST study therefore implies that the Trusts, relative to private sector operators, are benefiting from an excess subsidy equivalent to approximately 15.7[20] times the CNST payments stated in the Trust's accounts, although it is recognised that this estimate was based on a limited survey and that the results are likely to have been have been influenced by private insurers' lack of familiarity with NHS clinical negligence risk profiles (PriceWaterhouseCoopers LLP, 2005b).

Enrolment in the CNST is voluntary but all NHS trusts are currently members. At present IS providers cannot join the scheme directly but contributions relating to their care of NHS patients are made on their behalf by the referring health authority (http://www.nhsla.com/Claims/Schemes/CNST/) (Department of Health, 2005a). The contributions are funded by the DoH to the PCT through a "dual tariff" arrangement (PriceWaterhouseCoopers LLP, 2005b). This ensures that the benefits of collective NHS action extend to IS providers and, hence, that a fair playing field exists.

Looking ahead, provision has been made in the recent Health and Social Care Bill to extend eligibility for CNST to include non-NHS providers of NHS care (Department of Health, 2007a). Once implemented, this will ensure that IS providers are able to take advantage of this indemnity scheme (if they wish to) and will eliminate the administrative burden currently borne by PCTs in having to arrange indemnity on behalf of their contractors.

5.6.2 NHS Purchasing and Supply Agency

NHS PASA handles the procurement of national contracts for a range of supplies and services to NHS bodies including IT services and maintenance contracts, staffing and a range of medical and non medical supplies. PwC estimates that collective purchasing yields cost savings to the NHS of 9.6%. Although IS providers may access NHS PASA services when treating NHS patients, it is unclear whether they are charged for this service (PriceWaterhouseCoopers LLP, 2005b).

[20] 16.7 less 1, which represents the base cost

It is not apparent, however, that the ability to benefit from collective purchasing represents a competitive advantage that requires correction through payment arrangements. Indeed IS providers may themselves benefit indirectly from the bargaining power exerted by the NHS, if this reduces prices for the health sector as whole. Nor are IS providers precluded from joining forces to negotiate on a collective basis if they wish to do so. As such, we do not believe that the existence of the NHS PASA provides grounds for making compensating payments to IS providers.

5.6.3 Connecting for Health: IM&T

Launched in 2002, the NHS National Programme for IT (NPfIT) aims to secure a fast, reliable IT infrastructure over a 10-year period.[21] As well as improving patient safety,[22] the programme seeks to support patient choice by allowing easy access to appointments systems and the introduction of electronic patient records (PriceWaterhouseCoopers LLP, 2005b). NHS Connecting for Health (CfH) was established in April 2005 as a single national IT provider for the NHS and is responsible for delivering NPfIT (NHS Connecting for Health, 2005).

CfH is responsible for substantial levels of central expenditure on the programme, including the costs of contracting, paying for centrally managed projects and providing new computer systems for NHS organisations (National Audit Office, 2006). Local NHS organisations are responsible for implementation costs of NPfIT, but the magnitude of this cost is unknown because CfH does not systematically monitor local IT spending (House of Commons Committee of Public Accounts, 2007). In contrast, IS providers of NHS services are "both required and authorised to link with core NHS CfH systems"[23] at their own expense. For example, under Phase 2 IS Providers must fully integrate their systems with those of the NHS and must be capable of fully supporting Choose and Book (the NHS on-line Booking System) (Department of Health and Central Clinical Procurement Programme team, 2007). The DoH rules governing the ECN state that "the Provider shall at its own cost, be solely responsible for implementing and maintaining up to date the IM&T Services… and ensuring that the IM&T Services are provided in accordance with the standards specified" (Department of Health, 2006f). This includes cost of compliance with changes to NHS technical or data standards such as those issued by the Information Standards Board, Data Set Changes Notices and new NPfIT compliance requirements (Department of Health, 2006f). By subsidising NHS but not IS providers, the CfH programme can be considered a form of 'state aid' that may not be competitively neutral (CBI and Serco Institute, 2006).

Existing ISTC contracts require full integration with NHS IM&T systems (Department of Health and Central Clinical Procurement Programme team, 2007) and therefore IS providers have accepted the cost of this responsibility as a condition for market entry, perhaps compensated partly through the participation premium paid to Wave 1 ISTCs. This would suggest that no retrospective adjustment need be made.

However, if future large-scale IT programmes are introduced then competition law requires that NHS and IS providers are subsidised on an equivalent basis. If so, then there are three potential options for achieving neutrality (Department of Health, Unpublished):

1. Provide infrastructure to make the same IM&T available to IS providers
2. Calculate costs incurred by the IS in providing the same information and reflect this in the tariff
3. Charge public sector bodies a 'cost neutrality charge' to reflect the benefit derived from accessing this information

If future large-scale initiatives similar to NPfIT were to be initiated after 2008, it could therefore be argued that IS providers should then be reimbursed for the IT infrastructure costs (where these relate to care of NHS patients) (Option 1).

Option 2 involves adjusting the tariff paid to IS providers to reflect the additional costs of developing IM&T. These costs would vary by provider, so an increment to tariff would, at best, compensate

[21] http://www.dh.gov.uk/en/Policyandguidance/Informationpolicy/NationalITprogramme/index.htm, accessed 13/09/07
[22] http://www.connectingforhealth.nhs.uk/, accessed 13/09/07
[23] http://www.connectingforhealth.nhs.uk/systemsandservices/implementation/docs/implementation_guide_appendices.pdf, accessed 13/09/07

providers incurring average IT costs. The differential tariff would also contravene stated policy objectives, in particular the aim that patient choice is based on quality and not cost considerations.

Option 3, charging NHS providers for accessing information, would help to level the playing field by reflecting the subsidy received. The administrative costs of implementing such a policy would need to be considered, the 'payer' of data shared between primary and secondary care interfaces clarified, the proportion of cost attributable to 'contestable' services[24] identified and the risk of unintended consequences taken into account. An alternative equivalent approach would be to 'top-slice' NHS provider budgets by an amount equal to the subsidy received for contestable services.

5.6.4 Other Arms Length Bodies

In their study, PwC identified a subset of 16 Arms Length Bodies (excluding the Litigation Authority and PASA) that were thought to impact NHS organisations' operating costs (PriceWaterhouseCoopers LLP, 2005b). PwC state that these ALBs represent a subsidy to each NHS organisation. To calculate the size of this subsidy, total operating costs of these ALBs were weighted by the number of employees within each NHS body (PriceWaterhouseCoopers LLP, 2005b) (Table 9). Total subsidies – including those from ALBs – were then presented as a mark up relative to the NHS Trust's cost base (ibid, Table 21). On average, the mark up ranged from 7% to 15%.

However, we cannot determine on what grounds the existence of the identified ALBs can be considered to impact on the operations of NHS providers. Nor is it apparent whether dealings with ALBs represent a subsidy or administrative burden to NHS organisations. As such, we do not believe that any corrections to PbR payments need to be made because of the existence of ALBs.

Factor	Recommendation
Access to cheaper inputs	NHS LA: resolved once current Health and Social Bill enacted NHS PASA: no adjustment NHS CfH: no retrospective compensation but harmonise arrangements across NHS and IS for future IT programmes ALBs: no adjustment

5.7 Production of other outputs/services: R&D, teaching and training

Hospitals produce services in addition to their patient-related activities. The three main outputs are:

1. research & development;
2. teaching (training for qualification);
3. training (continuing professional development).

5.7.1 Research & development

The national R&D budget is approximately £1bn per year. In addition to a share of this funding, Foundation Trusts may also receive grants from State funded Research Councils, such as MRC; or from PCTs; or from medical schools (Department of Health, Unpublished). ISTCs currently receive no central R&D funding – because they do not undertake R&D. There is no reason why encouragement should not be given to IS providers to bid for R&D contracts.

5.7.2 Teaching (training for qualification)

The burden of teaching (i.e. training necessary for qualification) is currently borne by the NHS, and funded centrally by the DoH. The Multi-Professional Education and Training (MPET) fund is worth approximately £3.4bn annually. As many newly qualified professionals move into the private sector, centrally-funded teaching costs could therefore be considered a "subsidisation by the State of the costs of private healthcare providers" (PriceWaterhouseCoopers LLP, 2005b)(page 43). In ISTCs, this effect may be diminished if there is a high proportion of overseas staff.

[24] 'Contestable services' are those provided by the NHS that are open to contestability or in competition with IS provision (such as services provided under 'Choose and Book')

ISTCs were considered to present ideal training grounds for junior doctors, providing experience of straightforward elective case-loads (Healthcare Commission, 2007a, Department of Health, 2006b). Although Wave 1 ISTCs were not contractually obliged to train staff, the DoH did establish training contracts with a small number of ISTCs (Barron et al., 2006a, Healthcare Commission, 2007a). ISTCs in Phase 2 (which are expected to be operational in 2008[25]) will be required to provide clinical training "and a maximum of 35% of an ISTC's total activity must be offered for training" (Healthcare Commission, 2007a). It appears that the cost of this training is to be funded from the tariff (Barron et al., 2006a)(page 217). Nonetheless, bidders are required to account for the costs of teaching when estimating bid price:

> Bidders should price their Bids on the assumption that the training of NHS staff within the ISTC is [sic] not be required (Scenario A). Bidders are however required to indicate (…) the pricing implications if training were to be required at a future date (Scenario B). The implications of the provision of training should be reflected as a percentage mark-up to be applied to Unit Prices at the HRG level (Department of Health and Central Clinical Procurement Programme team, 2006)(Annex 1).

This requirement suggests that training should be incorporated into the HRG price, despite teaching costs not being included in the NHS tariff (Department of Health, 2005a). We do not agree: the costs of teaching should be identified and funded separately to the costs of patient-related care because education represents a distinct form of output.

5.7.3 Training

In contrast, training for professional development is funded locally (by the provider) in both NHS and IS organisations. As the tariff is based on average NHS reference costs, training costs are likely to be reflected in the tariff. However, cross subsidisation between centrally-provided funds for teaching and local training expenditure may arise, which would mean that the tariff does not reflect full training costs (PriceWaterhouseCoopers LLP, 2005b).

5.7.4 Implications for Payment by Results

We do not believe that the costs of teaching, training or R&D should be incorporated in the form of an adjustment to tariff. Under PbR, the tariff reflects payment for the provision of care to particular types of patient. R&D, teaching and training are different types of output, which need to be funded separately and transparently.

Access to these funding streams need not be restricted to NHS providers. In the same way that efforts have been made to encourage IS providers to undertake more training for qualification, there may be opportunities to access to R&D funding. The nature of ISTC business, where case-mix and service scope are more focussed than those of NHS Trusts, potentially offers suitable settings for clinical research (e.g. trials of a new artificial hip joint or of a new cataract lens).

There may also be cross-subsidisation between patient-related activities and the provision of R&D and training. However, this is best dealt with by ensuring that R&D, teaching and training is fully-funded and spending is audited properly. It should not be the role of an activity-based funding regime to correct for inadequacies in funding arrangements for other services.

Factor	Recommendation
Provision of other outputs	Ensure transparent, separate and full funding of R&D, teaching and training services

[25] http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/Browsable/DH_5699684, accessed 03/09/07

6. Differences in casemix

6.1 Introduction

Under a system of fixed price reimbursement such as PbR, it may be profitable for hospitals to engage in patient selection. This involves identifying and favouring those patients who are likely to cost less to treat than the amount the hospital will be reimbursed. There is substantial evidence that hospitals in the United States engaged in patient selection in response to the introduction of the prospective payment system for Medicare patients (Ellis, 1998). More recent research suggest that, although this problem persists, it can be remedied by adjustments to the payment system (Medicare Payment Advisory Commission, 2005, Cromwell et al., 2005, United States General Accounting Office, 2003a, United States General Accounting Office, 2003b).

The ability of hospitals to engage in patient selection can be ameliorated in various ways:

- By forcing hospitals to accept 'all comers'. In the US, hospitals can exercise discretion about who they accept for treatment. In England, NHS hospitals are not able to exercise such discretion.
- By ensuring limited heterogeneity in costs within each payment category (Healthcare Resource Group). This might involve expanding the number of HRGs.

Although NHS hospitals cannot engage in patient selection, IS and NHS treatment centres organisations may be able to do so. This may be because treatment centres may have more discretion in selecting patients with lower expected costs (a practice known as 'cream-skimming' or 'cherry picking') and in declining treatment to patients with high expected costs (known as 'dumping'). If treatment centres engage in such practices, their patients would have costs that tend to be lower than average of all patients categorised to the same HRG.

In this section we first consider the extent to which explicit exclusion criteria have been adopted by IS providers. Then we undertake empirical analysis of HES data to identify differences in patients in specific HRGs across IS providers, NHS treatment centres and NHS hospitals.

6.2 Exclusion criteria

Exclusion criteria are a good example of direct selection by IS providers (Table 9). Selection occurs across several dimensions, such as age, risk of further complications, and self-care indicators (e.g. body index), and are mostly focused on the avoidance of costly or risky patients, i.e., patients with actual or potential high severity or suffering from multiple severe diagnoses. It may be that NHS treatment centres also apply exclusion criteria, and, if so, these criteria should be made transparent.

These exclusion criteria are provider-specific and generally determined locally. These criteria specify a list of circumstances under which a provider may refuse a referral. Although administrative errors and/or inaccuracies such as inappropriate referrals are included in the lists of exclusion criteria, others enable providers to refuse patients on the basis of medical characteristics. The rationale for some criteria is clear (e.g. provision of MRI to patients with a cardiac pacemaker or metallic implants), but the rationale for other criteria, such as the exclusion of patients with a history of myocardial infarction within the previous 6 months, is less obvious. These latter criteria can be, as before, grouped using the typology described above and mostly comprise the ability to refuse referrals of, generally, high-risk and/or high-cost patients but also to refuse to supply specific types of treatment. It is arguable whether this is evidence of 'cream skimming' or whether is it good clinical practice that reflects provider capability. Whatever the motivation, the result is that ISTC case mix provision for a given procedure is likely to be less severe than the case mix for the NHS.

The HRG system is unable (and probably never will be able) to finely differentiate between the types of patient treated in each setting. The release of version 4 HRGs may address this problem at least partially. If it not possible to refine HRGs sufficiently, there are two ways that differences in casemix might be dealt with:

1. Set an across-the-board lower tariff for activity conducted in treatment centres (whether these be NHS or IS TCs) than the tariff for activity conducted in the inpatient setting.
2. Allow the lower price to be provider-specific, varying to the extent to which exclusion criteria are adopted.

We recommend option 2, because this more closely aligns incentives (price) with behaviour (the decision to adopt particular exclusion criteria). Note that, if exclusion criteria are also in place for NHS TCs, similar pricing arrangements to those applying to ISTCs should be adopted.

Factor	Recommendation
Exclusion criteria	Price adjustment to HRG-tariff to reflect direct selection of less costly patients. Regular review of the HRG system may be desirable. Any exclusion criteria operated by NHS TCs should be made transparent.

6.3 Empirical analysis of HES data

In this section we consider whether IS providers treat less complex patients within any given HRG than NHS providers. If so, there is an argument that HRG-tariff payments should be adjusted downwards for IS providers so that equal payments are made for equivalent work.

Our analysis uses Hospital Episode Statistics (HES) for 2005/6 and 2006/7. HES comprise individual patient records – defined as a Finished Consultant Episode (FCE) – about every NHS patient treated as a day case or inpatient in England. We analyse first FCEs these being the first episodes in a spell. A spell may encompass multiple FCEs if the patient has been under the care of more than one consultant during their hospital stay. For the treatments we consider it is very rare for there to be multiple episodes in the spell, so first FCEs and spells are, to all intents, equivalent. Each patient record includes a number of data 'fields', containing demographic (e.g. age, gender) and clinical information (e.g. diagnosis, procedures performed). All NHS trusts routinely provide HES data for every inpatient and day case patient they treat.

IS providers are contractually obliged to submit HES data for the NHS patients they treat. Despite this obligation, the HES data provided by IS providers may be of lower quality than NHS data, primarily because of IS provider inexperience in providing data in this format. Lower data quality may take two forms. First, IS providers may fail to make HES returns for all the NHS patients they treat. Therefore, HES undercounts the activity that has been undertaken by IS providers. Second, for those patients that are included in HES, the data provided by IS providers may not be completely accurate, perhaps because some fields are poorly coded.

In view of the possibility of lower quality data, instead of simply comparing NHS patients with IS patients, we make three sets of comparisons:

- between patients treated in IS providers and NHS hospitals, where it is expected that both casemix and coding practice will differ, making it difficult to establish the primary reason for observed differences;
- between patients treated in IS providers and NHS treatment centres, where it is expected that casemix will be similar;
- between patients treated in NHS treatment centres and NHS hospitals, where coding is expected to be similar, but casemix is likely to differ.

Table 9: Exclusion criteria applied by ISTC providers

Type of contract / service agreement	Social issues	Clinical issues, physical health	Clinical issues, mental health	Demographic issues	Administrative / other	Scope of care pathway	Notes
Independent sector treatment centre (ISTC) contracts	• Lack of necessary social support, e.g. no carer /escort available at discharge • Patient does not have 24-hr telephone access • Previous DNA • Patients detained by HM Prison service	• ASA score • Obesity • Concomitant medications / interventions • Dyskinesia • Unstable disease • MRSA • Recent MI • Previous anaesthetic problems	• Risk (perceived / actual) of patient violence • Known drug / alcohol dependency • Psychiatric illness / dementia / learning difficulties	• Age	• Patient data incomplete / inaccurate • Referral involves exceeding Annual Take or Quarterly Capacity Limit Value • Patient has failed to provide necessary consents to allow IS contact with NHS Parties	• Treatment outside scope of service • GP /specialist assessment indicated • Unsuitable for day case • Likely to need ITU facilities • Urgent / 2-week cancer wait • Trauma-related injuries	• Contracts are locally negotiated and vary widely • Large numbers of clinical conditions cited as exclusions • As data are confidential, key issues reported and selected examples given
Extended choice network (ECN)		• Patients with incapacitating disease that is a constant threat to life. • Patients with ASA score=3 (unless suitable intensive care facilities available) • Patients with ASA score>3	• Patients who have an unstable mental condition and are receiving psychiatric treatment	• Patients under 18 years of age		• no clinically urgent procedures • no services relating to maternity care, termination of pregnancy or cosmetic surgery • IVF treatment outside HFEA/ local guidelines	• Service level criteria for all ECN partners, covering Procedure Exclusion Group and Patient Exclusion Group.

Notes: ASA: American Society of Anaesthesiologists physical status grade (see below); BMI: body mass index; ITU: intensive therapy unit; DNA: did not attend

Sources: (Department of Health, Unpublished, Department of Health, 2006f)

ASA 1: Healthy patient. Localised surgical pathology with no systemic disturbance; ASA 2: Mild / moderate systemic disturbance (surgical pathology or other disease process); ASA 3: Severe systemic disturbance from any cause; ASA 4: Life threatening systemic disorder. Severe activity limitation; ASA 5: Moribund patient with little chance of survival.

Table 10: summary of comparisons made in the quantitative analysis

Comparison	Casemix	Coding	
IS and NHS hospitals	Differs	Differs	Not possible to disentangle casemix and coding effects
IS and NHS TCs	Same	Differs	Differences due to coding
NHS TCs and NHS hospitals	Differs	Same	Differences due to casemix

Table 10 summarises the comparisons made to discern whether observed differences in HRG activity can be explained by casemix or coding differences. If we observe less complex casemix in NHS TCs compared to NHS hospitals, and can assume that IS providers and NHS TCs treat a similar casemix, this would imply that a higher HRG payment should be made for patients treated in NHS hospitals than in the other settings.

6.3.1 Methodology

Our approach takes three steps:

1. Identify NHS TCs and IS providers.
2. Identify a subset of HRGs that accounts for the top 30 by volume of elective activity within NHS and IS treatment centres.
3. For each high volume HRG, compare indicators of within-HRG complexity for treatment centres and other hospitals.

The HES field 'protype' identifies the type of provider (eg NHS hospital, NHS TC, IS provider) for each FCE. We suspect this field may not always be accurately coded, underestimating the amount of activity at IS providers and NHS TCs. We supplement the identification of IS and NHS TC sites with information from the National Administrative Codes Service (NACS) and a survey of SHAs asking for the names and locations of all the IS providers and NHS TCs in their area (Table 11).

Table 11: Summary of data sources used to identify IS and NHS treatment centres

Data source	Description	IS TCs	NHS TCs
HES (1)	Healthcare provider type – protype	protype= INDSITETC or IS	protype= TRUSTSITETC
National Administrative Codes Service (2)	Lists of NHS and IS providers	file: ephpsite.csv NACS codes starting with N	file: ts.csv NACS codes starting with R, ending in TC or with "Treatment Centre" in name
Survey of SHAs	List of provider names and locations		
(1) http://www.hesonline.org.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=87			
(2) http://www.nhs.uk/nacs/data.aspx			

In the case of disagreement between the identification criteria, the IS identifier dominates. Thus, for example, "ST MARY'S NHS TREATMENT CENTRE" is considered an IS provider because its NACS provider code is "NT603". The protype for 11,036 patients treated at the "KIDDERMINSTER TREATMENT CENTRE RWPTC" takes a value of "TRUSTSITETC", so these patients are considered to have been treated at an NHS TC. However, for 1,749 patients treated at this provider, the protype field takes a value of "INDSITETC or IS" so this sub-sample of patients is considered to have been treated at an IS facility.

Applying these identification criteria, we identified 103 IS providers and 11 NHS treatment centres in 2005/6; and 71 IS providers and 12 NHS treatment centres in 2006/7 where HES records at least one patient as having been treated. Many of these IS providers report low volumes of activity – in 2005/6, 77 IS providers report fewer than 200 FCEs and 38 report fewer than 30 FCEs. Volumes increased in 2006/7 but, even then, 38 IS providers report fewer than 200 FCEs and 19 report fewer than 30 FCEs.

High volume HRGs were identified by combining activity data for both NHS treatment centres and IS providers, and then ranking these by combined volume. The characteristics of all elective patients categorised in these high volume HRGs were then compared according to the setting in which their treatment took place: whether it was in an NHS hospital, NHS TC or IS provider.

Our indicators of complexity are age; waiting time; day case rates; length of stay; number of diagnoses; number of operations; and deprivation (the latter for 2006/7 only). The interpretation of these indicators is provided in the Table 12 below. Age, number of diagnoses, number of procedures and deprivation are likely to be better indicators than the others, for which interpretation is less straightforward. Statistical comparisons are judged at $p<0.01$, given that multiple comparisons are being performed.

Table 12: Indicators of complexity used in the analysis

Indicator	Interpretation
Age	Older patients likely to have above average care requirements
Waiting time	Patients with longer waiting times may be in worse health state than average when finally admitted. Alternatively, these patients may have been in relatively better health and so been accorded a lower clinical priority.
Length of stay	Lower length of stay may indicate lower complexity; or it may be a marker for greater organisational efficiency; it may also suggest inappropriately early discharge (the "quicker and sicker" argument).
Day case	As with Length of Stay, treatment on a day case basis may indicate lower complexity or it may be a marker for greater organisational efficiency (perhaps achieved by specific exclusion criteria).
Diagnoses	Patients with a higher number of diagnoses are likely to have above average care requirements
Procedures	Patients undergoing more procedures are likely to have more complicated conditions and above average post-surgical care requirements
Deprivation	Patients from areas with higher income deprivation may have above average care requirements and it may be more difficult to arrange timely discharge

Results are presented using Forest plots which are commonly used in meta-analysis to compare results across different clinical trials. In this case, rather than clinical trials, our comparisons are across different HRGs. For each outcome of interest, the figures plot the weighted mean difference (represented as a square) and 99% confidence interval (horizontal line through each square) in the characteristics of patients treated in alternative settings. Confidence intervals are calculated assuming that patients are a random sample from an underlying population. We also report a 'pooled effect', which provides an indication of the weighted mean difference in the outcome of interest across all HRGs. Each figure also reports the mean and confidence interval values.

6.3.2 Results

Table 13 shows the number of elective FCEs undertaken in each setting. In 2006/7, 80,000 FCEs were performed by NHS TCs and almost 66,000 by IS providers. Our process for identifying IS providers in HES allowed us to capture more IS activity than had been achieved by the Healthcare Commission in their examination of ISTCs, as reported in the final row of the table (Healthcare Commission, 2007a).

Table 13: Number of elective FCEs and proportion of uncoded data

provider type	2005/6			2006/7		
	FCEs	% U codes	No providers	FCEs	% U codes	No providers
NHS hospitals	6,777,767	0.8		6,715,113	1.5	
NHS TCs	60,633	2.8	11	80,017	1.8	12
IS Providers	31,021	68.0	103	65,835	59.2	71
IS Providers HCC study	20,670	79.0		44,830 (Q1-Q3 only)	59.0	

Note: FCEs are the first episodes of a *spell.*

As expected, we found coding of HES fields by IS providers to be poor. A large proportion of activity is assigned to an unclassified Healthcare Resource Group (U code), the primary reason being that the patient's diagnosis is not recorded. IS providers have improved their coding over time, but even in 2006/7, 59% of FCEs were not assigned to a specific HRG. The Healthcare Commission reports a similar percentage of unclassified activity (Healthcare Commission, 2007a). Activity that is unclassified to a HRG is excluded from further analysis, which means that findings using 2006/7 data are based on just 41% of IS activity reported in HES.

Poor coding is not ubiquitous across all IS providers. Some providers have all of their activity classified to U codes and others achieve similar levels of coding to NHS providers. For instance, only 1.0% of FCEs at Shepton Mallet Treatment Centre (NTC01) are unclassified, compared to 94.4% of those treated at the Greater Manchester Surgical Centre (NT7). For a number of providers, all of their activity is unclassified to a HRG. Figure 2 shows coding performance of IS providers who are ranked as the top 25 by volume of activity.

NACS Organisation Name	NACS/HES site code	Volume	% of U-Codes
Shepton Mallet NHS Treatment Centre	NTC01	10031	1.0
Greater Manchester Surgical Centre	NT714	5654	94.4
Barlborough NHS Treatment Centre	NT502	4098	100.0
The Midlands NHS Treatment Centre	NTA03	3922	100.0
Eccleshill NHS Treatment Centre	NTA01	3243	55.8
Peninsula NHS Treatment Centre	NT501	3201	100.0
	NT331	3150	4.6
Bodmin NHS Treatment Centre	NT825	2766	99.9
	ECC*	2523	100.0
Mid Kent NHS Treatment Centre	NT503	2310	100.0
St Mary'S NHS Treatment Centre	NT603	2286	0.0
Nations Healthcare (Northampton) Ltd	NTA02	2062	86.9
Kidderminster Treatment Centre	RWPTC*	1749	0.2
Clifton Park NHS Treatment Centre	NT829	1564	100.0
Cobalt NHS Treatment Centre	NT830	1408	99.9
Capio New Hall Hospital NHS Treatment Centre	NT808	1402	96.0
Will Adams NHS Treatment Centre	NT602	1271	0.0
Blakelands NHS Treatment Centre	NT832	1240	100.0
Capio Reading Hospital NHS Treatment Centre	NT802	1146	99.9
Boston NHS Treatment Centre	NT828	1126	100.0
Sussex Orthopaedic NHS Treatment Centre	NT604	936	0.4
Preston Business Centre - Sharoe Green	NT718	915	0.0
Gainsborough NHS Treatment Centre	NT827	806	100.0
North East London NHS Treatment Centre	NT506	777	100.0
Horton NHS Treatment Centre	NT826	672	99.7

*Patients treated at two providers are included despite their not having an 'N' site code. This is because, for these patients, the 'protype' field indicated 'IS' or 'ISTC'

Figure 2: HES coding accuracy by IS provider (2006/7)

Table 14 shows the thirty HRGs that account for the largest volumes of activity across NHS treatment centres and IS providers in 2005/6 and 2006/7. As would be expected, most HRGs in the ‘top 30’ in 2005/6 also appear in the list for 2006/7. For some HRGs, there are relatively low volumes of activity in either NHS TCs or IS TCs. Where this is the case, the small sample size means that it will not be possible to reliably identify differences between providers in the types of patients treated.

Table 14: The 'top 30' HRGs that account for the largest volumes of activity in treatment centres

	2005/06			2006/07		
	NHS hospitals	NHS TCs	IS TCs	NHS hospitals	NHS TCs	IS TCs
A07 Intermediate Pain Procedures	106,572	2,217	34	109,821	2,727	20
B13 Phakoemulsification Cataract Extraction and Insertion of Lens	269,488	2,317	127	254,523	2,503	976
B15 Other Lens Surgery Low Complexity				14,991	7	5,728
C22 Intermediate Nose Procedures	29,875	267	271			
C55 Minor Ear Procedures				45,443	725	42
C58 Intermediate Mouth or Throat Procedures	256,490	1,708	547	247,937	2,909	427
E14 Cardiac Catheterisation and Angiography without complications	100,743	467	66	98,511	483	472
F06 Diagnostic Procedures, Oesophagus and Stomach	322,106	4,381	676	332,149	6,768	1,636
F35 Large Intestine - Endoscopic or Intermediate Procedures	281,304	4,000	370	306,553	6,084	1,454
F54 Inflammatory Bowel Disease - Endoscopic or Int Procs <70 w/o cc	41,907	725	50	45,354	1,032	109
F73 Inguinal Umbilical or Femoral Hernia Repairs >69 or w cc	24,101	513	95	23,492	576	298
F74 Inguinal Umbilical or Femoral Hernia Repairs <70 w/o cc	56,510	1,277	323	53,270	1,526	1,073
F93 Anus - Intermediate Procedures <70 w/o cc	18,965	404	125	18,340	532	196
F95 Anus - Minor Procedures <70 w/o cc	19,756	394	110			
G14 Cholecystectomy <70 w/o cc	32,177	567	160	32,723	555	311
H04 Primary Knee Replacement	51,390	2,846	542	51,351	2,577	892
H10 Arthroscopies	109,535	4,626	494	104,077	4,861	1,623
H12 Foot Procedures - Category 2	20,005	731	151	19,200	706	499
H13 Hand Procedures - Category 1	59,274	2,212	360	53,546	2,508	1,168
H14 Hand Procedures - Category 2	15,885	434	133			
H17 Soft Tissue or Other Bone Procedures - Category 1 <70 w/o cc	34,755	993	120	34,473	1,148	503
H22 Minor Procedures to the Musculoskeletal System	48,879	1,070	15	50,114	1,868	209
H80 Primary Hip Replacement Cemented	31,677	1,337	345	29,917	1,046	774
H81 Primary Hip Replacement Uncemented	10,080	741	86	12,366	959	97
J37 Minor Skin Procedures - Category 1 w/o cc	176,849	2,320	348	159,382	3,054	1,641
L19 Bladder Intermediate Endoscopic Procedure w/o cc	24,768	508	23			
L20 Bladder Minor Endoscopic Procedure w cc	50,113	594	53	57,288	928	2
L21 Bladder Minor Endoscopic Procedure w/o cc	202,279	3,372	439	193,612	4,022	130
L39 Penis Minor Open Procedure <70 w/o cc	28,048	516	48	26,542	670	61
L48 Renal Replacement Therapy w/o cc				676,267	2,021	
M05 Upper Genital Tract Minor Procedures	112,825	1,709	66	105,657	2,155	106
M06 Upper Genital Tract Intermediate Procedures	75,131	1,003	35	67,696	1,089	27
Q11 Varicose Vein Procedures	35,448	916	46	32,582	828	17

Figures 3 to 41 (see Appendix) show the comparisons for each indicator of casemix complexity across settings for each HRG for 2005/6 and 2006/7. As a guide to interpretation, consider comparisons of the age of patients treated in NHS hospitals and NHS TCs (Figure 3). For HRG A07 (Intermediate pain procedures), patients treated in NHS TCs were 3.2 years older than those treated in NHS hospitals (actual mean 58.3 years compared to 55.1 years). This difference is statistically significant at the 1% level – the confidence interval does not overlap zero. This is true for the majority of HRGs in this figure, implying that NHS TCs are treating an older population than NHS hospitals.

As a summary of the analyses, those HRGs for which there are statistically significant differences between types of providers are identified for each indicator of casemix complexity (Table 15).

Table 15: Summary of main direction of findings across HRGs

	2005/6	2006/7
Age	NHS TC > NHS hosp NHS TC > IS Prov	NHS TC > NHS hosp
Waiting time	IS Prov > NHS hosp IS Prov > NHS TC	No overall differences
Length of stay	NHS hosp > NHS TC NHS hosp > IS Prov	NHS hosp > NHS TC NHS hosp > IS Prov IS Prov > NHS TC
Day case	NHS TC > NHS hosp NHS TC > IS Prov	NHS TC > NHS hosp IS Prov > NHS hosp NHS TC > IS Prov
Diagnoses	NHS hosp > NHS TC NHS hosp > IS Prov	NHS hosp > IS Prov NHS TC > IS Prov
Procedures	No overall differences	NHS hosp > IS Prov NHS TC > IS Prov
Income deprivation	n/a	NHS hosp > NHS TC NHS hosp > IS Prov NHS TC > IS Prov

Our analysis suggests the following overall results:

1. **Age**. Patients treated at NHS TCs tend to be older than those treated at NHS hospitals or IS providers. Although this difference is statistically significant, the magnitude of the difference is small and its clinical importance is unclear. The overall difference between NHS TCs and IS providers was no longer significant in 2006/7.
2. **Waiting time**. In 2005/6, patients treated in IS providers generally experienced longer waiting times prior to admission than patients admitted to NHS hospitals and NHS TCs. This is unsurprising given that a major rationale for IS involvement was to reduce waiting times. By 2006/7, overall differences in waiting times between providers had decreased and were no longer significant.
3. **Length of stay**. As would be expected, patients at both NHS TCs and IS providers tend to have a shorter length of stay than those treated at NHS hospitals.
4. **Day case rates**. By design, more activity in TCs is conducted on a day case basis than it is in NHS hospitals, as the data demonstrate. Overall, NHS TCs tend to treat a higher proportion of patients on a day case basis than do IS providers.
5. **Number of diagnoses**. In 2005/6, patients at NHS TCs and IS providers had fewer diagnoses recorded than those treated at NHS hospitals. By 2006/7, the difference between NHS hospitals and NHS TCs was no longer significant. However, more diagnoses were recorded in NHS hospital and NHS TCs than IS providers. These observed differences may reflect either poor coding of diagnoses or patient selection by IS providers.
6. **Number of procedures**. Although there are significant differences for particular HRGs, in 2005/6 there was no discernible overall difference in the number of procedures recorded across different provider settings. In 2006/7, patients treated by IS providers were recorded as having fewer procedures than those treated in the NHS, which may be due to poor coding or patient selection.
7. **Deprivation**. Patients treated by NHS hospitals are more likely to come from income-deprived areas than those treated by either NHS TCs or IS providers. However, there was a non-significant trend for ISTCs to treat a slightly higher proportion of patients from deprived areas than NHS TC providers.

Orthopaedic HRGs (prefixed by H)

The main statistically significant differences observed between providers were in orthopaedic HRGs. Patients in NHS hospitals had significantly longer lengths of stay, more co-mordidities (diagnoses) and more procedures than those treated in the other settings. This is despite patients in NHS hospitals tending to be younger than those treated in TCs and having experienced a shorter waiting time prior to admission.

Diagnostic HRGs (F06, F35, F54, L19-21)

Patients attending NHS TCs for diagnostic reasons were more likely to be older than patients in NHS hospitals, who in turn were older than patients in IS providers. More diagnoses were recorded for patients treated in NHS hospitals than at NHS TCs or IS providers. However, more procedures were recorded for patients treated by NHS TCs and IS providers than those treated in NHS hospitals. This may be because many patients in NHS hospitals have diagnostic procedures as part of a wider treatment course and are allocated to more resource intensive HRGs.

6.3.3 Summary

Our analysis finds evidence of differences between patients treated in hospitals and TCs even though they are classified to the same HRG. NHS hospitals tend to treat patients with more diagnoses and procedures and from more deprived areas than patients treated in treatment centres – suggesting that the former group are more complex. While patients treated in the hospital setting tend to be younger on average, they represent a wider age range than those treated in TCs. If these differences in patient characteristics lead to differences in treatment costs, then either the classification system needs refining or differential payments might be made according to the treatment setting.

In future, the introduction of Version 4 HRGs may overcome any perception of differences in casemix across settings, with its finer granularity allowing more precise definitions of service type than is currently the case.

Inevitably the analysis is constrained by the quality of the data contained in HES. There are clear areas where improvements should be made, notably in the coding of provider type and, for many IS providers, in general coding completeness.

Factor	Recommendation
Casemix	The evidence suggests there are casemix differences between patients treated in hospitals and treatment centres. Whether these differences reflect differences in the cost of provision needs to be established. Improve the quality of HES data submitted by IS providers and NHS TC reporting in the provider code field.

7. Discussion and conclusions

A key element of the reform agenda for the health service has been to encourage a plurality of provision for NHS patients and so improve the quality of care. In introducing plurality, the Department of Health is committed to establishing a 'fair playing field'. This means that the objective of competitive neutrality across NHS and Independent Sector (IS) providers of NHS services ('a *level* playing field') is tempered by the obligation upon the public sector to act in the public interest.

This fair playing field must be supported by the system of reimbursement – called Payment by Results (PbR) – that is being implemented to fund NHS patients. PbR is a prospective payment system in which prices for treating particular types of patients are fixed in advance by the Department of Health rather than being negotiated locally. As prices are fixed, any competition between providers should be on the basis of the *quality* of services, rather than their *cost*.

Within this context, we were asked to consider the following issues:

- establish which factors drive significantly different cost structures for the different types of organisation;
- on a quantified basis, produce a set of weighted factors that any new tariff system would need to take into account (the work should quantify factors but should not produce a revised tariff);
- identify potentially perverse incentives either with the current system or with the proposed solution;
- identify any anticipated changes in the economic factors over time;
- consider whether it is appropriate to apply the Market Forces Factor (MFF) to organisations outside the NHS; and
- consider the implications of casemix differences in a separate, but related, phase of work.

Which factors drive significantly different cost structures?

The factors of relevance are operating constraints that are beyond provider control (i.e. unavoidable) and which impact on their costs of production. We have identified and examined the nature of each potential constraining factor on NHS and IS providers, and recommend how these might be addressed to ensure a fair playing field. To this end, we ask two questions:

- What is the differential impact of each unavoidable factor on NHS and IS providers?
- How should these unavoidable factors be accounted for within a fixed pricing regime?

Each factor investigated is listed in Table 16, together with a summary of how these might be addressed – if at all – under a PbR regime.

Quantification of these factors

Our analysis allows us to categorise each factor into one of five classes:

- Those factors which are not unavoidable – these are not exogenous constraints and do not imply an unfair or uneven playing field. As such no correction is required under PbR. Examples are corporation tax and pension contributions. No quantification of these factors is necessary.
- Those factors which are unavoidable, but where correction is best made through standardisation of regulatory arrangements, rather than by financial compensation. Examples are inspection regimes and access to the indemnity arrangements (NHS Litigation Authority). Again no quantification is necessary.
- Those factors that require specific payments to be made. We recommend only four types of specific payments – VAT, MFF, capital costs for PFI and payments for R&D, teaching and training. These payments will be provider-specific, and will depend on what VAT is incurred in providing NHS care, where the provider is located, the net additional cost of PFI payments, and how much R&D, teaching and training is undertaken. VAT reimbursement requires access to audited accounts, which are unavailable. The DoH already has the relevant

information to calculate MFF entitlements. The tariff reflects a proportion of average PFI costs, actual payments above this level will vary by provider. At present, IS providers undertake little R&D, teaching and training. If IS providers are to engage in such activities in future, payments should be made on the same basis as they are to NHS providers.

- Those factors that are best handled by introducing two-part tariffs, so that there is better risk sharing between providers and purchasers in the context of demand volatility. The requirement upon the NHS to have capacity available on stand-by necessitates such arrangements. The form of such arrangements needs to be assessed on a service by service basis.
- Those factors that entail price adjustment – this being the adoption of exclusion criteria for services conducted in treatment centres. As these exclusion criteria are provider-specific, a provider-specific reduction in tariff should be negotiated that reflects the number and type of exclusion criteria. Quantification would need to be based on what the DoH is willing to penalise IS providers for adopting such criteria and what IS providers are willing to accept by way of a penalty. This best way to determine willingness to pay of the parties is through negotiation.

Table 16: Summary of recommendations

Factor	Recommendation
Regulatory constraints	
Corporation tax	No change.
VAT (on contracted out services)	LT: seek VAT exemption for IS providers in their provision of NHS services ST: work with IS providers to assess current VAT liability in providing services to NHS patients
Monitoring and performance management regime	Registration/monitoring: address as part of market entry negotiations not activity-based payment arrangements. Legislation has proposed to standardise requirements Reporting: standardise requirements
Contracting issues	Contractual arrangements: no adjustment Ensure that IS providers make accurate HES returns Synchronise payment timing
Production process constraints	
Cost of capital	Harmonise relevant accounting guidelines across sectors Access to capital: no adjustment needed Cost of borrowing: Providers face a range of options, so it is unclear whether the playing field is fair. This matter requires further detailed investigation by relevant specialists. PFI: identify the magnitude of the problem and make specific payments to compensate for these. Consider taking legal advice on the nature of these contracts which appear inflexible.
Costs of labour	Recruitment: relax additionality rules Pay levels: no adjustment Pension provision: no adjustment
Geographical differences in input prices – Market Forces Factor	Review the current basis for calculating MFF, taking into account its appropriateness to IS providers Make MFF payments to both NHS and IS providers, paid directly by DoH, after consideration of the locational constraints faced by IS providers
Economies of scale and scope	Continue with separate payments for emergency and elective patients Consider extending use of two-part tariffs
Access to cheaper inputs	NHS LA: resolved once current Health and Social Bill enacted NHS PASA: no adjustment NHS CfH: no retrospective compensation but harmonise arrangements across NHS and IS for future IT programmes ALBs: no adjustment
Provision of other outputs	Ensure transparent, separate and full funding of R&D, teaching and training services
Type of service / treatment	
Exclusion criteria	Price adjustment to HRG-tariff to reflect direct selection of less costly patients. Regular review of the HRG system may be desirable. Any exclusion criteria operated by NHS TCs should be made transparent.
Casemix	The evidence suggests there are casemix differences for hospitals and treatment centres. Whether these differences reflect differences in the cost of provision needs to be established. Improve the quality of HES data submitted by IS providers and NHS TC reporting in the provider code field.

Identify potentially perverse incentives either with the current system or with the proposed solution

Financial arrangements under PbR can be modified in two ways if there is evidence that providers face different unavoidable costs or provide different services:

- ***Price adjustment.*** This involves allowing price to vary in line with the collective influence of the unavoidable factors or to be adjusted to reflect inaccurate service descriptions.
- ***Specific payments.*** This would involve making specific payments (charges or rebates) to compensate for the influence of each specific unavoidable cost factor.

Price adjustment to correct for unavoidable constraints is not recommended because it undermines the integrity of a fixed pricing regime and distorts purchasing behaviour.

Specific payments for unavoidable costs have the advantage of greater transparency and allow adjustments to be factor-specific rather than based on provider characteristics, such as ownership type. The form of these payments will vary according to the factor under consideration and the amount will be provider specific.

Where there is evidence that different types of service are being provided and this is not accurately reflected by the classification system used to define services, price adjustment is recommended.

Identify any anticipated changes in the economic factors over time

A number of factors that currently give rise to an unfair playing field will be addressed through changes to legislation, once the current Health and Social Care Bill is enacted. The adoption of version 4 HRGs is anticipated to ameliorate concerns about the ability of the current version of HRGs to accurately describe casemix differences.

Consider whether it is appropriate to apply the Market Forces Factor (MFF) to organisations outside the NHS

We believe current arrangements – whereby the MFF adjustment is paid directly from DoH to providers with the money being top-sliced from PCT allocations – should be retained. We believe that the proposal to revert to the position where PCTs pay the 'tariff x MFF' is ill-founded, and disagree with claims that this would introduce greater simplicity and transparency in the payment system, introduce more effective efficiency incentives around non-elective services, and better align incentives for PCTs in commissioning services (Department of Health, 2006c)(§3.72).

Our position is based on the following arguments:

- The information requirements for calculating MFF (and any other) payments are the same, irrespective of whether payments are made directly to providers or indirectly via PCTs.
- Making price adjustments (e.g. in the form 'tariff x MFF') is straightforward only when the extent of exposure is proportional to activity. For many unavoidable costs this is unlikely to be the case, so forcing these into an activity-based pricing adjustment would be a complicated undertaking. Exposure to unavoidable costs should be quantified on the basis of their cost drivers and compensated accordingly.
- A system of direct payments is more transparent than one in which each HRG price has to be adjusted according to each provider's exposure to the collective influence of the unavoidable factors. Rather than transparency, this promises opacity because the resulting adjusted price cannot easily be disentangled by third parties.
- It is not apparent why the DoH believes that 'tariff x MFF' would introduce *more* effective efficiency incentives around non-elective – or indeed any types of – services. We demonstrate formally (Technical Appendix 1) that price adjustment (e.g. 'price x MFF') and specific payments provide equivalent incentives to providers.
- Rather than better aligning incentives for PCTs, 'tariff x MFF' is likely to distort PCT commissioning behaviour. We demonstrate (Technical Appendix 2) that this risks distorting PCT behaviour on the fairly benign assumption that they would respond to price signals.

If IS providers are subject to similar locational constraints that face NHS providers, they ought also to be eligible for MFF payments. If IS providers are thought to be less constrained than NHS providers in where they locate, MFF payments might be reduced proportionately. This would require a judgement to be made about how restricted IS providers are, and would probably need to be negotiated between the Department of Health and each IS provider on a case by case basis.

Consider the implications of casemix differences

A justification for differential payments between NHS and IS providers is that they treat different types of patients, and the classification system used to define a 'unit' of service is insufficiently refined to identify these differences. This would not be a problem if differences were random, where it is a matter of chance whether any particular patient is more or less expensive than the average patient in the service category to which they are classified. With sufficiently large volumes, these differences cancel out. Problems arise if the differences across providers are systematic, with one type of provider more likely to treat low-cost patients and another treating more high-cost patients.

We analyse this in two ways. First, we consider the extent to which explicit exclusion criteria have been adopted by IS providers. Second, we undertake empirical analysis of HES data to identify differences in patients in specific HRGs across IS providers, NHS treatments centres and NHS hospitals.

IS providers have adopted exclusion criteria that are provider-specific and generally determined locally. These criteria specify a list of circumstances under which a provider may refuse a referral. This implies that ISTC case mix provision for a given procedure is likely to be less severe than the case mix for the NHS.

The HRG system is likely to be unable to differentiate accurately between the types of patient treated in each setting. Consequently we recommend that IS (and NHS TCs that adopt exclusion criteria) are penalised by being paid a lower price for the services they provide. This price reduction will be provider-specific, varying to the extent to which exclusion criteria are adopted.

Our analysis of HES finds evidence to suggest systematic differences in casemix indicators across treatment settings. NHS hospitals tend to treat patients with more diagnoses and procedures and from more deprived areas than patients treated in treatment centres – suggesting that the former group are more complex. While patients treated in the hospital setting tend to be younger on average, they represent a wider age range than those treated in TCs. If these differences in patient characteristics lead to differences in treatment costs, then either the classification system needs refining or differential payments might be made according to the treatment setting.

In future, the introduction of Version 4 HRGs may overcome any perception of differences in casemix across settings, with its finer granularity allowing more precise definitions of service type than is currently the case.

Inevitably the analysis is constrained by the quality of the data contained in HES. There are clear areas where improvements should be made, notably in the coding of provider type by NHS organisations and, for many IS providers, in general coding completeness.

Conclusion

Differentiated payments under PbR are justified on the grounds that providers face different operating constraints, which imply that efficient providers will incur different costs in providing the same services.

Ownership status is not necessarily a sound basis for making differentiated adjustments for unavoidable factors. Instead, provider-specific adjustments should be related to each constraining factor according to the degree to which the factor impacts each provider's costs. Of course, the average net effect of these factors may differ significantly between IS and NHS providers, but this will be because of the association of these factors with ownership type.

These specific payments should be made directly by the Department of Health, rather than via PCTs so that purchasing behaviour is not distorted.

Both the exclusion criteria and the analysis of HES data imply that casemix is less complex in treatment centres than in NHS hospitals. We recommend that IS (and NHS TCs that adopt exclusion criteria) are paid a lower price for the services they provide when exclusion criteria are in place. This price reduction will be provider-specific, varying to the extent to which exclusion criteria are adopted.

If tariffs are to continue to be based on average costs, consideration should be given to extending the Reference Cost collection to IS providers so that the costs incurred by these providers can inform the price. This is particularly important for services where a large proportion of activity is undertaken by IS providers.

Efforts should also be made by IS providers to improve the completeness and quality of their HES returns.

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Appendix 1

This appendix presents a diagrammatic summary of findings from the HES analysis. For each group of patients treated by each of the three categories of provider (NHS treatment centres; IS providers; all other NHS hospitals), six (for 2005/6) or seven (for 2006/7) indicators of complexity were tested for each HRG (see Table 12 for further details):

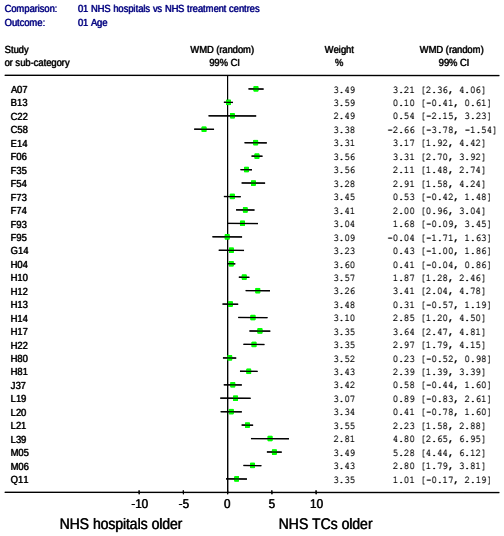
1. Age in years (05/6 and 06/7) (Figure 3 to Figure 8)
2. Inpatient waiting time in days (05/6 and 06/7) (Figure 9 to Figure 14)
3. Length of stay in days (05/6 and 06/7) (Figure 15 to Figure 20)
4. Proportion of day cases (05/6 and 06/7) (Figure 21to Figure 26)
5. Number of diagnoses (05/6 and 06/7) (Figure 30 to Figure 32)
6. Number of operations (05/6 and 06/7) (Figure 33 to Figure 38)
7. IMD score (proportion living in income deprivation) (06/7 only) (Figure 39 to Figure 41)

The pooled estimates are based on the weighted mean difference (WMD) statistic. The WMD, or 'difference in means', is a standard statistic that measures the absolute difference between the mean value in two groups. It is appropriate as a summary statistic in meta-analysis when outcome measurements in all trials are made on the same scale. In this case, where patients are grouped by HRGs rather than trials, each indicator was assessed using a common scale (e.g. 'age' assessed in 'years' for each HRG and for each provider) and so the WMD is suitable for describing these data. In addition, the WMD allows the graphs to be labeled using the 'natural' scale. Therefore, in the case of the indicator 'age' the x-axis is in years. The y-axis shows where the mean difference (difference between the means) between the two groups is zero. For each indicator, the figures plot and report the mean difference (represented as a square) and 99% confidence interval (horizontal line through each square); where a confidence interval crosses the y-axis (i.e. spans zero), the difference in effect is not significant at the 1% level. The 1% level was selected in preference to an alpha of 5% to reflect multiple testing on the same groups of patients, which increases the chance of spuriously finding a 'significant' result.

Confidence intervals are calculated assuming that patients are a random sample from an underlying population. We also report a 'pooled effect', which provides an indication of the effect size across all HRGs. However, as there is a great deal of heterogeneity (variation) between patients in different HRGs, the pooled effect is highly indicative and should not be over-interpreted.

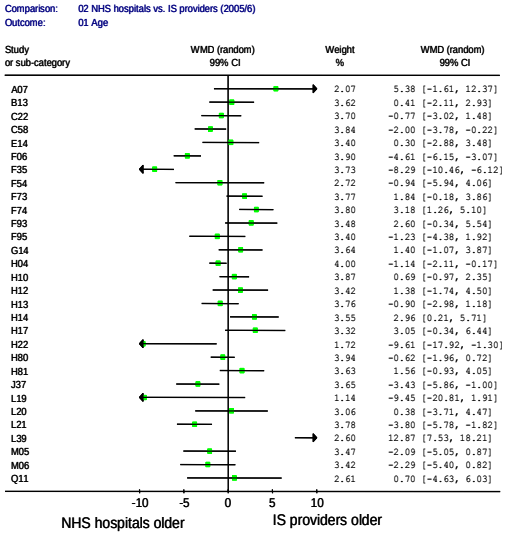
Figures are presented by HRG, with 2005/6 and 2006/7 results given on facing pages to facilitate comparison. Figures were constructed using RevMan 4.2 software (Review Manager (RevMan) [Computer program], 2003).

Figure 3: Forest plot for differences in patient age (yrs): NHS Treatment centres vs. NHS hospitals (2005/6)



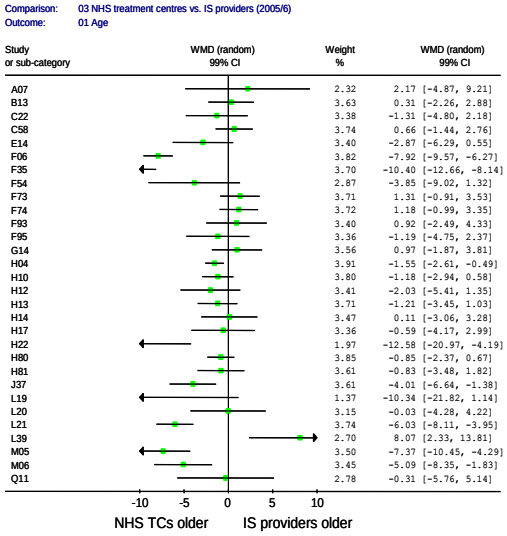
Pooled effect: weighted mean difference 1.78; 99% confidence interval 1.02 to 2.53

Figure 4: Forest plot for differences in patient age (yrs): NHS hospitals vs. IS providers (2005/6)



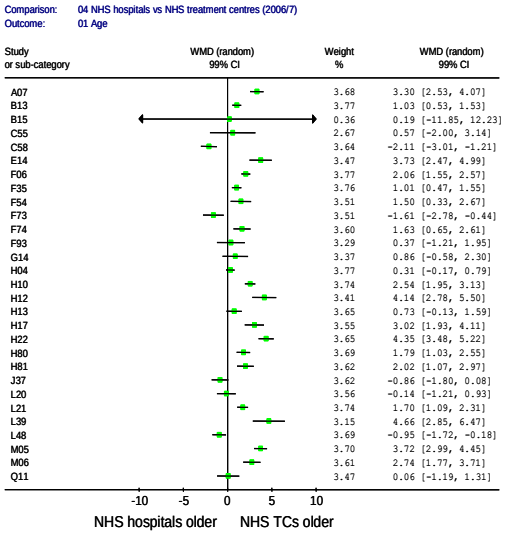
Pooled effect: weighted mean difference -0.29; 99% confidence interval -1.72 to 1.14

Figure 5: Forest plot for differences in patient age (yrs): NHS Treatment centres vs. IS providers (2005/6)



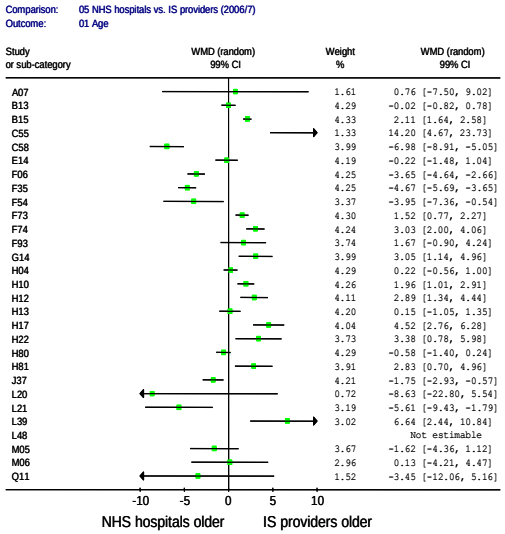
Pooled effect: weighted mean difference -2.02; 99% confidence interval -3.68 to -0.36

Figure 6: Forest plot for differences in patient age (yrs): NHS Treatment centres vs. NHS hospitals (2006/7)



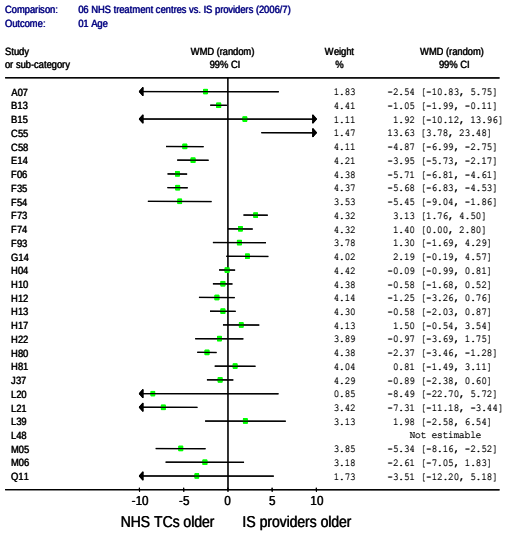
Pooled effect: weighted mean difference 1.50; 99% confidence interval 0.74 to 2.26

Figure 7: Forest plot for differences in patient age (yrs): NHS hospitals vs. IS providers (2006/7)



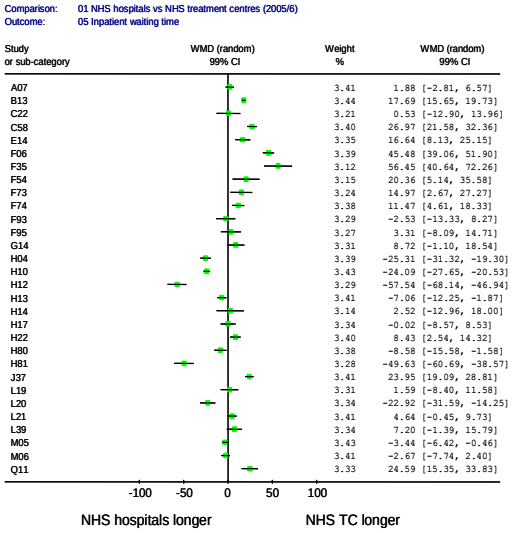
Pooled effect: weighted mean difference 0.291; 99% confidence interval -1.03 to 1.60

Figure 8: Forest plot for differences in patient age (yrs): NHS Treatment centres vs. IS providers (2006/7)



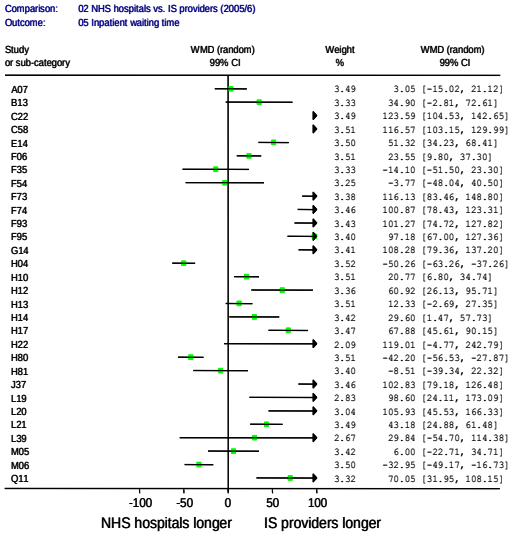
Pooled effect: weighted mean difference -1.401; 99% confidence interval -2.86 to 0.06

Figure 9: Forest plot for differences in inpatient waiting time (days): NHS hospitals vs. NHS Treatment centres (2005/6)



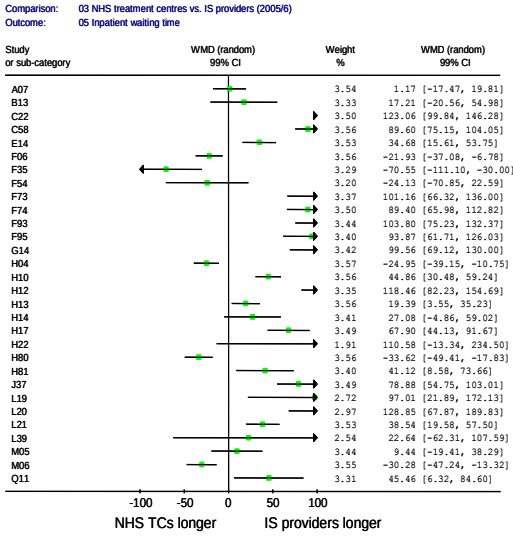
Pooled effect: weighted mean difference 3.04; 99% confidence interval -6.14 to 12.21

Figure 10: Forest plot for differences in inpatient waiting time (days): NHS hospitals vs. IS providers (2005/6)



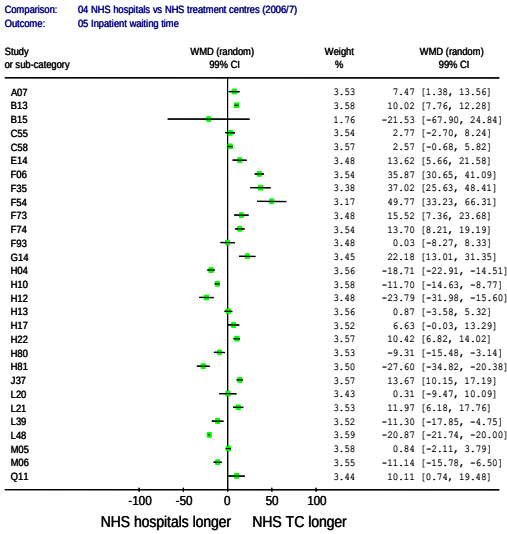
Pooled effect: weighted mean difference 48.36; 99% confidence interval 20.50 to 76.22

Figure 11: Forest plot for differences in inpatient waiting time (days): NHS Treatment centres vs. IS providers (2005/6)



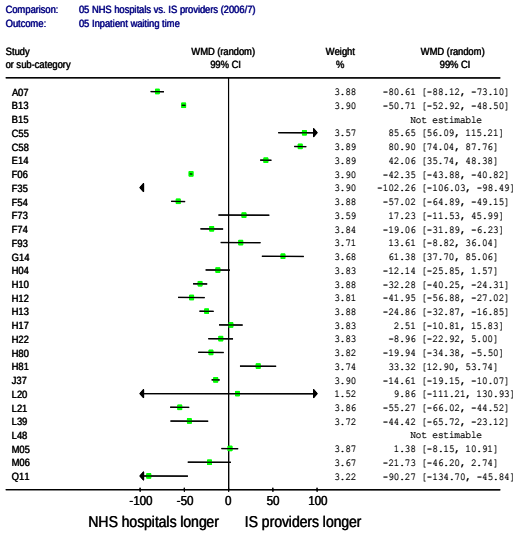
Pooled effect: weighted mean difference 45.05; 99% confidence interval 20.14 to 69.97

Figure 12: Forest plot for differences in inpatient waiting time (days): NHS hospitals vs. NHS Treatment centres (2006/7)



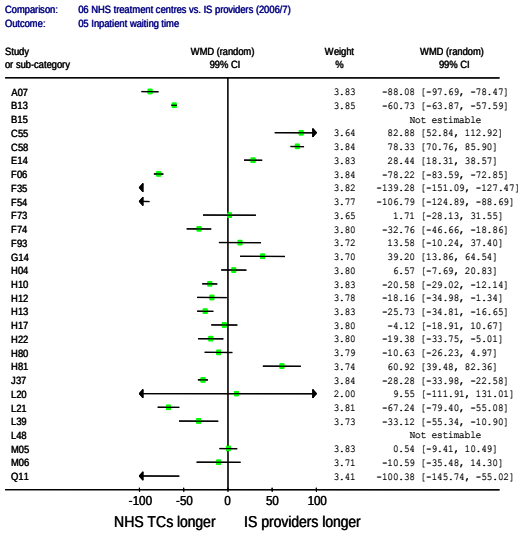
Pooled effect: weighted mean difference 3.99; 99% confidence interval -4.63 to 12.60

Figure 13: Forest plot for differences in inpatient waiting time (days): NHS hospitals vs. IS providers (2006/7)



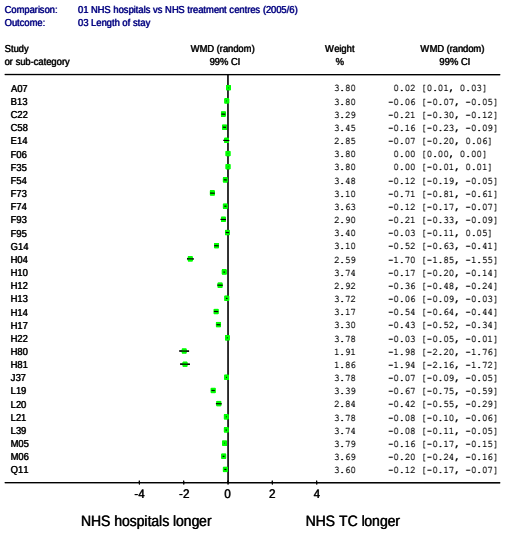
Pooled effect: weighted mean difference -14.371; 99% confidence interval -33.49 to 4.74

Figure 14: Forest plot for differences in inpatient waiting time (days): NHS Treatment centres vs. IS providers (2006/7)



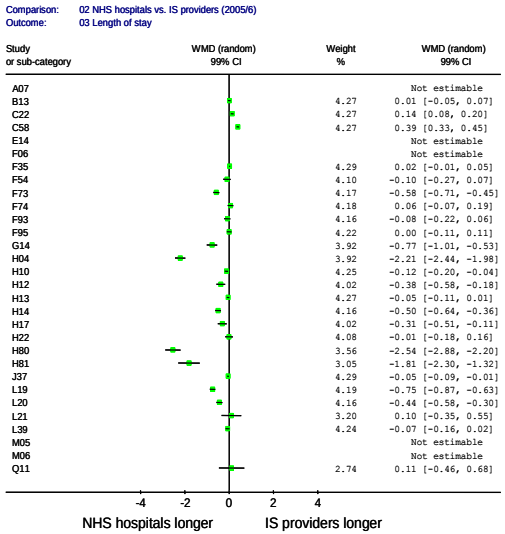
Pooled effect: weighted mean difference -19.891; 99% confidence interval -44.72 to 4.93

Figure 15: Forest plot for differences in length of stay (days): NHS hospitals vs. NHS Treatment centres (2005/6)



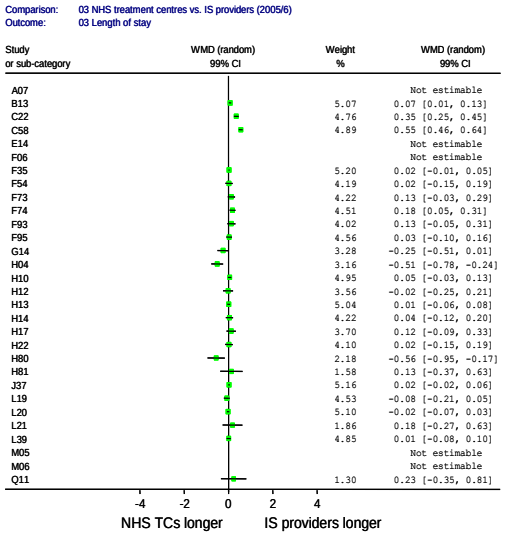
Pooled effect: weighted mean difference -0.30; 99% confidence interval -0.34 to -0.26

Figure 16: Forest plot for differences in length of stay (days): NHS hospitals vs. IS providers (2005/6)



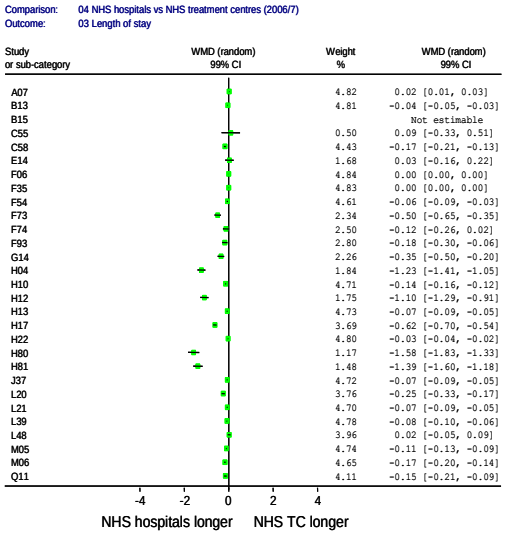
Pooled effect: weighted mean difference -0.37; 99% confidence interval -0.53 to -0.22

Figure 17: Forest plot for differences in length of stay (days): NHS Treatment centres vs. IS providers (2005/6)



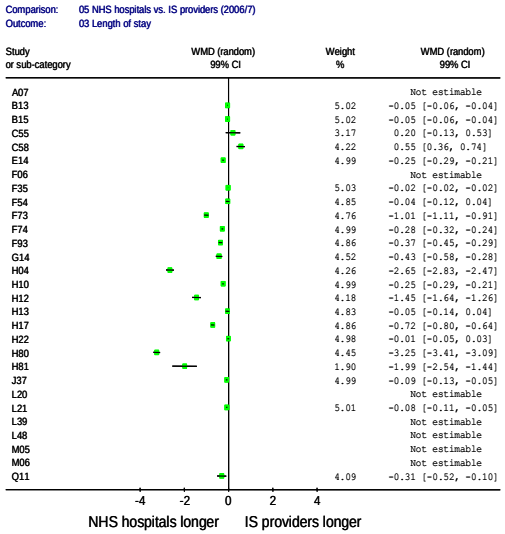
Pooled effect: weighted mean difference 0.05; 99% confidence interval -0.03 to 0.12

Figure 18: Forest plot differences in for length of stay (days): NHS hospitals vs. NHS Treatment centres (2006/7)



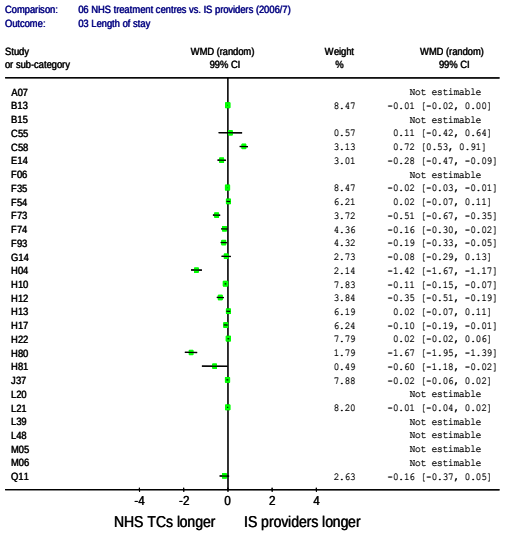
Pooled effect: weighted mean difference -0.19; 99% confidence interval -0.22 to -0.16

Figure 19: Forest plot for differences in length of stay (days): NHS hospitals vs. IS providers (2006/7)



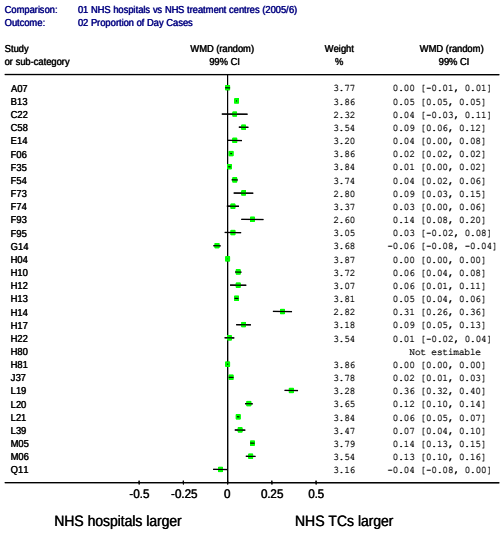
Pooled effect: weighted mean difference -0.521; 99% confidence interval -0.62 to -0.42

Figure 20: Forest plot for differences in length of stay (days): NHS Treatment centres vs. IS providers (2006/7)



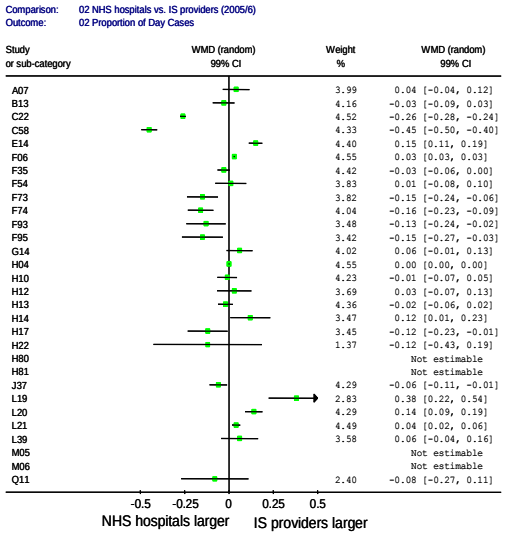
Pooled effect: weighted mean difference -0.121; 99% confidence interval -0.16 to -0.08

Figure 21: Forest plot for differences in the proportion of day cases: NHS hospitals vs. NHS Treatment centres (2005/6)



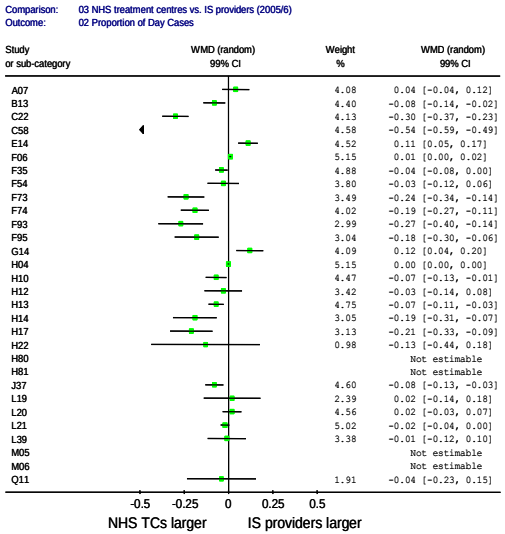
Pooled effect: weighted mean difference 0.06; 99% confidence interval 0.05 to 0.08

Figure 22: Forest plot for differences in the proportion of day cases: NHS hospitals vs. IS providers (2005/6)



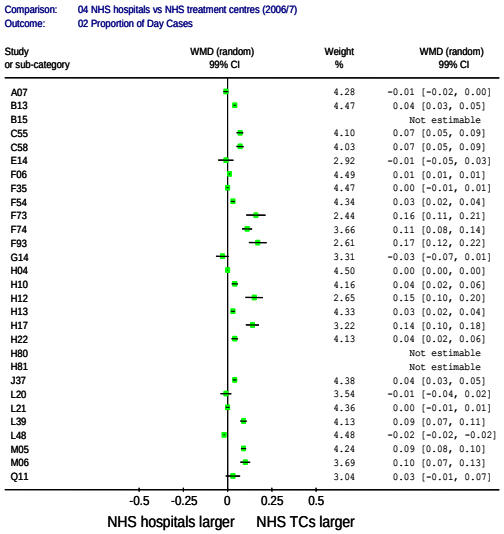
Pooled effect: weighted mean difference -0.03; 99% confidence interval -0.07 to 0.01

Figure 23: Forest plot for differences in the proportion of day cases: NHS Treatment centres vs. IS providers (2005/6)



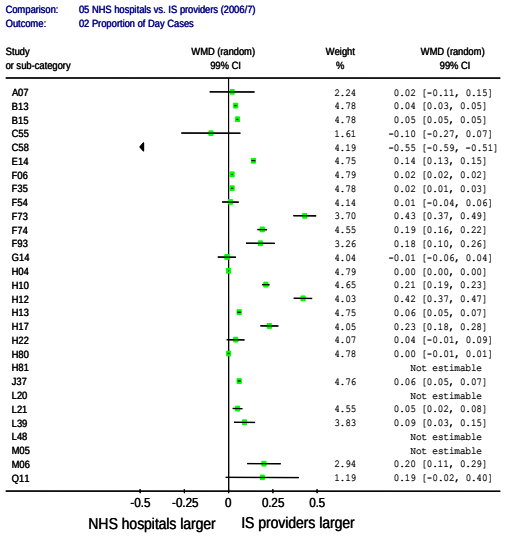
Pooled effect: weighted mean difference -0.09 99% confidence interval -0.12 to -0.05

Figure 24: Forest plot for differences in the proportion of day cases: NHS hospitals vs. NHS Treatment centres (2006/7)



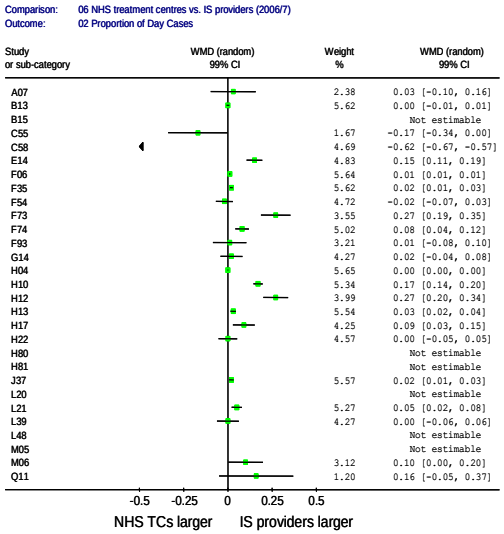
Pooled effect: weighted mean difference 0.05; 99% confidence interval 0.03 to 0.06

Figure 25: Forest plot for differences in the proportion of day cases: NHS hospitals vs. IS providers (2006/7)



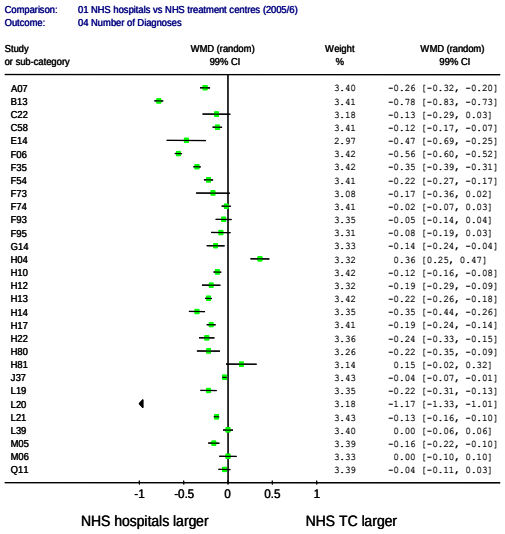
Pooled effect: weighted mean difference 0.081; 99% confidence interval 0.05 to 0.10

Figure 26: Forest plot for differences in the proportion of day cases: NHS Treatment centres vs. IS providers (2006/7)



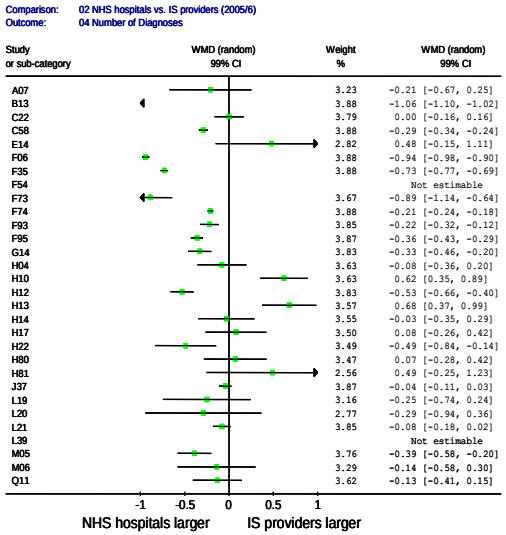
Pooled effect: weighted mean difference 0.031; 99% confidence interval 0.00 to 0.05

Figure 27: Forest plot for differences in the number of diagnoses: NHS hospitals vs. NHS Treatment centres (2005/6)



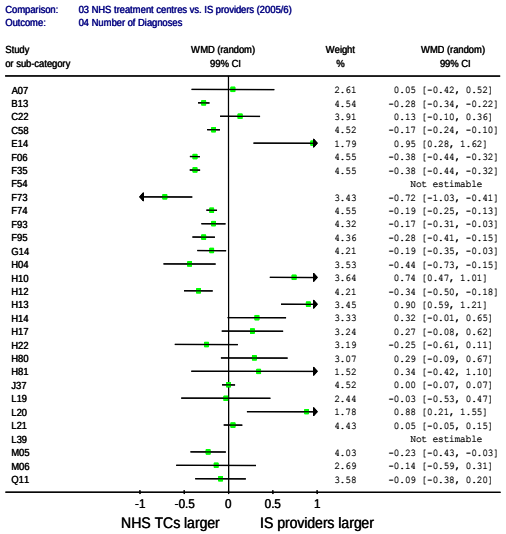
Pooled effect: weighted mean difference -0.20; 99% confidence interval -0.31 to -0.10

Figure 28: Forest plot for differences in the number of diagnoses: NHS hospitals vs. IS providers (2005/6)



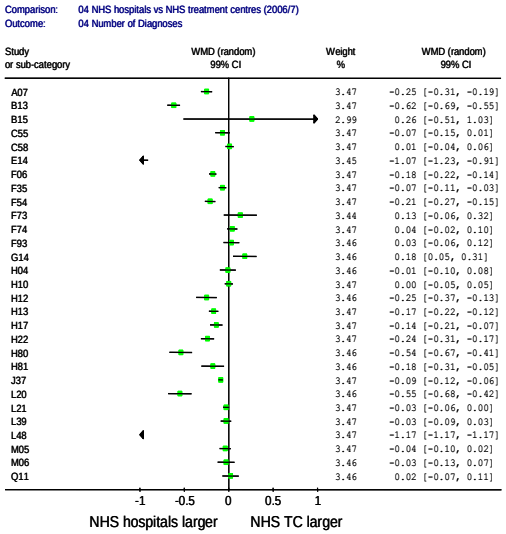
Pooled effect: weighted mean difference -0.21; 99% confidence interval -0.41 to 0.00

Figure 29: Forest plot for differences in the number of diagnoses: NHS Treatment centres vs. IS providers (2005/6)



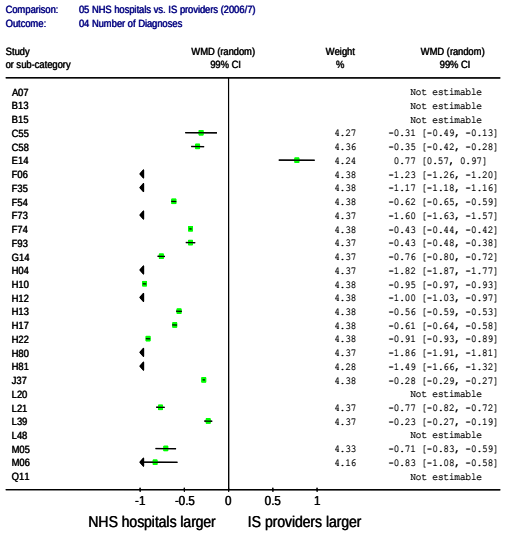
Pooled effect: weighted mean difference -0.04; 99% confidence interval -0.15 to 0.08

Figure 30: Forest plot for differences in the number of diagnoses: NHS hospitals vs. NHS Treatment centres (2006/7)



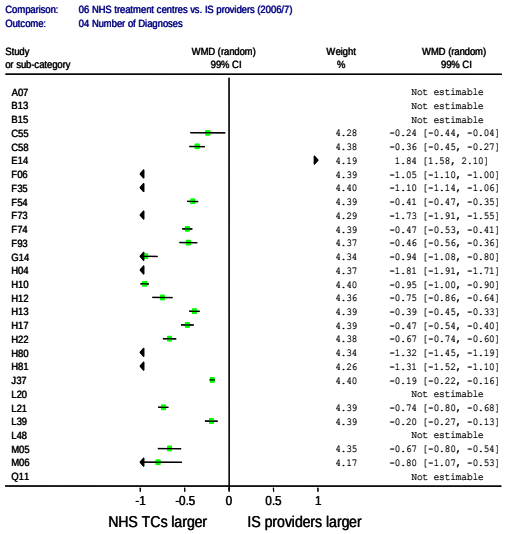
Pooled effect: weighted mean difference -0.18; 99% confidence interval -0.54 to 0.17

Figure 31: Forest plot for differences in the number of diagnoses: NHS hospitals vs. IS providers (2006/7)



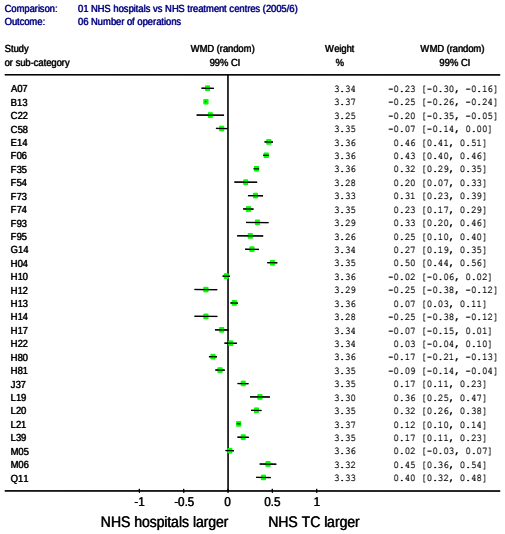
Pooled effect: weighted mean difference -0.791; 99% confidence interval -1.02 to -0.56

Figure 32: Forest plot for differences in the number of diagnoses: NHS Treatment centres vs. IS providers (2006/7)



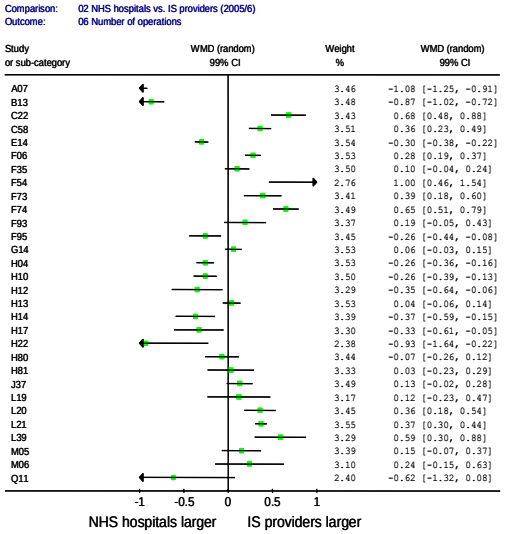
Pooled effect: weighted mean difference -0.661; 99% confidence interval -0.90 to -0.42

Figure 33: Forest plot for differences in the number of operations: NHS hospitals vs. NHS Treatment centres (2005/6)



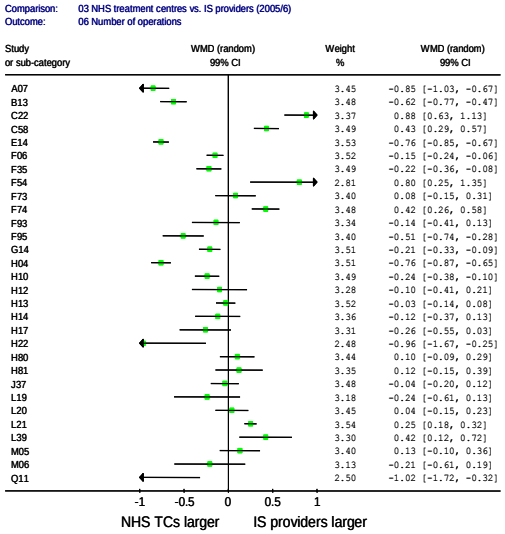
Pooled effect: weighted mean difference 0.13; 99% confidence interval -0.02 to 0.27

Figure 34: Forest plot for differences in the number of operations: NHS hospitals vs. IS providers (2005/6)



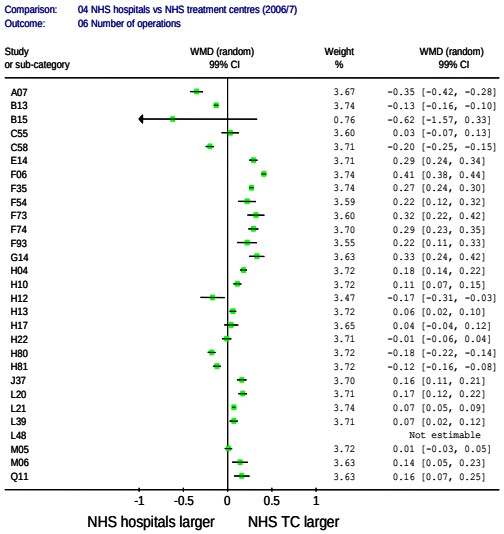
Pooled effect: weighted mean difference 0.01; 99% confidence interval -0.18 to 0.20

Figure 35: Forest plot for differences in the number of operations: NHS Treatment centres vs. IS providers (2005/6)



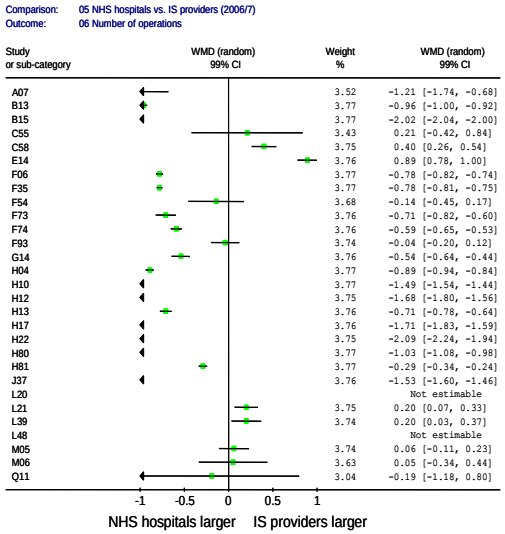
Pooled effect: weighted mean difference -0.12; 99% confidence interval -0.32 to 0.09

Figure 36: Forest plot for differences in the number of operations: NHS hospitals vs. NHS Treatment centres (2006/7)



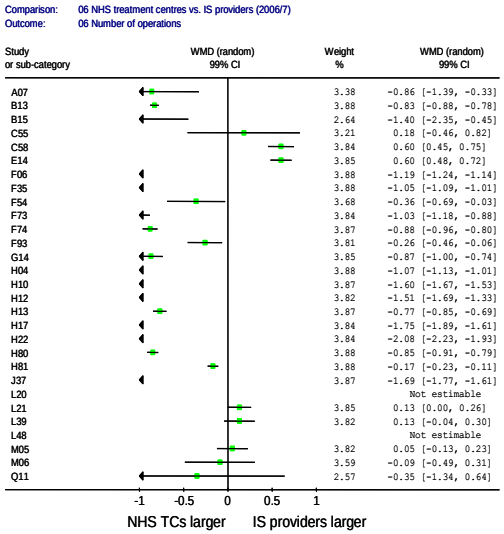
Pooled effect: weighted mean difference 0.08; 99% confidence interval -0.01 to 0.18

Figure 37: Forest plot for differences in the number of operations: NHS hospitals vs. IS providers (2006/7)



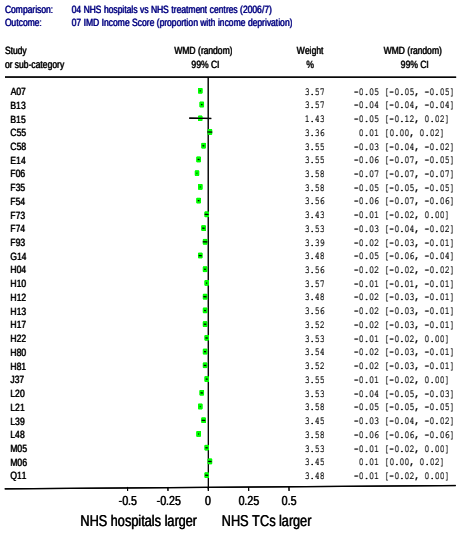
Pooled effect: weighted mean difference -0.651; 99% confidence interval -1.04 to -0.26

Figure 38: Forest plot for differences in the number of operations: NHS Treatment centres vs. IS providers (2006/7)



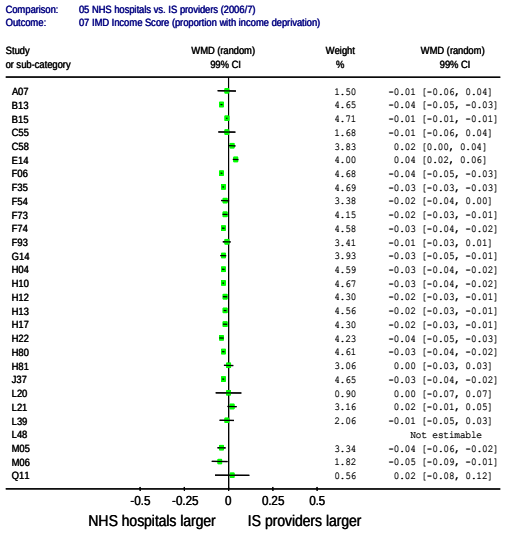
Pooled effect: weighted mean difference -0.711; 99% confidence interval -0.98 to -0.43

Figure 39: Forest plot for differences in IMD (income deprivation): NHS hospitals vs. NHS Treatment centres (2006/7)



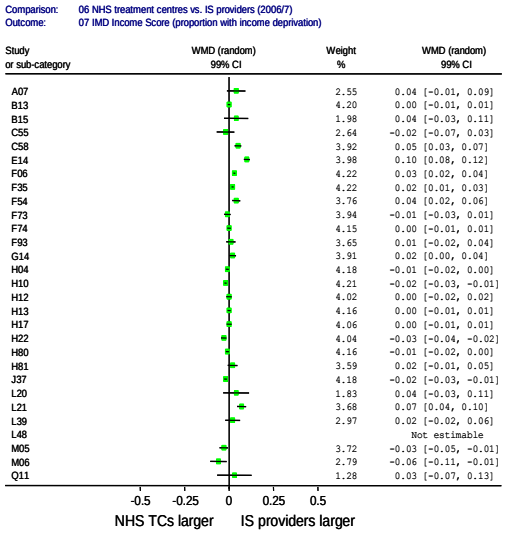
Pooled effect: weighted mean difference -0.031; 99% confidence interval -0.04 to -0.02

Figure 40: Forest plot for differences in IMD (income deprivation): NHS hospitals vs. IS providers (2006/7)



Pooled effect: weighted mean difference -0.021; 99% confidence interval -0.03 to -0.01

Figure 41: Forest plot for differences in IMD (income deprivation): NHS Treatment centres vs. IS providers (2006/7)



Pooled effect: weighted mean difference 0.011; 99% confidence interval 0.00 to 0.02

1 Technical Appendix 1. Price adjustment vs. specific payments

The costs of private providers may differ from the costs of public providers in four main respects. First, labour costs may differ because of different recruitment costs or pensions contributions; second, capital cost might differ for private providers because of the risk premium paid on interest rates (which might also be related to the higher risk for private providers of business closing); third, cost of other inputs (like medicines) may be different due to different VAT regimes; fourth, public and private providers might differ in the degree of efficiency.

There are two potential methods to correct for these differences: 1) the first is to use a differential tariff; 2) the second is to use specific payments.

We show below that the two methods are equivalent if the tariff is correctly calculated and when differences in costs reflect differences in the variable costs. If differences in costs are due to differences in fixed costs, then specific payments should be preferred.

1.1 One input, constant returns to scale

Purchaser pays a price p for each unit of quantity q provided. There is one input, labour L (for example the number of doctors, nurses or admin staff), with unit cost w. The production function exhibits constant returns to scale: $q = L/\gamma$, where γ is a positive parameter. t is defined as the extra labour cost for example due to higher pension contributions as a proportion of salary.

The cost function is $C = wL(1+t)$. If $t = 0$ then the public and private provider have the same cost. If $t > 0$ the public provider has a higher cost than the private provider. If $t < 0$ the private provider has a higher cost than the public provider. Substituting in the production function, the cost function is: $C(q) = w\gamma(1+t)q$.

The utility of the provider is given by the difference between revenues and monetary and non-monetary costs: $U = pq - C(q) - \varphi(q)$ where $\varphi(q)$ is non-monetary disutility of providing quantity q, with $\varphi'(q) > 0$ and $\varphi''(q) > 0$.

The optimal level of quantity q is such that:

$$p = w\gamma(1+t) + \varphi'(q) \tag{1}$$

Suppose that the optimal quantity is the one currently provided by public providers, with $t = 0$, so that $p^* = w\gamma + \varphi'(q^*)$. What is the tariff, call it p^p for the private sector, that would lead to the same quantity? It is:

$$p^p = p + tw\gamma \tag{2}$$

The Proof is straightforward. The private provider maximises $p^p q - w\gamma(1+t)q - \varphi(q) = (p + tw\gamma)\, q - w\gamma(1+t)q - \varphi(q)$, whose FOC is: $p + tw\gamma = w\gamma(1+t) + \varphi'(q)$ or $p = w\gamma + \varphi'(q)$, which proves the result.

However, the same solution can be obtained by reimbursing the provider the cost twL, ie giving a subsidy of t on labour cost. If this is the case, the problem of the private provider is to maximise: $pq - w\gamma(1+t)q - \varphi(q) + twL$, or after substitution: $pq - w\gamma(1+t)q - \varphi(q) + tw\gamma q = pq - w\gamma q - \varphi(q)$.

Proposition 1 *Public and private providers are subject to the same incentives (ie they will produce the same quantity) if either (i) the private provider is paid a price: $p^p = p + tw\gamma$, where p is the price of the public provider and $t \gtrless 0$ is the difference in costs between the two types of provider; (ii) the private provider receives a transfer t on the labour input, with an overall transfer of twL, where w is the salary of labour.*

Notice that the two methods have the same cost for the purchaser. Under method 1 the cost for the purchaser is: $tw\gamma q = twL$, which is identical to the cost under method 2.

1.2 More than one input, constant returns to scale

The above analysis holds also with more than one input. Define L, K and I as labour input, capital input and other inputs (medicines, tests and so on). The cost of each unit of input is w, r, n which stand for salary, interest rate on capital and cost of medicines and so on.

The cost function is in this case: $C = w(1+t)L + r(1+h)K + n(1+v)I$, where t is contributions on pensions, h is risk premium paid on interest rates and v is VAT.

Under constant returns to scale the cost function is:

$$C(q) = c(w(1+t), r(1+h), n(1+v), 1)q \tag{3}$$

where $c(.)$ is the cost of one unit of output. As in the above section, the marginal cost of activity is constant and the result presented in proposition 1 holds.

1.3 Differences in fixed costs

Suppose that the two types of provider differ in the fixed costs only. Define F^{pub} and F^{pri} as the fixed costs for public and private providers.

The problem of each provider is to maximise $pq - C(q) - F$. Regardless of the fixed cost, the optimal quantity is such that $p = C'(q)$.

It is immediate that differential tariffs will lead to differential quantities. Therefore, differences in fixed costs should be reimbursed through different ad-hoc lump-sum transfers or specific payments.

1.4 More than one input, decreasing returns to scale

Define L, K and I as labour input, capital input and other inputs (medicines, tests and so on). The cost of each unit of input is w, r, n which stand for salary, interest rate on capital and cost of medicines and so on.

1.4.1 Private sector

The cost function is: $C = w(1+t)L + r(1+h)K + n(1+v)I$, where t is extra contributions on pensions, h is risk premium and v is VAT. The revenues for the provider are pq. The production function is: $q = f(L, K, I)$. We assume that the production function exhibits decreasing returns to scale due to some fixed inputs (for example the number of beds).

The provider chooses 1) the optimal quantity and then 2) implements it through the optimal combination of inputs which minimises total costs. We solve by backward induction.

In stage 2 the provider minimises costs subject to the production of a given quantity:

$$\begin{aligned} \min_{L,K,I} \quad C &= w(1+t)L + r(1+h)K + n(1+v)I \\ \text{subject to} \quad &: \quad q = f(L, K, I) \end{aligned} \tag{4}$$

The lagrangian is $l = w(1+t)L + r(1+h)K + n(1+v)I + \lambda\left[q - f(L, K, I)\right]$. The First Order Conditions with respect to the three inputs are:

$$l_L(L^*) = 0: \quad w(1+t) = \lambda f_L(L, K, I) \tag{5}$$

$$l_K(K^*) = 0: \quad r(1+h) = \lambda f_K(L, K, I) \tag{6}$$

$$l_I(I^*) = 0: \quad n(1+v) = \lambda f_I(L, K, I) \tag{7}$$

where $\lambda = l_q$ is the opportunity cost of increasing quantity by one unit. We assume that the problem is well behaved and the SOCs are satisfied. The optimal level of the inputs are: $L^*(q, w, r, n, t, h, v)$, $K^*(q, w, r, n, t, h, v)$, $I^*(q, w, r, n, t, h, v)$. Substituting in the cost function we obtain:

$$\begin{aligned} C(q, w, r, n, t, h, v) = \; & w(1+t)L^*(q, w, r, n, t, h, v) \\ & + r(1+h)K^*(q, w, r, n, t, h, v) \\ & + n(1+v)I^*(q, w, r, n, t, h, v) \end{aligned} \tag{8}$$

Using the envelope theorem, we obtain:

$$\frac{dC}{dt} = wL^* > 0; \frac{dC}{dh} = rK^* > 0; \ \frac{dC}{dv} = nI^* > 0. \tag{9}$$

Not surprisingly, the cost is increasing in the determinants of the cost differential. And,

$$\frac{dC}{dq} = w(1+t)\frac{dL^*}{dq} + r(1+h)\frac{dK^*}{dq} + n(1+v)\frac{dI^*}{dq} > 0 \tag{10}$$

Define p^p as the price in the private sector. In the first stage the provider chooses quantity to maximise the difference between revenues and costs:

$$\max_q \ p^p q - C(q) \tag{11}$$

whose FOC is:

$$q^*: \ p^p = w(1+t)\frac{dL^*}{dq} + r(1+h)\frac{dK^*}{dq} + n(1+v)\frac{dI^*}{dq} \tag{12}$$

The optimal quantity is achieved at the point when the marginal benefit is equal to the marginal cost.

1.4.2 Public sector

In stage 2 the provider minimises costs subject to the production of a given quantity:

$$\min_{L,K,I} C = wL + rK + nI \quad \text{s.t. } q = f(L,K,I) \tag{13}$$

The lagrangian $l = w(1+t)L + r(1+h)K + n(1+v)I + \lambda[q - f(L,K,I)]$. The First Order Conditions with respect to the three inputs are:

$$\begin{aligned} l_L(L^{**}) &= 0: \ w = \lambda f_L(L,K,I) \\ l_K(K^{**}) &= 0: \ r = \lambda f_K(L,K,I) \\ l_I(I^{**}) &= 0: \ n = \lambda f_I(L,K,I) \end{aligned} \tag{14}$$

where $\lambda = l_q$ is the opportunity cost of increasing quantity by one unit.

The marginal cost of activity is

$$\frac{dC}{dq} = w\frac{dL^{**}}{dq} + r\frac{dK^{**}}{dq} + n\frac{dI^{**}}{dq} \tag{15}$$

The price in the public sector is given by p. The problem is to maximise the difference between revenues and costs:

$$\max_q \quad pq - C(q) \tag{16}$$

whose FOC is:

$$q^{**}: \quad p = w\frac{dL^{**}}{dq} + r\frac{dK^{**}}{dq} + n\frac{dI^{**}}{dq} \tag{17}$$

The optimal quantity is again achieved at the point when the marginal benefit is equal to the marginal cost.

1.4.3 Comparison

What is the optimal price p^p such that $q^{**} = q^*$? It is such that

$$q^{**} : p = w\frac{dL^{**}}{dq} + r\frac{dK^{**}}{dq} + n\frac{dI^{**}}{dq} \tag{18}$$

$$q^{*} : p^p = w(1+t)\frac{dL^{*}}{dq} + r(1+h)\frac{dK^{*}}{dq} + n(1+v)\frac{dI^{*}}{dq} \tag{19}$$

Notice that $\frac{dL^*}{dq} = \frac{dL^{**}}{dq}$, $\frac{dK^*}{dq} = \frac{dK^{**}}{dq}$ and $\frac{dI^*}{dq} = \frac{dI^{**}}{dq}$. The following proposition can be established.

Proposition 2 *Public and private providers are subject to the same incentives (ie they will produce the same quantity) if either (i) the private provider is paid a price:*

$$p^p = p + wt\frac{dL^{*}}{dq} + rh\frac{dK^{*}}{dq} + nv\frac{dI^{*}}{dq} \tag{20}$$

where p is the price of the public provider; ii) the private provider receives a subsidy t on the labour input, a subsidy h on capital input and a subsidy v on other inputs with an overall subsidy of $twL + hrL + vnI$.

The above equation suggests that the price in the private sector is equal to the price in the public sector plus the extra marginal cost sustained in the private sector.

Again, by adjusting the price accordingly the two systems are equivalent.

1.5 Welfare analysis

The models developed so far imply that the correction in tariff is such that the quantity produced by the two providers is the same in equilibrium.

In this section we derive the optimal quantities from a social welfare point of view. Typically the optimal quantities will differ across providers and this has implications for the corrections on the optimal tariffs.

The main result shown below suggests that the price for the provider with higher cost is always higher than the price for the provider with lower cost, but that the difference in prices is smaller than the difference in the marginal cost.

The welfare function is given by the sum of consumer welfare and provider profit. Net consumer welfare is: $B(q) - pq$ while profit is given by: $pq - C(\theta, q)$, where θ is a parameter of the cost function. We assume that θ can have two values $\overline{\theta}$ and $\underline{\theta}$, which stands respectively for high cost and low cost. We also assume: $B_q > 0$, $B_{qq} < 0$, $C_q(\overline{\theta}, q) > C(\underline{\theta}, q) > 0$ and $C_{qq}(\theta, q) > 0$. The proportion of high-cost hospitals is λ. Total welfare is then: $[B(q) - pq] + [pq - C(\theta, q)] = B(q) - C(\theta, q)$. The optimal quantities for the two types satisfy:

$$B_q(q^*(\theta)) = C_q(\theta, q^*(\theta)) \tag{21}$$

If the marginal cost is higher for the provider with higher θ, then it follows that:

$$q^*(\underline{\theta}) > q^*\left(\overline{\theta}\right) \tag{22}$$

Intuitively, since the marginal cost is higher for the high-cost type, the optimal quantity is lower. The regulator has two instruments, ie $p(\underline{\theta})$ and $p\left(\overline{\theta}\right)$. The optimal prices are set such that:

$$\begin{aligned} p^*\left(\overline{\theta}\right) &= B_q(q^*\left(\overline{\theta}\right)) = C_q(\overline{\theta}, q^*\left(\overline{\theta}\right)) \\ p^*(\underline{\theta}) &= B_q(q^*(\underline{\theta})) = C_q(\underline{\theta}, q^*(\underline{\theta})) \end{aligned}$$

Notice that the price for the high-cost type is higher:

$$\Delta p = p^*\left(\overline{\theta}\right) - p^*(\underline{\theta}) = B_q(q^*\left(\overline{\theta}\right)) - B_q(q^*(\underline{\theta})) > 0$$

Since the quantity of the high-cost type is lower, $q^*\left(\overline{\theta}\right) < q^*(\underline{\theta})$, the marginal benefit is higher and the optimal tariff is higher. Also,

$$\begin{aligned} \Delta p &= p^*\left(\overline{\theta}\right) - p^*(\underline{\theta}) = C_q(\overline{\theta}, q^*\left(\overline{\theta}\right)) - C_q(\underline{\theta}, q^*(\underline{\theta})) \\ &= \left[C_q(\overline{\theta}, q^*\left(\overline{\theta}\right)) - C_q(\underline{\theta}, q^*\left(\overline{\theta}\right))\right] - \left[C_q(\underline{\theta}, q^*(\underline{\theta})) - C_q(\underline{\theta}, q^*\left(\overline{\theta}\right))\right] \\ &< \left[C_q(\overline{\theta}, q^*\left(\overline{\theta}\right)) - C_q(\underline{\theta}, q^*\left(\overline{\theta}\right))\right] \end{aligned}$$

The first term is the difference in the marginal cost of producing the quantity of the high-cost type. The second term in bracket is the difference in the cost of producing the two optimal quantities for the low-cost provider. Therefore, the difference in the price is below the difference in the marginal cost when evaluated at $q^*\left(\overline{\theta}\right)$.

Similarly,

$$\begin{aligned}\Delta p &= p^*\left(\overline{\theta}\right) - p^*\left(\underline{\theta}\right) = C_q(\overline{\theta}, q^*\left(\overline{\theta}\right)) - C_q(\underline{\theta}, q^*\left(\underline{\theta}\right)) \\ &= \left[C_q(\overline{\theta}, q^*\left(\underline{\theta}\right)) - C_q(\underline{\theta}, q^*\left(\underline{\theta}\right))\right] - \left[C_q(\overline{\theta}, q^*\left(\underline{\theta}\right)) - C_q(\overline{\theta}, q^*\left(\overline{\theta}\right))\right] \\ &< \left[C_q(\overline{\theta}, q^*\left(\underline{\theta}\right)) - C_q(\underline{\theta}, q^*\left(\underline{\theta}\right))\right]\end{aligned}$$

The first term is the difference in the marginal cost of producing the efficient quantity. The second term in bracket is the difference in the cost of producing the optimal quantities. Therefore, the difference in the price is below the difference in the marginal cost also when evaluated at $q^*\left(\underline{\theta}\right)$.

In summary,

Proposition 3 *The difference in prices is smaller than the difference in the marginal cost between the high-cost and the low-cost provider.*

The main policy implication of this section is that the difference in the price for the high-cost and low-cost provider should be smaller than their difference in the marginal cost. This arises because since the marginal benefit is decreasing, the optimal quantity for the high-cost provider is smaller than for the low-cost provider.

As special cases we can show that if the marginal benefit of care is constant, then the difference is prices is zero, $\Delta p = 0$ (proofs omitted). In contrast is the marginal benefit is infinitely inelastic (the demand curve is a vertical line), then the difference is prices is equal to the difference in the marginal cost.

Notice that if instead of prices, we use *specific payments*, a similar result arises. The specific payments should be designed in such a way that only a proportion of input costs are reimbursed to the provider.

2 Technical Appendix 2. PCTs and price adjustment

Consider a PCT and two providers. The number of referrals for a PCT (or quantity demanded) are q_1^d and q_2^d respectively for providers 1 and 2.

We want to analyse two scenarios: 1) the price adjustment is delegated to the PCTs: PCTs have to pay a higher price for the provider with higher costs; 2) price adjustment is top sliced: the PCT pays the same price for both providers and the extra cost is paid directly by the Department of Health (DoH).

The benefit for the patient's population covered by the PCT from treatment in hospitals 1 and 2 is $B(q_1^d, q_2^d)$. Under scenario 1 the PCT pays price p_1 and p_2 respectively for providers 1 and 2, with $p_1 < p_2$ and receives a fixed budget F^A. Under scenario 2 the PCT pays price $p = p_1$ (the lowest price) for both providers and receives a fixed budget $F^B < F^A$ (the DOH retains some money to make up for the extra price compensation).

To avoid corner solutions, we assume that the two hospitals are imperfect substitutes (this may be due to different locations for example).

2.1 Scenario 1

We assume that the PCT maximises benefits for the patients subject to a budget constraint, ie it maximises:

$$\max_{q_1^d, q_2^d} B(q_1^d, q_2^d) \text{ s.t. } p_1 q_1 + p_2 q_2 \leq F^A \tag{23}$$

Define λ the lagrangian multiplier. Assuming that the budget constraint is binding, the optimal quantities are given by:

$$B_{q_1^d} = \lambda p_1 \tag{24}$$

$$B_{q_2^d} = \lambda p_2 \tag{25}$$

Since the model is symmetric and $p_1 < p_2$ it follows that $q_1^d > q_2^d$ i.e. the quantity demanded from provider 1 is higher than the quantity demanded from provider 2.

2.2 Scenario 2

If the payment is top sliced, then the problem is

$$\max_{q_1^d, q_2^d} B(q_1^d, q_2^d) \text{ s.t. } p_1(q_1 + q_2) \leq F^B \tag{26}$$

and the optimal quantities are:

$$B_{q_1^d} = \lambda p_1 \quad (27)$$

$$B_{q_2^d} = \lambda p_1 \quad (28)$$

so that $q_1^d = q_2^d$.

2.3 Discussion

We have shown, as is intuitive, that if the PCT pays different prices for different providers, it will demand more treatment from the hospital which has the lowest price. If the DoH wants to create a fair-playing field, in this case the hospital with higher cost will be disadvantaged.

However, even if the demand for treatment is different, this does not imply that the supply is different. If there is excess demand, the optimal quantity supplied by both providers might be lower than the one demanded by the PCT and therefore, both providers will provide their optimal quantity in equilibrium. It is only when there is excess supply that the provider with higher price is disadvantaged because it receives a lower number of referrals and therefore treats fewer patients.