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# **Doing More For Less: Paediatric Cardiac Surgery After the Financial Crisis Transcript**

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**Doing More For Less:  
Paediatric Cardiac Surgery After The Financial Crisis**

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**Introduction**

I realise I am taking a risk in talking about money and resources, but repairing congenital heart defects is expensive. Without being 'in'the work, it is difficult to imagine how that expense accumulates, and working out detailed costs per patient is notoriously difficult, especially in the NHS. However, we do know that costs vary widely across the world, for apparently similar outcomes. Two things have triggered this talk: -

1. The financial crisis and its consequences, including a policy of austerity
2. A challenge from Devi Shetty, a friend and colleague in Bangalore, India, who asked me 'what moral right have you got to charge \$50,000 for a case which I can do for less than \$3000?'

This latter question has kept me awake at night, because it gets to the heart of some of the major issues facing healthcare in general and the NHS in particular. It is also a question directly relevant to my role as Medical Director of an NHS Foundation Trust, a £450 million turnover business, which, like all other FTs, is under massive financial pressure. How can we do what we do for less?

In order to answer this question, I need first to explain to you what contributes to the cost of care of a child with congenital heart disease. I will then cover briefly the impact of the financial crisis on our finances, and particularly on how that, and a subsequent government policy of austerity, has altered the resources available to us. I will also need to explain how the NHS landscape has changed, and how we are paid for what we do. At the end I will consider some radical options for cost reduction, and hope they will cause you to think about what could and should happen to facilitate the delivery of world-class highly specialised services in England.

The passage of a patient through the health system has come to be called a *pathway*. I want you to accompany a representative child with tetralogy of Fallot along this pathway, from diagnosis *in utero* to follow up through life. On the way we will add up the components of cost (cost drivers), and between us we can work out a guesstimate of total cost. I have chosen tetralogy of Fallot firstly, because it is neither the simplest nor the most complex condition we treat, and it is treated everywhere in the world, whereas some of the conditions at the very complex end of the spectrum are not treated in some countries for a variety of reasons, usually resource-based. Secondly, I have chosen Fallot because, amazingly, it is the only congenital heart condition for which lifetime costs and benefits have been formally assessed. Let me remind you what tetralogy of Fallot is.

**Tetralogy of Fallot**

Tetralogy of Fallot is a serious but repairable heart abnormality, characterized by having a narrowed way out of the right heart to the lungs, involving a smaller than normal pulmonary valve and thickened muscle below it. The arteries leading to the lungs are often small too, and there is always a big hole between the right and left ventricles, called a ventricular septal defect or VSD. Because it is harder to get blood to flow through the narrowed outlet of the right ventricle than it is to flow across the VSD, deoxygenated blue blood is shunted from right to left across the VSD into the left ventricle and out into the aorta and around the body. Less blood gets to the lungs than should, and these things combine to mean that the child looks blue, most easily seen around the mouth and fingers.

The condition can be repaired in one operation, by closing the VSD and enlarging the outflow from the right ventricle. This is usually done at around the age of 3-6 months but varies. Some children need something done immediately after birth to tide them over until they are large enough for a safe repair, and they can be helped by a shunt, ballooning the pulmonary valve or perhaps by stenting open the arterial duct. After repair, children need regular follow up and many need to have the pulmonary valve replaced as adolescents or young adults. Follow up is life-long.

**How does the Cost Accumulate?**

The following table illustrates the components of cost and highlights the underlying contributions of other

factors.

Item	Equipment	Staff	Comment	Approx. Cost (£)
Generic Fetal Scan	Ultrasound Scanner	Sonographer	3-5 y training, ≈£25 -30,000	200.00
Fetal Cardiac Scan	Cardiac US Scanner	Cardiac Sonographer/Paediatric Cardiologist	7 years training, ≈£30,000 + cardiologist 15 years training ≈£90,000	400.00
Cardiac Scan	Cardiac US Scanner	Cardiac Sonographer/Paediatric Cardiologist	7 years training, ≈£30,000 + cardiologist 15 years training ≈£90,000	400.00
MDT	AV equipment, EPR	Multiple Staff		3000.0
Shunt Episode	ICU, OP Room	Nurses (1:1), intensivists (>3 per shift), surgeons (>3), anaesthetists (>2), scrub nurses (2), technicians (>2), physios, pharmacists, admin staff	Move from ICU, to OR then to ICU, HDU, Ward	30,000.00
Clinic Visits	Cardiac US Scanner	Cardiac Sonographer/Paediatric Cardiologist	7 years training, ≈£30,000 + cardiologist 15 years training ≈£90,000	400.00
Repair	ICU, OP Room	Nurses (1:1), intensivists (>3 per shift), surgeons (>3), anaesthetists (>2), scrub nurses (2), technicians (>2), physios, pharmacists, admin staff	Move from ICU, to OR then to ICU, HDU, Ward	30,000.00

It is impossible to detail all the costs, but the principles I want to get over are that the work is specialised, labour intensive, and complex. Before I go into the threats to funding, I think it is reasonable to ask if it is worth spending money in general.

The purpose of treatment of these conditions is to both extend the duration of life and to improve its quality, such that patients with the abnormality can leave a full and contributory life. The most widely accepted (although still controversial) measure to describe is the QALY or quality-adjusted life year. The QALY is based on the number of years of life that would be added by the intervention. Each year of perfect health is assigned the value of 1.0, down to a value of 0.0 for being dead. If quality of life is reduced, then the extra life years are given a value between 0 and 1. In other words, half a year lived in perfect health is equivalent to 0.5 QALYs (0.5y x 1 utility), which is the same as 1 year of life lived with a utility of 0.5 (e.g. bedridden) (1.0y x 0.5 utility). Various weightings can be applied, of which the most used come from standardized quality of life assessment scores such as the EQ5D questionnaire.

A recent paper<sup>1</sup> from members of the GOSH team reviewing all 1085 patients who had repair of tetralogy of

Fallot at GOSH between 1964 and 2009, clearly shows the QALY benefit of treatment for tetralogy of Fallot, with operative treatment being associated with an average of 35 QALYs versus only 3 without treatment. That paper also calculated indicative costs normalizing at 2010-11 prices. The cost of the admission involving repair was approximately £30,000 or \$45,000 US, this amounts to roughly 40% of the mean lifetime cost per patient which was around £65,000 or \$98,000 US. These are just the sums that Shetty challenges.



### **How is this paid for?**

The underlying principle of the NHS is good healthcare, free at the point of delivery. In the first full year after the NHS was founded in 1948, the Government spent £11.4 billion on health. By 2010, this had risen 10-fold to £121 billion, whereas GDP and total public expenditure had increased by a factor of 4.8 in the same period<sup>2</sup>. The vast majority of NHS funding ultimately derives from central (UK) taxation. Within the block grant to each devolved administration (via the Barnett formula) each country is free to decide how much to spend on the NHS. The NHS can raise income from patient charges (co-payments) and each country can set their own levels. Examples include prescription and dental charges and private patient income.

How cash is distributed within the NHS has changed multiple times during my career, as has the structure by which it is governed and managed<sup>3</sup>. It was relatively simple when it all started, with few layers of management, but has morphed into something of a monster. Particularly since the 1980's, when the purchaser:provider split was introduced during the Thatcher years, creating an 'internal' or 'quasi' market aimed to promote competition among providers in the hope of replicating the benefits markets were considered to bring about in the private sector. These benefits were expected to be decreases in costs, and increases in efficiency, quality, innovation and 'provider responsiveness'. Whilst there have been improvements in many of these over time, they have been surprisingly modest, and an excellent review of literature published by Civitas<sup>4</sup> pointed to the difficulty in allocating any improvement to the creation of the internal market, because of the continuous change in organization. However, that report did point out that NHS *culture* had changed, with a shift of power from hospitals to primary care and from providers to purchasers. The failure to deliver the benefits promised has been attributed to one or all of these three factors: -

1. Refusal to create a 'real' market (e.g. existence of political interference, barriers to exit and entry)
2. Weak incentives to engage participants and break historical patterns
3. Lack of a stable policy environment to inspire commitment from staff.

The mechanism by which hospitals like mine get paid for what they do is called Payment by Results (PbR), although payment for activity might be a better term. For those of you who would like a more detailed explanation of this system, there is a fairly friendly guide on the Internet; ([https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/213150/PbR-Simple-Guide-FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213150/PbR-Simple-Guide-FINAL.pdf)). PbR is paid to Providers by Commissioners, based on nationally determined *currencies* and *tariffs*. *Currencies* are the unit of healthcare for which a payment is made (e.g., an outpatient attendance or stay in hospital for treatment) and the *tariff* is the set price for each currency, based on the national average costs supplied by providers corrected by a market forces factor or MFF. The payments are based on coded data grouped into things called Healthcare Resource Groups or HRGs, because there are so many individual codes for diagnoses and procedures. Here are a couple of worked examples from the NHS Guidance.

	<b>Mrs Smith</b>	<b>Mr Jones</b>
<b>The patients<sup>3</sup></b>		
<b>Treatment</b>	Elective caesarean during a 7 day spell in April	Emergency admission for fragility hip fracture in April
<b>Code</b>	ICD-10 codes are <b>O300 (twin pregnancy)</b> and <b>Z37.2 (twin both live born)</b>  OPCS-4 code is <b>R17.2 (elective lower uterine segment caesarean delivery)</b>  Submitted to SUS in May	ICD-10 codes are <b>S7200 (fractured neck of femur)</b> and <b>W19.0 (unspecified fall at home)</b>  OPCS-4 codes are <b>W37.1 (primary total prosthetic replacement of hip joint using cement)</b> and <b>Z94.3 (left sided operation)</b>  Submitted to SUS in May
<b>Group</b>	HRG payment currency is <b>NZ13A (planned lower uterine caesarean section with complications)</b>	HRG payment currency is <b>HA12C (major hip procedures category 1 for trauma without complications and comorbidities)</b>
<b>Tariff</b>	Elective and non-elective spell tariff is <b>£2,704</b>	Base tariff is <b>£5,323</b>
<b>Tariff adjustments</b>	The expected length of stay for NZ13A is 5 days. A <b>long stay payment</b> of £394 is payable for each additional day's stay, in this case 2 days.	There is a best practice tariff for fragility hip fracture which applies to HA12C and some other HRGs.  An <b>additional best practice payment</b> of £1,335 is payable where care complies with clinical characteristics of best practice. In this case, surgery within 36 hours of arrival in A&E, under expert care of a consultant geriatrician.
<b>MFF</b>	<b>Guy's and St Thomas'</b> has an MFF payment index of <b>1.2770</b>	<b>Leeds Teaching's</b> MFF is <b>1.0461</b>
<b>Reimbursement</b>	Total payment is:  $(£2,704 + (2 \times £394)) \times 1.2770 =$ <b>£4,459</b>  SUS extract in July informs monthly reconciliation between NHS Lambeth and Guy's and St Thomas'	Total payment is:  $(£5,323 + £1,335) \times 1.0461 =$ <b>£6,965</b>  SUS extract in July informs monthly reconciliation between NHS Leeds and Leeds Teaching

It is easy to understand that simply *administering* this system has added operating costs to the NHS. Records to keep, coders to code, information services to maintain, software to manage, negotiators to negotiate and finance directors to worry. There are annual negotiations between providers and commissioners, and of course all providers are trying to maximize income and all commissioners to limit expenditure. Some argue that the lack of a true market limits the effectiveness of this approach [because providers cannot set prices and truly compete], whilst others argue that the very presence of this pseudo-market generates inefficiency and wastes resources that could otherwise be spent on integrated patient care. These clearly reflect both the divisions between right and left in politics, and the important role that the NHS plays in politics in England.

Despite these complexities, spending on the NHS in 2010 remained close to the European average of 8.9% of GDP, compared with 17.7% in the US where market forces predominate. The Commonwealth Fund recently reported<sup>5</sup> that the UK had the best healthcare system in the world, and it was in a very good place for continued improvement.

Complex though the internal 'market' was from the start, it is as nothing compared to what it has become. Since the 1980's, there have been many changes to the NHS, creating the unstable political framework described by Civitas in its report. The risks of this instability became particularly relevant to the morale of NHS staff around the time of the last election when, after promising absolutely no top-down reform of the NHS, the newly elected government (under the auspices of Andrew Lansley) launched the biggest changes in its history; a change so big '*it could probably be seen from space*', according to Sir David Nicholson, then the CEO of the NHS. It is worth spending a few moments describing these structural changes.

As I have said the basic structure in 1948 was relatively simple, but did separate local from hospital services from the start. The need better to integrate these services was recognized in the 1974 reforms, but the structure was understandable, with direct lines of accountability. What has emerged over the years, and particularly after the Lansley reforms, is massively complex. Not only are its funding and governance structures hard to follow, but there are so many methods to influence its system, so many groups to consult and give advice, and so much space within the legislation to stifle decisions, that it looks, in my view, destined to fail.

The bottom line for specialist cardiac care is that it is commissioned directly from NHS England via regional, teams, in our case the NHS England London office. They are our direct paymasters, but ultimately the amount

of money going into the NHS is decided by the Government of the day, with policy initiatives and NHS England decisions governing how income is distributed between the various segments (primary care, secondary care, specialist care etc.).

You will all have been affected by the financial crisis of 2008. It was a truly cataclysmic event, but one which many people, especially people like me with very limited financial nous, still struggle fully to understand. For those of you who appreciate explanations of money matters in non-technical jargon (when I have to talk to finance people, I can just imagine how hard it must be for my patients to talk to me), I can recommend John Lanchester's 2010 book, *Whoops!*<sup>6</sup>. He begins the book with a thought experiment proposed by the mathematician John Allen Paulos<sup>7</sup>, in considering the big numbers used in finance. Without doing the calculation, Allen-Paulos asks you to consider how long is 1 million seconds. The answer is roughly 11.6 days. Now think how long is 1 billion seconds. The answer is 31.7 years! And 1 trillion seconds; the answer, easier to calculate, is 31,700 years. These experiments add useful scale to the numbers I am about to show you, put together in 2009.

There is a wonderful animation by David McCandless from 'Information is Beautiful' describing some relative values in 2009 (<http://www.informationisbeautiful.net/2010/debtcrisis/>). The sheer scale of the cost of the financial crisis is instantly visible in this animation and sets the context for the years that have followed, as both governments and central banks diverted or created money to bail out the commercial banks and maintain the viability of markets and the security of private assets.

There was an immediate impact on our national deficit (the amount we have to borrow to bridge the gap between income and expenditure), which peaked at around 11% of GDP in 09-10 and the economy went into recession. The Coalition government, in common with many others in Europe, began a policy of *austerity*, partly 'to reassure the markets'. Austerity involves policies designed to reduce government spending or raise taxes to try [or both] and reduce government deficits, as such they have usually been associated with higher unemployment and lower economic growth. The coalition reduced expenditure by £85 billion from April 2010, 15% using tax rises and 85% in spending cuts<sup>8</sup>. It is the third largest austerity package in Europe. Capital spending was slashed, there were extensive public sector job losses, and those still employed experienced (and are still experiencing) wage freezes. Subsequent reductions in deficit have only been about 50% of the target the government set themselves, although the OBR predicts more significant reductions over the coming 5 years. Many economists have proposed that austerity is harmful because it suppresses growth; reducing tax take by either increasing unemployment or reduced spending. The IMF recently announced<sup>9</sup> that it had 'underestimated the negative effect of austerity on jobs and spending power'. Reeves et al<sup>9</sup> make a convincing case that we have also underestimated the consequences on health inequalities.

Some have interpreted the austerity policies as a means directly to reduce the size of the state. In the UK, state expenditure makes up just under 40% of GDP, compared with 30% in the USA and New Zealand, and 50% in France. If you decide to reduce the proportion of state spending by austerity measures, there will be an inevitable reduction in demand unless others in the private sector step into the void. You have to rely on enough private resources being, freed up to stimulate growth. For a fuller account of the arguments against austerity policies, see Mills and Gould<sup>10</sup>.

Others have considered that austerity is simply good 'housekeeping', fixing the roof while the sun is shining. And we are going to need a good roof in the 2020's when the pension and health consequences of demographic changes take hold, as the baby-boomers age.

Such decisions as these are the domain of politicians, and we will have the opportunity to choose between their different approaches in May.

Actually, compared with other public services and especially local government, the NHS has got off relatively lightly, its budget being ring fenced, but missing the growth that had occurred during all previous administrations. But with an aging population, changing demographics, increasing health inequality as incomes diverge, and raised public expectations, the pressure on the NHS has been immense. Especially coming as it did in the middle of the massive and expensive Lansley reforms. Previous contract agreements with staff have left the system with a significant internal inflation rate for wages and drug costs are rising rapidly.

The impact of austerity on the NHS has been profound, and we are only half way through the programme, if that. In addition, the increasing demand on primary care and emergency services has caused NHS England to divert resources from specialist services like mine towards those demands. We will have much less cash to do our job in coming years, and the financial viability of many organisations will be at risk. How do I know that? Well here are the views of NHS Foundation Trust Finance directors. There are going to be some very difficult decisions to be made

Although my work exists in the small print of health care, it is also at the cutting edge, and continues to make important R&D contributions. We have also been a success, in terms of outcomes as I have shown in these talks before. But we are expensive, for the reasons I showed you earlier. If we were a business, large parts of the NHS would need to be in 'turnaround', and if you are in turnaround, the first thing you have to do, as John Moulton has said, is to 'get control of your costs'.

Can we really justify our current costs and is there a different, and better, way in which we can do our work and, if there is, would the result of aggressive cost-cutting be both acceptable to the population in the UK and implementable?

At the start of this lecture I mentioned the challenge of Devi Shetty. It was a challenge he first made a few years ago when the Wall Street Journal described him<sup>11</sup> as 'The Henry Ford of Heart Surgery'. Shetty was born in Mangalore, the 8<sup>th</sup> of 9 children. He planned early in his schooling to be a doctor, but became hooked on cardiac surgery when a teacher told him of Chris Barnard's first heart transplant. After graduating in India, Shetty came to London, where he spent 6 years at Guy's before returning to direct a heart hospital in Calcutta, funded by the affluent Birla family. He soon realised that few patients in India could not afford the high cost of cardiac surgery, especially so the parents of young children. In India, health care provision is patchy and few people are covered by insurance. They have to pay.

He was very influenced by the humility of Mother Theresa upon whom he had to operate, and a version of one of her favourite sayings still adorns his office wall; "Hands that serve are more sacred than lips that pray". Shetty's father in law owned a large construction company and agreed to build and finance a large hospital on 25 acres of former marshland on the outskirts of Bangalore. This was the start of the Narayana group of hospitals, and the beginning of a journey of cost reduction.

The strategies Shetty's group has adopted are as follows.

The use a very 'asset-light' model, in which they have invested in green field sites developed such that the group itself owns the buildings and the land. In the NHS, so many of our hospitals are on expensive inner-city sites, and with the current accounting rules, those costs have to appear in the Trusts accounts, adding to the costs of care.

Narayana also have agreements that allow them to run their services in hospitals owned and run by others. Within the Narayana area however of those hospitals, the group 'owns' both equipment and staff. There are very few models like this in the NHS, with Moorfield's eye services being the best example.

All the units they build are designed for high volume, high patient flow practice, and increasingly use very low cost construction techniques, particularly using prefabricated units and, on the green field sites, single storey construction. They are not luxurious. Some of you may remember that this was a very common mode of building hospitals in England after the war, some of which are still surviving. They were built that way for the same reasons.

They cluster single specialty hospitals in campuses, with 4-6 buildings providing 2000 to 5000 beds sharing core facilities to reduce cost. Accommodation and training are available on site for staff, to encourage recruitment and retention, and creating more local economic stimulation. This is how it was in the early days of the NHS, when nursing homes and doctors residences were the norm. Many of those NHS assets (the like of which Shetty has found to be so valuable in India), were sold off in the Thatcher era after being judged to be luxury assets, not delivering a return at market value.

Doing more each day and each week. Routine elective work in Shetty's hospitals starts earlier in the day, and finishes later in the evening, and they operate on elective cases 6 days a week per operating room. Surgical and anaesthetic teams work more hours than their English colleagues are contracted to do, and they are doing what they love doing, operating, for most of that time. Efficiency is rewarded; poor timekeeping is disciplined.

In England, in most hospitals operating lists start after 0800, and patients are only sent for under the instruction of the anaesthetist. In Bangalore, the patient is delivered to the operating room, and the anaesthetist is expected to be there. This saves hours each day. Importantly, enough staff are employed to overlap cases so that one patient is anaesthetized and ready as the first is sent to ICU. The assets are used maximally, and everything they do is aimed at increasing flow of patients through the system. Interestingly, this was what used to happen in the NHS quite widely, but over the years custom and practice have drifted, and the productivity has not increased. This has not been helped by the fact that, over recent years, the amount of practical training that post-graduate doctors get has been dramatically reduced by zealous interpretation of working time regulations and shorter duration of overall training. So just sub-consultant grades now rarely have enough skills to work without direct supervision.

Sir Bruce Keogh, the NHS medical director, has pushed for the extension of the NHS working week, but current staff contracts mean that extending work into weekends or evenings actually increases costs rather than reduces them.

The net effect of these building and process designs is that Shetty's team in Bangalore are able to do almost 5000 paediatric operations per year in one hospital compared to the 3000 done in total by the 10 centres in England! His team operates on up to 20 patients per day. It is very hard to believe that consolidation of services into significantly fewer sites would not produce dramatic cost savings over time. If you remember my last talk, it would likely also result in improved quality; the more you do the better you get.

All patients pay, but they do not pay the same amount. They ask what the patients can afford, and the patients

are surprisingly generous, giving up huge proportions of their assets. The poorest are not charged at all, but usually give what little they can in either cash or labour. And labour costs are minimized by encouraging the family to be part of the system of care, thus permitting a lower nurse to patient ratio.

Shetty and his close management team have direct control of procurement, and insist on Standard Operating Procedures (SOPs) so that there is no unnecessary variation between surgeons. He has negotiated significant reductions in the costs of almost everything he buys, from sutures to drugs and gowns to surgical equipment. He buys local, and is not prepared to accept US or English prices. There is an element of command and control about this, but it works. For some reason NHS procurement has always been vulnerable to criticism, but it is often individual clinicians who express personal preference, which is tolerated by the system. It may be why we like it here! It has proved incredibly difficult to get SOPs into surgical practice in many English hospitals, with the argument of 'clinical freedom' being used as the primary defense against it.

There is much more questioning of the 'single use' concept. Non-contaminated patches etc. can be re-sterilised and reused. Extreme risk-aversion in England has stopped this. Wastage is not tolerated and everything with costs attached to it is totaled up in real time. All doctors and administrators receive daily profit and loss calculations, describing their own practice and the performance of the hospital as a whole. Updates are sent electronically to their mobile phones. This engages all staff in the finances of the hospital, motivates them to keep costs low and enables rapid course correction if necessary. Few NHS hospitals either have the systems, ability or will to get such data to the front line staff. Finance is managed by finance, or at mid-range management level. Shetty points out that you can make great savings by doing 'a thousand small things'. Those 'thousand small things' are best identified by people on the shop floor who have the opportunity to change things, and to do so without massive bureaucracy.

Shetty's group has made extensive use of technology, both exploiting the advantages of modern video communication to do remote consultations and outpatient assessment. Also because so many of their patients are illiterate, they have pretty well abandoned conventional written communication, and now use WhatsApp to communicate with patients, families and referrers by audio, video, instant messaging and photography. This saves on typing costs, provides more detailed accurate communication and allows patients to store relevant data they can access on the phone. Despite dramatic efficiency gains, improved communication and enormously high levels of customer satisfaction in India, this would currently not be transferrable to England because of our information governance rules. WhatsApp may not be the best system for data security, but you would think that with the scale of the NHS market, some equivalent would exist by now, and we could begin to learn from what has worked so well in India. It is beginning to give them long-term follow up data, previously unavailable in the Indian system.

They employ a single patient and staff feedback system; accessible via one number from a mobile phone, and with hotel style response. An excellent way to know what people do or don't like.

They have also developed their own electronic patient record system, with data stored across the network in the Cloud. They have not chosen to use the big US corporate suppliers, preferring to work with the innovative young developers in Bangalore. When you think about the digital talent in the UK and the scale of the NHS, it is astonishing that we have not been able to do this. After the collapse of Connecting for Health, we are only now beginning to see a move towards genuine interconnectivity between hospital and community, but the patient is usually out of the loop. It drives me mad to think of the wasted clinical and research opportunities, as well as the massive system inefficiencies we have by continuing to use post and refuse to use email or other pathways of communication, largely because we have yet to solve the information governance issue.

Yet there is a big paradox here, as John Harman has recently pointed out<sup>12</sup>. There is a growing gap between the technical capacity of the public sector and that of the private sector, and an exponential growth of open-source data [similar to the way WhatsApp is used in India]. Harman says *"the seemingly meaningless, incidental, bits of data that we shed are turning the concept of privacy into an archaism, despite half hearted (and doomed) regulation to protect 'personally identifiable information'"*. People are all ready forgetting about digital privacy, because for most of the time it appears to be to their advantage not to care. Indeed according to Google Trends, interest in 'privacy' has dropped by 50% in the last decade. Health data clearly should be secure, but we are making life hard for our patients by not sorting this out.

There are many other detailed changes that they have implemented, but there are some important background cultural and health system differences that we need to expose before considering whether these or other cost control systems would have value in the English system.

- India has a huge untreated population of children with congenital heart disease; millions of them.
- There is no care system of 'universal access' as with the health service in the UK.
- There is a very poorly developed medical insurance system [although Shetty himself has established a very effective and very low cost one called Yashaswini<sup>13</sup>].
- There is massive under-provision of care; no care is more common than some care.



- People expect to pay for their care, and usually expect to suffer financially to do so. Very much like the situation in England before the NHS.
- The Indian population is also highly spiritual, in contrast to the much more secular English environment. Individuals are inherently grateful to get any treatment at all, and often regard the chance of treatment alone as a gift from God.
- They are prepared to travel huge distances for the chance of successful treatment; often [for financial reasons] their only chance.

Within the context of surgery for congenital heart disease, there are again important and relevant differences. All patients are treated in England, and free of charge, irrespective of diagnosis. Our case-mix is wide and complex. In Bangalore, there are some conditions that they currently do not treat, because they consume excessive resources and multiple procedures may be required. They have concentrated on procedures, which for the most part are necessary require only one-off treatment. In fact in England, 88% of patients will only need to have one cardiac surgical procedure with the rest of their care being manageable locally.

In England, we know our outcomes over an extended period of time, and these are available for the public to see<sup>14</sup>. In Bangalore, outcomes are not the important currency; access to treatment is. However, with the investment in IT and electronic patient records, this will become an important aspect of their work. It is difficult to perform direct comparisons because the data do not quite match and the populations are different, but for the same diagnosis and procedures survival to one year after surgery appears similar to ours.

We just about meet our demand in England, although the peaks and troughs of referral, an apparent increase in incidence (older parents, consanguineous families and IVF all contributing) and staff shortages put pressure on the system. Waiting times, especially to be admitted to ICU in specialist centres can be too long, and most of us struggle to find beds for patients on a weekly basis. But we do find them eventually; even for complex patients. These patients with complex conditions (often not treated in India) stay the longest and consume a disproportionate amount of resources, especially measured as ICU bed-days.

There are differences in the expectations of the public in each country. As I have said, in India, people are just glad to have access to treatment, irrespective of the accommodation, cost or distances involved. In England, years of positive publicity by or about our surgical teams, and pressure from a critical media, has resulted in very high public expectations of both service delivery and environment. Whilst there is obvious simple gratitude, there is also an expectation of excellence and an appropriate intolerance of poor care. Families have come to expect top class facilities, excellent staff - with high staff to patient ratios, minimal delays along the pathway of care and outstanding results. Actually that is largely what we give them. The UK results for surgical repair of congenital heart defects are amongst the very best in the world, across the whole country.

Further, it seems from the debate that occurred during the Safe and Sustainable process I described last time, that it is important, at least to the vocal groups attending meetings, that it is important for services to be provided locally, rather than centralized. Which brings me to the final part of this talk; could we, in this country, apply the cost saving methods adopted by Shetty in India, and would they have the same effect or even be acceptable?

Shetty's main cost savings are based on the principles of economies of scale and low cost buildings. Application of these in the England seems unlikely, for a number of reasons. Firstly, we have evidence from the failure to implement the Safe and Sustainable review recommendations that localism triumphs over common sense. I covered this in my last lecture (<http://www.gresham.ac.uk/lectures-and-events/the-bristol-scandal-and-its-consequences-politics-rationalisation-and-the-use>). People don't seem to accept the argument that it is safe to travel long distances for great care, or that centralization is a good thing. This flies in the face of safe travel data from Canada, Australia and India. We could definitely do all UK cases in one hospital if Shetty's principles could be replicated here. That could result in closure of facilities or more likely altered use, releasing or redistributing resources. We know that local politicians are incredibly unwilling to close local hospitals because of the Kidderminster effect, and it seems unlikely that the most obvious cost saving we could introduce would come to pass.

It also seems unlikely that the use of low cost buildings on green field sites is likely to be a winner with the public or politicians. Recent developments in hospital design in England have been towards the 5 star end of the market, and I can personally testify to the impact of good facilities both on morale and perception of quality as we have built 5 star accommodations. Our hospitals are also in urban centres, not only for reasons of tradition, but also to ensure provide ready access to staff. It is also unlikely that our population will accept lesser accommodation now that we have improved it so much. The changes in India have a flavor of the early days of the NHS, with functional design winning over aesthetics and comfort. We have moved on, and expectations are high.

I pointed out last time that the complexity of the new NHS makes change difficult, especially at scale. It is often quite difficult to work out who is really in charge. Foundation Trusts are supposed to be independent, but their

business plans have to be signed off by several other layers of the organization and its regulator Monitor. Even when Trusts want to merge to make larger and more efficient organisations, they are only relatively free so to do, as it must now be opened to external competition from the private sector, as was the case recently in Bournemouth and Poole (<http://www.bbc.co.uk/news/uk-england-dorset-24559766>). Some finance directors are of the view that the NHS only exerts control over Foundation Trusts by taking money away from them! It doesn't yet feel integrated in the way that many would expect the NHS to be. If you think of the NHS as a huge corporation, which it is in many respects, the ability of the Board to implement important efficiency changes across the organization is severely limited by the complexity beneath it. You can't imagine Microsoft or Virgin working that way.

Which, perhaps sadly, leaves us with change at local level, and voluntary inter-institution agreements as being the most likely way to save cost. At a local level, there is a really good stimulus to reduce costs this year. The government via NHS England is giving us less. They have reduced the tariff prices, and intend to pay only a percentage of activity above plan, even though the costs may be the same or higher, especially if you are unlucky enough to have to admit only very sick patients after completion of the contract. We are in the odd position of having being a business with high demand, a successful product, but with no control over the process we can charge and little control over the volume of business we do.

Nonetheless, as Shetty has said, "When you have money in the bank your brain stops working", and perhaps this is just the stimulus we need to reduce our local costs. And we should be able to learn from what he has achieved, not least by doing 'a thousand small things'. We should be able to make our processes more efficient, to work more of the day in overlapping shifts, to do elective work on more days of the week, and strive to eliminate waste and delay. This could be a description of Lean Management made famous by Toyota and in health care most successfully implemented by the Virginia Mason Hospital in Seattle (<http://www.virginiamasoninstitute.org>).

To really make these changes happen requires standardization, SOPs and extensive use of real-time data. And linking activity and finance information made available in real time for the workers (doctors, nurse etc.) on the shop floor. Given the right information, these are the people that can alter things and they need to be given permission, to be freed up to make local changes. That they do not have these freedoms very often in the NHS not only relates to lack of data to act on, but also to a long tradition of always asking for more through a complex business case process. Annual budget cycles force this, but individuals need to get into their minds the core questions; how can I do this differently, better and a lower cost.

We do need more data. But most NHS hospitals are just beginning the journey towards full electronic records, and even when they are present linkage to finance data is not seen as priority. Individuals need such data to alter their behaviour.

Much could be done by reconsidering who does what and how they do it. I was once challenged by the question 'why was I still closing holes in the heart', when that could be done by a more junior member of staff if we trained them well to do it. It is a profound question. Should tasks be devolved to lower costs workers if that can be achieved safely? I am not sure the public would like that; they seem to value experience and are largely intolerant of such moves. If we consider what happens in private practice, people clearly pay more for to have care delivered by an 'expert'. They wouldn't be happy if a junior did their operation.

We have some of the highest nurse:patient ratios in the world, obviously a cost driver, but it is really hard to know what the optimal ratio is. The definition of a nurse is quite variable, and other staff, for example pharmacists or respiratory therapists, may take over some of their tasks in centres with apparently low ratios. There is a surprising lack of really hard evidence comparing the effectiveness of different ways of working, aimed at delivering the best outcomes at the lowest cost. This is an area of research in which the NHS should be leading the world, rather than following it.

We do need to use our assets more effectively. Most operation rooms stand idle in the evenings and weekends, MRI machines similarly in many places. Operations start later than in the US and India whilst there are often hold ups in ICU and wards because of lack of staffed beds and difficulty sending patients back to full local hospitals. This whole flow of patients requires integration, which the parties are beginning to talk about for older people, but are not addressing with such vigour for young people or for highly specialised care.

Current NHS staff contracts make evening and weekend work punitively expensive. This must be changed. I don't think people should work more hours a week, but they should be distributed more evenly. If the rate limiting steps of staffed ICU beds and problems with discharge can be solved, each hospital could definitely do more work in their expensive assets. At the moment doctors in the UK work long hours, including complex on call arrangements. With 7 day working, it should be possible over time to have higher-grade people present reducing error and the need for on call.

I have had the pleasure of working with a number of management coaches since I became medical director. Two in particular have influenced me; they are Eugene Litvak from the Institute for Healthcare Optimisation in Boston, and Peter Willats, now of APT Global but formerly with McKinsey and the Kaizen Institute. They have come from different industries, but they each made similar observations. Hospital care, especially for surgery, is fundamentally a production line, and management of that production line using methods that have been seen to

work in other industries will produce lower costs and better outcomes. An obsessional approach to flow along the production line and an intolerance of poor quality, overlain with an obsession about safety will bear fruit. When we have worked with them, this has worked. When they leave it has been hard to sustain. This suggests that better training in these methods, for all staff, together with much improved data flow would make a big difference.

Those management coaches also question why we tolerate so much variation between consultants. They respond by saying that clinical freedom is integral to their job, and that the serendipity of that freedom sparks innovation. Maybe, but it certainly leads to poor cost control. We could reduce that variation by the effective use of Standard Operating Procedures, as is the case in so many other walks of life.

Shetty makes a big deal of procurement. Rightly so, my management coaches did too. I struggle to understand why something as big and potentially as powerful as the NHS continues to pay more than it should for many products. Shetty can buy many things cheaper than we can.

Finally, a few words about values. There are clearly differences between the England and India in the values each society places on its services and how they are delivered. We have come to value universal access, local services and high quality staff and facilities. India is in a different place. However, what we value costs money and we pay for them out of our taxes. If our government reduces the amount it gives providers to do the work, the either you vote in a new government with different policies or we have to respond in some way. I think we should value efficiency as much as we value effectiveness, but hospitals need to have the tools and skills to deliver it. Too often this has been attempted by hiring external consultants rather than building well established business practices into core training of managers and clinicians alike.

I doubt if we can achieve the efficiencies achieved by Shetty, but there are lessons to be learned and, given the decisions our governments are making, we have to learn them fast, or go broke, and the consequences of that would be very painful. Efficiency is just another dimension of quality, and there is nothing wrong with doing medicine more cheaply. Indeed I think Shetty's 'moral' challenge is a good one. The ethical principle of justice requires us to take into account the needs of wider society; and releasing resources for others is part of that. We may have begun to deliver excellent surgical results, but we need to start reporting cost and value in the same way; that way we can appeal to the competitive instincts of staff to do it better for less.

We have an election coming up, and the decisions we make in May are likely to have a significant impact on how health care is delivered in this country. As Polly Toynbee said "*the only outcome that is never measured in the NHS is the outcome of what the politicians do.*"

Read up, study their offers and vote wisely. It is your choice.

© Professor Martin Elliott, 2015

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### References and Further Reading

1. Hunter RM, Isaac M, Frigiola A, et al. Lifetime costs and outcomes of repair of tetralogy of Fallot compared to natural progression of the disease: Great Ormond Street Hospital cohort. PLoS One 2013;**8**(3):e59734.
2. Harker R. NHS Funding and expenditure. House of Commons Library, 2012.
3. Webster C. *The National Health Service. A Political History*. Oxford: Oxford University Press, 1998.
4. Brereton L, Vasoodaven V. The Impact of the NHS Market: an overview of the literature. London: Civitas, 2010:1-60.
5. Davis K, Stremikis K, Squires D, et al. Mirror, Mirror on the Wall. How the Performance of the U.S. Health Care System Compares Internationally: The Commonwealth Fund, 2014:1-32.
6. Lanchester J. *Whoops! Why everyone owes everyone and no one can pay*. London: Allen Lane, 2010.
7. Paulos JA. *Innumeracy: mathematical illiteracy and its consequences*. New York: Hill and Wang, 1988.

8. Reeves A, Basu S, McKee M, et al. Austere or not? UK Coalition government budgets and health inequalities

. J R Soc Med 2013;**106**(11):432-36.

9. Fund IM. *World Economic Outlook: Coping with high debt and sluggish growth*. Washington, DC: IMF, 2012.

10. Mills J, Gould B. *Call to Action: Britain's economic problems and how they can be solved*. London: Random House, 2015.

11. Anand G. The Henry Ford of Heart Surgery. *The Wall Street Journal* 2009.

12. Harman J. Disrupting the Intelligence Community. *Foreign Affairs* 2015;**94**(2):99-107.

13. Service EN. Yashaswini Scheme for Urban Co-ops. *The New Indian Express* 2014 28th may 2014.

14. NICOR:congenital heart disease website. Secondary NICOR:congenital heart disease website 25/9/14 2014. [https://nicor5.nicor.org.uk/\\_80257061003D4478.nsf/vwContent/home?OpenDocument](https://nicor5.nicor.org.uk/_80257061003D4478.nsf/vwContent/home?OpenDocument).

If you want to see Shetty speak about some of his strategies, please visit <http://www.risky-business.com/video.php?videoid=145>. **Risky Business** is a regular conference supported by GOSH and initiated and organized by my colleague Allan Goldman, Guy Hirst, former pilot with BA and Tony Giddings from the Royal College of Surgeons. **Risky Business** is devoted to sharing learning across organisations, something I have tried to emphasise in this talk and to which I shall return later in the series.