Evaluation of PFI-Built James Cook University Hospital

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1.0 Background

This paper is about one section of a research study which evaluated the design quality of a private finance initiative (PFI) contract to rebuild the James Cook University Hospital (JCUH) on Teesside in the North-East of England. The research study was funded by NHS (National Health Service) Estates on behalf of the South Tees Hospitals NHS Trust and was carried out by a research team from the Universities of Durham and Newcastle upon Tyne. [1]

The team was led by Dr Jane Macnaughton who is Director of CAHHM, the Centre for Arts and Humanities in Health and Medicine, a research group at Durham University and other members of the team were architects, anthropologists and an art commissioning specialist with a full-time research assistant. [2]

The group was deliberately established as multidisciplinary and this presentation describes the examination of the briefing process, which was called the 'Process Research'. A second part of the research examined the outcome of the move from the old hospital accommodation to the new JCUH on hospital users (patients, staff and visitors). This was called the 'Outcomes Research'. Extracts from the Report relating to the 'process research' are included in this paper.

The hospital has over 1,000 bed spaces and offers secondary and tertiary care on a regional basis. It is also a centre of academic excellence and provides national learning facilities in certain specialities and the total building work was in the order of £160 m.

Figure 1 *The new entrance area for the James Cook University Hospital with the large globe forming a focal point. This sculpture was designed by Andrew Barton and was one of the commissioned artworks which form part of the Arts' Programme which was part of the building contract.*

From the beginning of the briefing process the Client had clear ideas about what it wanted to achieve with the new development. It wanted the treatment regime to be patient-focused and it wanted to increase efficiency on a series of physical and clinical criteria. The trust began a series of discussions to look at how departmental relationships could be improved and how day case facilities could be increased.The Trust also began to formulate a series of ideas about how this could be expressed in the brief for the new building and they identified a series of key components which included value for money, greater attention given to patient-focused care, and an acknowledgement of the therapeutic benefits that can flow from a well-designed hospital environment. These were uppermost in the minds of senior management when the early ideas were being formulated. The Trust also had a clear vision that high quality design would generate therapeutic benefits for patients. They wanted these characteristics to be central to the design process.

A diagram of a model promoting wellbeing was a key component in the winning Architects' proposals presented during the selection process for the winning consortium. HLM, the Architects working with Mowlem Construction put forward an integrated design for patient wellbeing identifying a series of key indicators.

Early on in the design process the Client body decided to rename the hospital The James Cook University Hospital. This idea was successful and provided an over-arching concept on which a whole series of design ideas have been hung. James Cook (fig. 3) was born in 1728 within a few miles of the hospital site and was a great explorer who mapped the coast of Australia and New Zealand. The idea was that a range of activities could be linked to his work – scientific, biology, geography and not least medical ideas - as a stimulus for the arts commissioning work building on 3 great voyages in the Pacific between 1768 and his death in 1779.

Figure 2 *James Cook*

The Chief Executive of South Tees Hospitals NHS Trust and his planning team believed that the solution to these challenges lay in high quality architectural design and the integration of public art - commissioned and created regionally - into the health care environment. The development of JCUH has paid special attention to building design, therapeutic colour schemes, materials, lighting, space, and acoustics.

The design features and colour schemes are intended to individualise departments within the hospital to help create a sense of intimacy within the whole. In addition, £250,000 from the building budget was ring-fenced for the purpose of commissioning artwork for the hospital. The Trust set up a 'Healing Arts' Committee to seek further funding for art works and also to fund artists residencies to create works appropriate to this hospital environment. The Trust introduced to the building a theme of Captain James Cook and his voyages, and some of the artwork reflects the chosen theme.

The theme is intended to link the hospital with the local area and to give the hospital a sense of coherence as a single building. Also, the Trust explicitly intended to use art to link the JCUH with its community. They viewed the art works as having a wider role than purely one of assisting in creating a 'healing environment'.

Purpose of the Project

The study focused on two main aims: firstly, to examine the process by which the concept of patient-centred care was incorporated into the design brief: and secondly, to discover whether that concept was realised in any noticeable and meaningful way by users of the hospital building (patients and visitors) and by staff.

The study commenced before the move to the new accommodation took place so the research team had the opportunity to carry out pre-build and post-build analysis in order that a comparison could be made.

A number of studies have now been carried out into the impact of improved design features in NHS hospitals. Specifically, the research team reviewed the approach and methodologies used by Scher and Senior (1999), Leather (2002), Douglas, Steele et al. (2002) and Lawson and Phiri (2003). All made some use of mixed qualitative and quantitative methodologies in their studies. Lawson and Phiri's approach was to look at patient's outcomes from an architectural perspective.

Methodology

The report states that:
The study team addressed three main questions:
1.How was the design brief for the new JCUH developed and what were the main principles encapsulated in the brief?

2.Were those principles realised and valued in any noticeable way by patients, visitors and staff of the new hospital and did they think the new accommodation was a better environment for patient care than the old?
3.What was the impact on patients, visitors and staff of the artwork commissioned for and placed within the new hospital?
and that the research had two main aims (p.20)
1) To examine the process by which the concept of patient-centred care was incorporated into the design brief.
2) To discover whether that concept was realised in any noticeable and meaningful way by users of the hospital buildings (patients and visitors) and by staff.

In order to achieve these aims the research was carried out under two subheadings:
1) Research on the process of developing the brief (Process Research).
2) Research on outcomes for patients, staff and other users (Outcomes Research).

Preliminary research questions and outcome measures were identified process research as follows:

Objective:
The purpose is to investigate the briefing and design processes to assess how the visions for 'patient-centred care' were carried through into the design of the new hospital.

Underlying assumptions:
1.It is possible to define a 'Patient-Centred Care Strategy' in the brief.
2. If 'Patient-Centred Care' is appropriately articulated in the brief it will be possible to identify the benefits in the completed building.

Research questions:
1. How were 'patient-centred care' concerns articulated in the brief? How was the design process managed to ensure that these priorities were maintained?
2. How closely does the completed building reflect the 'patient-centred' aspirations of the brief?

Outcome measures:
The aim is to understand
• how 'patient-centred' principles are reflected in the built environment,
• how the design quality issues are conceptualised, documented and realised throughout the process, and
• how and why Arts projects were integrated within the design process.

Methodologies Employed
• Examination of documentation prepared to guide the briefing process.
• Interviews with key respondents in the design and planning process.

Ethical Considerations

The research team obtained an approval for the study from the Local Research Ethics Committee (LREC) in June 2002, and discussed the sampling and recruiting strategy with Dr John Drury, the chair of the LREC. The research project was registered with The National Research Register (NRR) which provides a record of Research and Development projects within or of interest to the NHS, and the research team follows the guidelines set out by the 'The Research Governance Framework for Health and Social Care' Health (2001).

Specifically, written consent was given for each interview carried out and anonymity of respondents was preserved except when explicit permission was given to use titles or names.

Interview tapes are stored in locked premises in the University office. Before photographs were taken at the hospital premises, permission was sought and given by the Trust and no individuals can be identified in any photograph taken by the project team.

Results

The senior management team of the Trust were extremely helpful and give the research team open access to all of the documents produced during the PFI process – and were always ready to provide answers to questions and deal with queries. Twenty-two (22) taped interviews were recorded with senior decision makers – each interview lasting approximately one hour. These included from the clients' side both senior administrators and also senior clinicians and on the design side representatives from the contractor and also the architects.

Timescale

The timescale, as is common in the UK for new hospital buildings, was fairly protracted.The original OJEC advertisement was put out in March 1995 and the new building was handed over in a series of phases starting in 2000 and running through to the first half of 2004 – a period of nine years.

Finance

It was decided early on that there was not the time or the resources to make meaningful value for money judgements about the effectiveness of carrying out this project under PFI rules as distinct from traditional public sector finance arrangements.

However, the Full Business Case sets out the economic analysis indicating that in overall terms the solution delivers better value for money and demonstrates a significant transfer of risk to the private sector – that is PFI is a better buy. It shows that the 35 year cumulative net present value of the PFI option is just short of £12 million less than the publicly funded option after risk is taken into account (fig 4). Also, it shows that the area of the hospital under the chosen PFI solution is slightly less than the equivalen-public sector comparator scheme (– about 1½% smaller in area). Although not fully investigated there is some evidence which casts doubt on the criteria used by the Treasury to compare the PSC with PFI.

The construction costs and operating costs for the PFI project were more expensive before the

Risk Adjusted NPV (35 years)

	PSC	PFI	Difference
	£ 000	£ 000	£ 000
Cumulative NPV at 2042/43	186,797	215,568	28,772
Cost of risk associates	21,660	910	40,750
	228,456	216,478	11,978

Area of Hospital

PSC	128,811.70	
PFI	128,617.60	
	194.1 sq m	

adjustment was made for risk. It seems that the estimates for risk in PFI projects are nearly always less than the allowance for risk in PSC projects – and it was this adjustment that tipped the PFI estimate below that of the PSC for the JCUH project.

Development of the design philosophy

The Trust, from the very beginning of this project, had a very clear vision about its aspirations for the hospital and it maintained that objective throughout the whole of the construction process. Its starting point was the "Better by Design" publication written by NHS Estates in 1994 and the key points were that it:
- Functions well
- Looks attractive
- Improves the locality

The Trust's design philosophy statement (fig 5) expands on the importance it places on patient centred care and its brief to bidders for the scheme included seven core values - these focus on delivering patient centred health care which is appropriate, accessible, and of high quality.

The aim is to offer patients the best possible clinical care,
- allow them an opportunity to be part of the decision making process about their health care
- and to ensure that staff respect and support these objectives.

Core value of the Trust's commitment to its patients

- we aim to offer our patients the best possible clinical care by sustaining staff skill and technology at the leading edge of their respective fields
- we aim to give patients the opportunity to play a real part in their own care through informed choices and decision making
- We aim to ensure all staff exchange mutual respect and support in working together for patients
- We aim to protect each patient's right to courtesy and dignity at all times as well as their spiritual and cultural needs
- We aim to deliver our services in the way which is most convenient to patients
- We aim to provide an environment that promotes patients' comfort, security and wellbeing
- We aim to run the Trust in a way that empowers staff to work

Table 1 *Trust's design philosophy statement*

A patient's right to courtesy and dignity which is in line with their spiritual and cultural needs is spelt out – the services should be delivered in a way which is convenient to patients

-the environment should promote patients' comfort, security and wellbeing
-and lastly the Trust wants to empower staff to work efficiently in the patients' interest.

Criteria and weighting of Trust's evaluation

Criteria	Relative weighting
Efficiency of clinical operations	35%
Delivery of high quality, patient-centred care	25%
Delivery of project services	10%
Technical suitability of service	10%
Consortium organisation	5%
Financial viability	5%
Delivery of project construction	5%
Transfer of staff	5%
Total weighting	100%

Table 2 *Criteria and weighting of Trust evaluation*

The weighting system used by the Trust in evaluating the bids it received for the new hospital shows that the delivery of high quality patient centred care had the second highest ranking at 25%, exceeded only by the importance of clinical efficiency which was given 35% (tab. 6).

Design brief objectives

The design brief set out a number of key criteria.
- Patient centred care
- The institute concept (a hospital with a hospital)
- The mall concept (to provide a social and cultural focus for the whole hospital)
- Incorporation of an art strategy

Patient centred care was enlarged on by the Trust in its documentation by saying that there should be optimum functional and clinical adjacencies between new and existing departments. These patient centred objectives are central to the development of the institute concept which groups the facilities needed by a patient for a particular speciality within the same part of the hospital. This minimises travel distances but also maximises opportunities for patients to identify with particular groups of staff and remain within the familiar environment throughout their episode of care. It attempts to maintain some of the sense of individuality and personality which a small hospital might offer, within a large hospital setting. The mall concept is part of the hospital village idea whose heart is located in the central mall – a public space which provides a focal point for the operation of the hospital from the patient's perspective.

Visions and aspirations

From the very beginning of the design process senior clinicians were involved in developing the ideas and the policy of patient centred care so that they took ownership of the brief right from the beginning. Throughout the design process, even after financial close and during the construction phase, the interviews were positive about the benefits that this approach had brought. There was agreement amongst the senior clinicians that although time consuming, the overall benefits were worthwhile. This process was expensive in management time – over 1000 meetings are recorded – but there was a culture that the visions and aspirations were going to be achieved.

What is an ideal hospital environment?

Although the Full Business Case identifies a number of objectives to enhance the target of patient centred care there is little evidence specifically establishing criteria for environmental conditions. Rather there are a series of aspirational statements referring to issues such as sympathetic architectural design and then identifying a series of issues such as landscaped courtyards, maximising natural daylight and shared communication spaces to create a non-institutional healing environment. Above all

else the emphasis is on placing the needs of the patient above everything else and key words are homeliness and friendliness. Essentially, the brief sets out the vision of the Chief Executive and the senior management team.

The interviews confirmed that there is widespread satisfaction for most of the areas, including all areas used by patients but there are some back of house spaces where criticism was expressed. Also, there was concern about some FM management issues although this may have been more to do with teething problems in the immediate aftermath of taking over the new building. It is probably premature to be too judgemental about this aspect of the new hospital's operation.

Key Findings and conclusions

Fundamentally, there has been clear leadership on this project from the beginning to the end of the contract. Bill Murray, the Chief Executive at the commencement of the programme was the driving force behind setting clear parameters for patient centred care and ensuring that this programme was adhered to during the development of the brief and into the construction phases of work.

The early documentation identifies that there was a willingness to accept the PFI methodology. The Trust recognised the political necessity to go with the flow. It is outside the scope of the study to consider Treasury rules in detail and to assess some of the risk analysis issues which are being raised by others. Senior clinicians were involved throughout the project from inception to completion, and from the interviews it is clear that this has helped to ensure the original design aspirations set out in the brief were achieved even though it was expensive in time.

The key aspects of the Trust's design philosophy including patient centred care, the institute concept and a mall have all manifested themselves in the final solution.

However, several of the senior clinicians alluded to the difficulties in understanding the 3D implications of design decisions. Although some 3D visualisation was carried out there are several examples of disappointment where the end result for a consultant's room, for example, have fallen below expectations. The interpretation of 2D drawings is often difficult for people outside of the architectural profession.

There was general satisfaction with the ward areas and patient areas, although there was some dissatisfaction with staff areas and consultants' offices in the back office areas. There have also been some problems with wayfinding – this is more to do with the use of language than geography. An example that comes to mind which was quoted by a consultant was asking a patient to go for an x-ray without clarifying to the patient that this would be signposted as the Radiography Department.

Comments about the mall have raised a range of opinions. Generally seen as successful there are issues arising over its use and function; for example, is it a hospital corridor or a community space? is it a space to house works of art?

There has been some uncertainty about whether patients and visitors were free to use the sitting areas for a rest, or to eat their sandwiches. This led to a discussion in a small number of interviews about the philosophical nature of the space (e.g. was the mall a public space in the sense of it not being part of the hospital?) It is not possible to be conclusive because during the interviews some of the retail activities envisaged were not fully operational (e.g. there was a shop but the café was only just opening at the end of the study period). The senior staff were impressed with the quality of the space but questions were raised about the large scale of the mall in comparison to some of the smaller back of house spaces.

The spiritual needs of patients have been provided for with the multi-faith chapel and a holistic care centre.

There have been improvements in travel distances, arising from the institute concept but there are still issues of privacy and dignity for patients. An interesting issue has arisen over the definition of patient only routes. For example, the gynaecology department said that the route from the ward to the operating theatre was much better. It raises the issue of whether hospital design should make provision for dedicated patient routes; the brief does not call for these but the privacy and dignity of a seriously ill patient is obviously questionable if they are being wheeled along a public corridor.

Concerns were raised about the efficiency and cost of FM services – some of this may have been teething problems but there is obviously a period of bedding in and settling down which needs to take place. Although apparently not problematic at the James Cook University Hospital the potential problems of transferring design responsibility from the client to the contractor was raised at some interviews.

At the James Cook University Hospital it would appear that the strong management team ensured that problems did not become significant. Although there was some consultation with patients and patient groups early on in the briefing process, with the benefit of hindsight a number of interviewees said that they thought there should have been more patient consultation, and that they would like to see this occur on other schemes in the future.

Investigations were limited to the internal functioning of the building and comments have not been made about the external works, landscaping and car parking arrangements.

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