

## **The impact of facilities management on patient outcomes**

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## **The impact of facilities management on patient outcomes**

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# **The impact of facilities management on patient outcomes**

## **Abstract**

**Category:** Research paper

### **Purpose of this paper**

The aim of the study was to investigate the extent to which practicing NHS facilities managers thought that the contribution of FM could be measured in terms of health outcomes.

### **Design/methodology/approach**

A questionnaire was distributed to NHS facilities or estate managers from the majority of NHS trusts in England and Wales.

### **Findings**

In general, there is little or no evidence from pre-existing research to prove the contribution of FM in terms of health outcomes. However in spite of this 59% of facilities managers in the NHS believe that the contribution of FM could be measured yet only a relatively small number of Trusts (16%) have attempted to measure the contribution of FM. The analysis of the secondary data does not show any conclusive evidence of a correlation between FM and health outcomes.

### **Research limitations/implications**

The scope of the study did not extend to collecting empirical evidence to prove the contribution of FM to health outcomes - it was only focusing on whether facilities managers thought it was possible, and if so how they would measure the contribution. However, as part of the project some secondary data were tested for a relationship between FM services and health outcomes.

### **What is original/value of paper**

This is the first time any study has gathered opinion from facilities managers as to whether they believe their contribution can be measured in terms of organisational outcomes, in this case patient care or health outcomes. It provides a useful starting point in order to develop a future study to prove the contribution from FM to health outcomes.

## Introduction

Ever since the discipline emerged, facilities managers have been searching for the 'holy grail' of how to measure their contribution to the core business or strategic goals. Price (2004) argued that to move the facilities management (FM) discipline forward to one that is seen as business critical, rather than a low risk support service, facilities managers need to produce evidence that demonstrates their contribution to business. He highlights a few published studies starting to emerge which link the office environment to productivity (Laframboise *et al.*, 2003 and Bootle and Kaylan, 2002), however he states there are relatively few other examples, NHS included.

Looking specifically at the NHS, in recent years there has been a change in attitude towards facilities services and its contribution to healthcare. For example, in the 2005 general election, 'clean hospitals' were one of the key battle grounds.

*The NHS Plan* (Department of Health, 2000) can now be seen as one of the catalysts that propelled FM from the background to a more prominent position within healthcare. *The NHS Plan* set out a 10 year programme of modernisation for health and social care to improve the standard of services for patients. The consultation exercise that took place prior to *The NHS Plan* being published showed that the public ranked the cleaning standards and quality of hospital food as high among their priorities:

*"People want to see the basics put right. Half of people think the condition of hospital buildings needs to be improved. Few people are complimentary about hospital food. One survey found almost a third of patients needed help eating meals but did not always get it. Dirty hospitals are a big concern. Patients are concerned at mixed sex wards."* (The NHS Plan, p.135 - 136)

Chapter Four of *The NHS Plan* outlined the investment that would take place in healthcare facilities. This included more beds, new hospitals and a commitment to clean wards and better hospital food. It was these last two items that resulted in the Department of Health launching the "Clean Hospitals" and "Better Hospital Food" initiatives.

The Clean Hospitals ([www.cleanhospitals.com](http://www.cleanhospitals.com)) initiative was co-ordinated by NHS Estates. Each NHS Trust had to submit action plans to improve their patient environment. Following on from the NHS Plan, the Department of Health issued a number of policy documents which focused on hospital cleanliness; *National Standards of Cleanliness*<sup>1</sup> (2001), *Winning Ways: Working together to reduce Healthcare Associated Infection in England* (2003a), *Standards of Cleanliness in the NHS* (2003b), *A matron's charter: An action plan for cleaner hospitals* (2004a), *NHS Healthcare Cleaning Manual* (2004b) and *Towards cleaner hospitals and lower rates of infection* (2004c).

Another interesting issue added to the clean hospitals debate are hospital acquired infections (HAI), and most notably MRSA (methicillin-resistant staphylococcus aureus), being linked, in the public's mind, directly to cleanliness. A recent poll by the British Medical Association<sup>2</sup> (BMA) confirmed the findings from *The NHS Plan*, in that the public are concerned about hospital cleanliness and MRSA. The survey asked 2000 patients to rank 10 NHS spending priorities, and clean hospitals came out top. Clean hospitals are one contributory factor in the spread of MRSA, however other factors are more important such as staff washing hands and the access to single bedded wards. In fact Jones<sup>3</sup> (2004) goes even further and claims that there is very little scientific evidence to suggest that clean hospitals reduce infection.

The Better Hospital Food ([www.betterhospitalfood.com](http://www.betterhospitalfood.com)) initiative, again co-ordinated by NHS Estates, introduced a new menu designed by leading chefs, a 24 hour catering service and ward housekeepers to manage the food service on the wards. Apart from the initial criticism surrounding the new menu, the Better Hospital Food initiative did not attract the same high

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<sup>1</sup> Listed as an NHS Estates report

<sup>2</sup> From the BBC website <http://news.bbc.co.uk/1/hi/health/4620471.stm>

<sup>3</sup> From <http://www.hdmagazine.co.uk/storyprint.asp?sc=2026005>

level media and public attention that the Clean Hospitals initiative did - this is reflected in the BMA survey which ranked Better Hospital Food as 9<sup>th</sup> out of the 10 spending priority options.

Changes made following the review of the Department of Health's (DoH) arm's length bodies (ALBs) (Department of Health, 2004d), resulted in NHS Estates - the agency that was previously responsible for co-ordinating support for facilities and estates managers in the NHS - being disbanded. Its responsibilities were split across other organisations, however a core team was retained by the DoH to concentrate on delivering policy on engineering, design and asset & property management.

Interestingly the objective for the DoH's new Estates and Facilities Directorate is "*To ensure the strategic development of a flexible and responsive environment for health and social care, delivering improved health outcomes through innovative estates and facilities solutions that enable high quality, safe patient care.*" Unfortunately the six work-streams that provide the detail behind the strategic objective do not make explicit reference to improving health outcomes, but instead focus on capital investment, asset management, estates knowledge, sustainable development and the developing capacity agenda.

One of the major outcomes from the review of the ALBs was that the National Patient Safety Agency (NPSA) took over responsibility for the delivery and implementation (but not the policy or monitoring) of cleaning, better hospital food and safe hospital design. Their responsibilities for these areas are at a relatively early stage. However, in terms of a research programme looking at cleaning and food and the impact on patient outcomes, it appears the NPSA agenda is focused elsewhere.

Before being disbanded NHS Estates managed the small programme of research focused on estates and FM, and the responsibility for this has now passed to the new Estates and Facilities Directorate at the DoH. The programme<sup>4</sup> for funding is currently encouraging research in the areas of: the impact of standardisation on the built environment; designing out infection; ventilation; and the appropriate selection of maintainable finishes. Unfortunately they do not specify a research agenda focusing on the impact of FM services on patient outcomes.

What perhaps is even more worrying is the actual level of funding allocated directly from the DoH for estates and FM research. According to figures from NHS Estates (2003), the NHS has the largest property portfolio in Europe - 25% of the NHS spend is on estate and facilities management. Yet the provisional figure for the financial year 2005 - 06 for the estates and FM research and development fund was £372,000. This is compared to the £650m million allocated for clinical research in 2005 - 06. It is therefore hardly surprising that there is a little evidence linking FM and health outcomes.

In January 2006 the DoH published the report *Best Research for Best Health: A new national health research strategy*. This outlined the direction of NHS research and development over the next five years. While it appears the focus is to fund and support research which leads to improved outcomes for people, it is difficult to see the agenda facilities and estate related research.

The recent disbanding of NHS Estates and the resulting split in support responsibilities has left estates and facilities services at a cross-road. Some elements that support the service have already transferred over to more clinically focused organisations, for example the NPSA as discussed above, and the Chief Nursing Officer who is now responsible for policy issues related to cleanliness and food. It could be argued that it is now critical for NHS estates and facilities services to demonstrate their ability to contribute to health outcomes in order to avoid becoming even more fragmented.

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<sup>4</sup> From the Department of Health website  
[http://www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/EstatesAndFacilitiesManagement/EstatesAndFacilitiesArticle/fs/en?CONTENT\\_ID=4118973&chk=YDJzFm](http://www.dh.gov.uk/PolicyAndGuidance/OrganisationPolicy/EstatesAndFacilitiesManagement/EstatesAndFacilitiesArticle/fs/en?CONTENT_ID=4118973&chk=YDJzFm)

There is a growing evidence base on the relationship between hospital design and health outcomes, particularly through the work of Ulrich and Zimring (2004) which is summarised in their report *The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity*. Lawson and Phiri (2000) have also attempted to link the ward environment with patient outcomes. Their study compared two wards on the same hospital site - one newly refurbished and the other a conventional 1960s design. Their findings showed that, unsurprisingly, the patients in the newer buildings expressed more satisfaction with the appearance, layout and overall design. But in terms of the patient health outcomes, such as length of stay, the data were inconclusive. There is evidence to suggest the link between the environment and health, particularly around sensory environments. However, what most of the studies show is that it is very difficult to move beyond anecdotal evidence.

To conclude, in terms of empirical evidence which supports the contribution of FM - and specifically the delivery of food services and cleaning standards - to health outcomes, there is limited, if at all any evidence. Facilities managers in the NHS are passionate about the contribution that they make to health outcomes, however, at best this is anecdotal evidence. With Foundation Trust status and the new Patient Choice agenda there is even more urgency for estates and facilities departments to raise their profiles and prove their contribution to healthcare.

One positive note from the Patient Choice and Payment by Results agendas is that the early evidence (Taylor et al. 2004, Miller & May 2006 and Coulter et al. 2004) is suggesting that patients will use factors such as ease of car parking, cleaning standards and food service when making their choice of hospital.

### **Research aims and objectives**

The aim of this study was to investigate the extent to which practicing NHS facilities managers thought that the contribution of FM could be measured in terms of health outcomes. In essence, the study provided a "snapshot" of opinion from current facilities managers on whether the services they deliver to the NHS could be measured in terms of health outcomes.

The scope of the project did not extend to collecting empirical evidence to prove the contribution of FM to health outcomes - it was only focused on whether the above was capable of being done. However, as part of the project some secondary data were tested for a relationship between FM services and health outcomes.

In the context of this study, FM was taken to include the "soft" FM elements of responsibility such as catering, cleaning, portering and ward housekeeping. Therefore the "hard" FM elements, typically the estates functions, property management, building maintenance etc. were not included within the study. The key objectives of the study were to investigate:

- whether practicing facilities managers in the NHS believe the contribution of FM can be measured in terms of health outcomes;
- what type of indicators can be used, or evidence be collected, to prove the contribution of FM in terms of health outcomes;
- if any NHS trusts have already conducted research to measure the contribution of FM in terms of health outcomes; and
- for a relationship between the secondary data available relating to health outcomes and standards used to measure food and cleanliness.

### **Research methodology**

The aim of the study was to gather the views and opinions from a large sample of NHS facilities managers. Therefore, the primary method for collecting data was through a questionnaire. The questionnaire was distributed to NHS facilities or estate managers from the majority of acute, mental, social care and primary care trusts in England and Wales. In addition the questionnaire was also distributed to facilities managers working for private

sector companies providing support services to the NHS. A total of 783 questionnaires were distributed, with 116 returned. This was an overall response rate of 14.8%.

The questionnaire was designed in order to be completed simply and quickly by respondents. It was distributed via the post with a prepaid return envelope enclosed. The study was considered to be a service/practice evaluation, and as such did not come under the existing Research Governance Framework. The study was effectively evaluating current practice with the intention of generating information to inform decision making. However, it was anticipated that there would be no major ethical issues associated with the study. The research did not involve patients or any medical intervention. A non-sensitive questionnaire was distributed and consent to take part in the study was implied by the return of the questionnaire. Good practice in relation to ensuring confidentiality, making the data anonymous and data security was followed.

The secondary data analysis investigated for a relationship between health outcomes and the standards used to measure food and cleanliness. The measures of health outcomes were taken from Healthcare Commission<sup>5</sup> data. The measures of food and cleanliness were taken from the Patient Environment Assessment Team (PEAT) scores. The PEAT score is built up using multidisciplinary teams to assess the patient environment, including a score to rank food and cleanliness.

## **Findings**

The questionnaire was split into four sections. Section One dealt with the *Contribution of facilities management in the NHS*. Section Two focused on *Patient groups*, and whether respondents felt the impact of FM was different for different patient groups. Section Three was on the *Profile of facilities management in the Trust/Organisation*. Section Four was titled *Contribution of facilities management within your own Trust*.

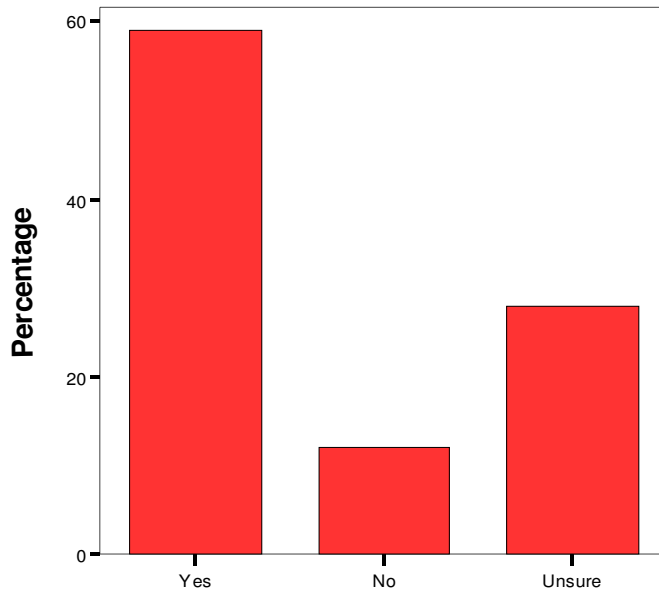
The findings from the survey are split into two parts. The first part presents the findings from the questionnaire. The second part considers the secondary data collected from the Healthcare Commission and investigates for a correlation between:

- PEAT cleanliness scores and MRSA;
- PEAT scores and average length of in-patient stay; and
- PEAT scores and the National Inpatient Satisfaction Survey results.

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<sup>5</sup> The Healthcare Commission is the independent body responsible for collecting data and monitoring the performance of NHS organisations.

**Percentage of respondents who thought it was possible to measure the contribution of facilities in terms of health outcomes.**



**Is it possible to measure the contribution of FM?**

Graph 1 - Respondents who thought it possible to measure the contribution of facilities in terms of health outcomes

	Number	Percentage
Yes	69	59%
No	14	12%
Unsure	33	28%
Total	116	100%

Table II - Respondents who thought it possible to measure the contribution of facilities in terms of health outcomes



## Ways in which the contribution of facilities management can be measured in terms of health outcomes.

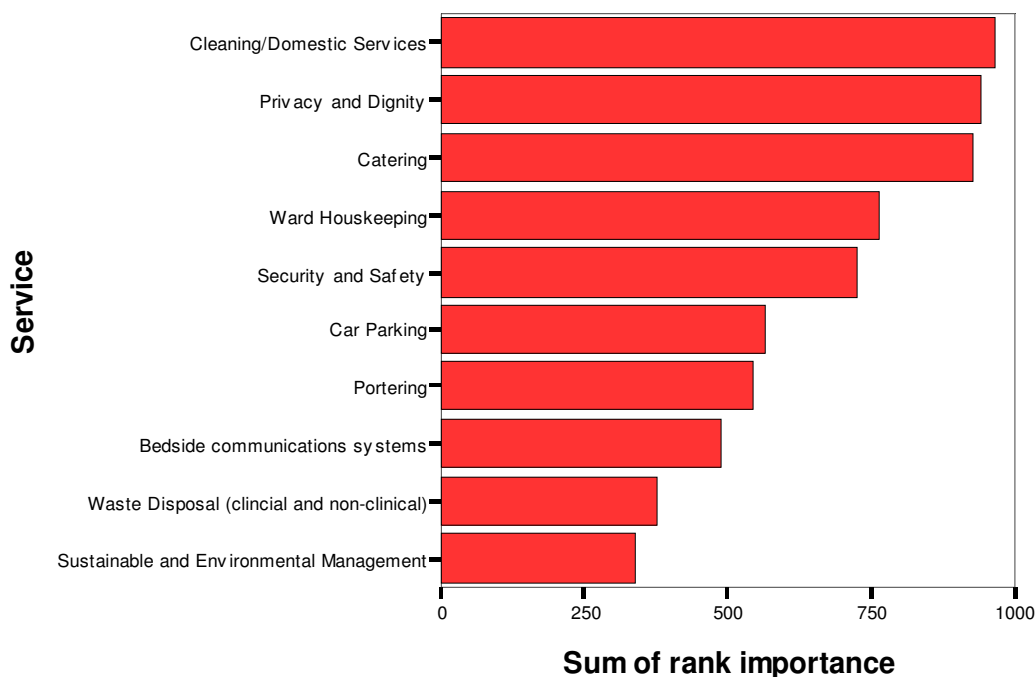
Respondents were asked to outline the ways in which they thought the contribution of FM could be measured in terms of health outcomes. This was an open-ended question.

The most popular measure suggested was to use MRSA/HAI rates as an indicator (44% of respondents), particularly when linked to hospital cleanliness. Some respondents made explicit reference that when hospital (PEAT) cleanliness scores improved they noted a reduction in MRSA/HAI rates within their trust. The next most popular measure indicated by respondents was to use patient satisfaction survey results or the number of patient complaints received relevant to the facilities services. This was suggested by 24% of respondents. The next most popular measure suggested was to use the PEAT scores - this was indicated by 10% of the respondents. However the PEAT scores are not a measure of health outcomes as such, they indicate the performance of facilities services rather than patient outcomes.

Other suggested ways to measure the contribution of FM in terms of health outcomes included:

- Using waiting times as a measure - more FM services, for example more porters, results in shorter waiting times.
- Measuring patient dietary intake or calorific intake as a measure of the food/catering services.
- Measuring the relationship between average patient length of stay and cleanliness and food standards/scores.

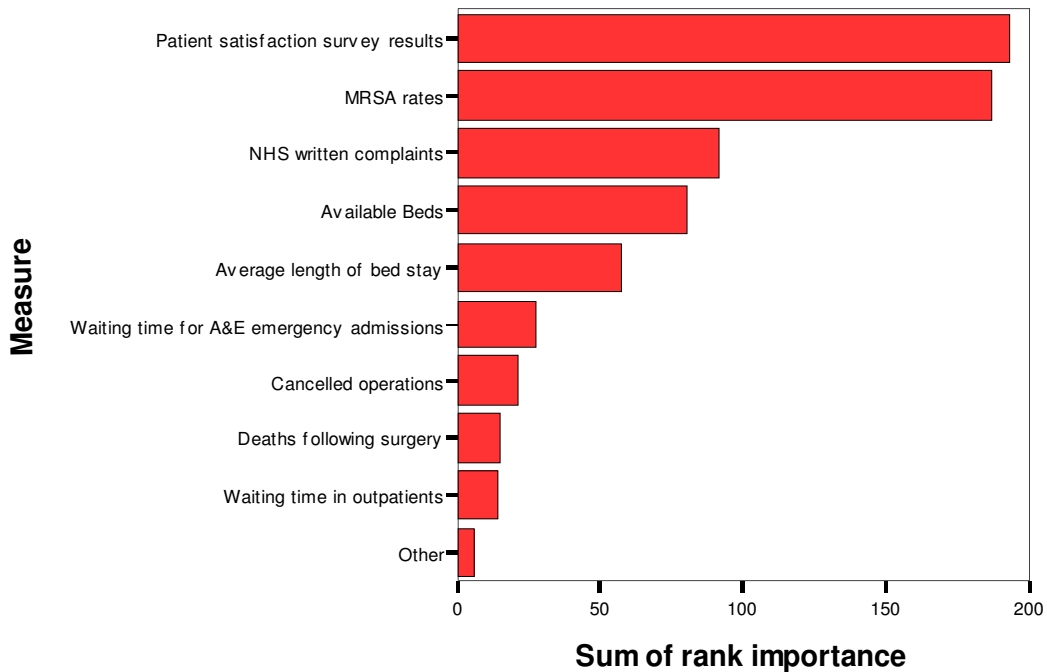
## FM services in order of rank importance of the impact they have on the quality of the patient experience.



Graph 2 - FM services in the order of rank importance of the impact they have on the quality of the patient experience

Respondents were asked to rank the FM services in order of importance of the impact on the quality of the patient experience. '1' being the most important and '10' the least important. The above graph shows the sum of rank importance, hence if a respondent ranked a service as the most important (i.e. number 1) then it was given the highest score of 10. Cleaning/domestic services ranked as most important FM service on the quality of patient experience. Interestingly privacy and dignity was ranked above the catering services.

**Measures of 'health outcomes' in order of rank importance when trying to assess the contribution of facilities management in the NHS.**

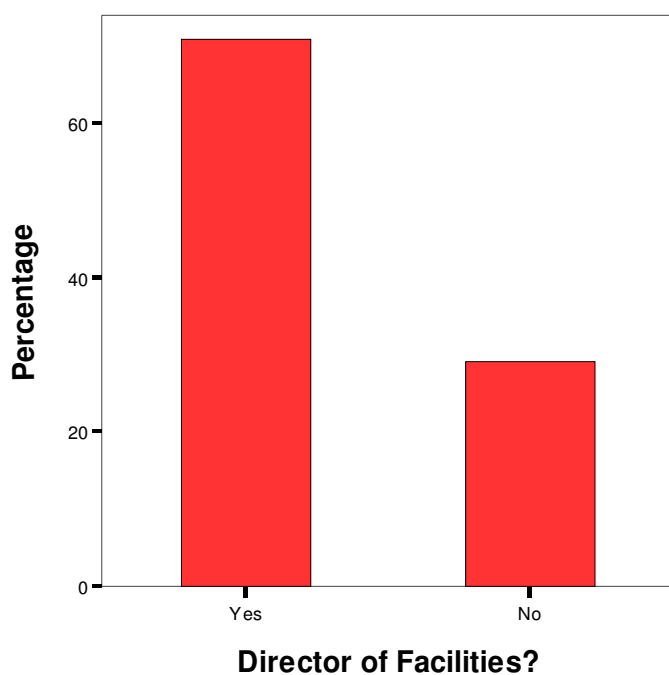


Graph 3 - Most appropriate measures of health outcomes to use when trying to assess the contribution of FM in the NHS

Respondents were asked to indicate the three most important measures of 'health outcomes' that were most appropriate when trying to assess the contribution of FM in the NHS. The 'health outcomes' listed as options were chosen from the measures the Healthcare Commission use as part of their annual exercise to generate the NHS performance ratings.

The above graph shows a sum of the rank importance for each measure of 'health outcomes'. Therefore *Patient satisfaction survey results* and *MRSA rates* scored almost double the next most important measure (*NHS written complaints*).

**Percentage of Trusts/Organisations that have Director of Facilities (or a Director of Estates responsible for FM).**



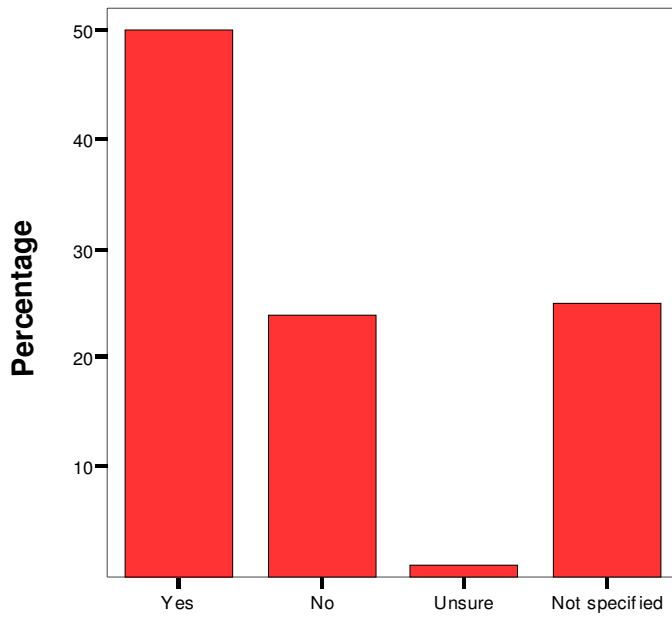
Graph 4 - Percentage of Trusts/Organisations that have a Director of Facilities

	Number	Percentage
Yes	82	71
No	34	29
Total	116	100

Table IV - Percentage of Trusts/Organisations that have a Director of Facilities

This question was included in order to establish or investigate a link between those trusts that have a senior member (director level) of staff responsible for FM and how forward thinking the FM department is in terms of a link between services and health outcomes. The data presented however, is interesting and valuable in itself.

**Percentage of Director of Facilities (or a Director of Estates responsible for FM) that sit on the Trust board.**



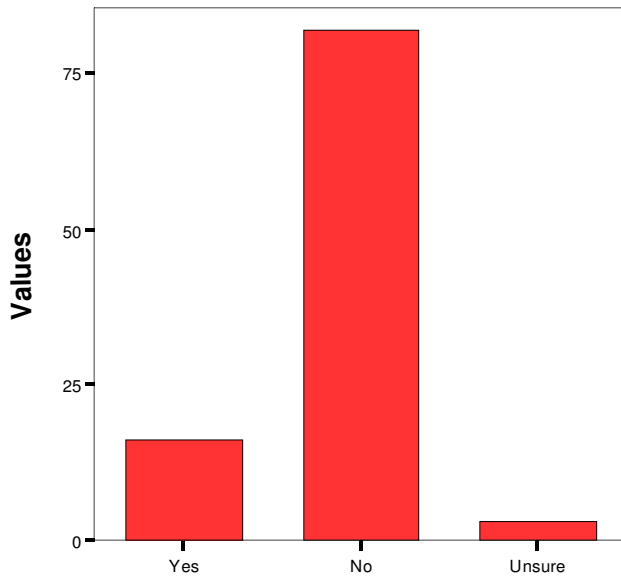
**Director on the Trust Board?**

Graph 7 - Percentage of Director of Facilities (or a Director of Estates responsible for FM) that sit on the Trust board.

	Number	Percentage
Yes	58	50
No	28	24
Unsure	1	1
Not specified	29	25
Total	116	100

Table V - Percentage of Director of Facilities (or a Director of Estates responsible for FM) that sit on the Trust board.

**Percentage of facilities departments that have attempted to measure their contribution in terms of health outcomes.**



**Has the Trust measured the contribution?**

Graph 6 - Percentage of facilities departments that have attempted to measure their contribution in terms of health outcomes

	Number	Percentage
Yes	18	16
No	95	82
Unsure	3	3
Total	116	100

Table VI - Percentage of facilities departments that have attempted to measure their contribution in terms of health outcomes

**Type of organisation the respondent works for and the most appropriate measure of 'health outcome' when trying to assess the contribution of FM in the NHS.**

The type of organisation the respondent worked for was classified according to the Trust name provided. The organisation was classified as either:

- Acute/General
- Primary Care Trust<sup>6</sup>
- Mental Health Trust
- Shared Services Agency/Partnership<sup>7</sup>
- Private Sector Organisation
- Other

Using the Kruskal-Wallis test, there were statistically significant differences in the measures of health outcomes to use when trying to assess the contribution of FM in the NHS, for the available beds, waiting time in outpatients, cancelled operations and MRSA rates.

Table VII illustrates the differences in the measures of health outcomes. The higher the mean rank, the higher the importance placed by the organisation.

<b>Health Outcome Measure</b>	<b>Type of Organisation</b>	<b>Mean Rank</b>
Available Beds	Acute/General Trust	42.67
	PCT	30.5
	Mental Health Trust	53.5
	Shared Services Agency/Partnership	64.63
	Private Sector Organisation	67.17
Waiting time in outpatients	Acute/General Trust	44.56
	PCT	62.71
	Mental Health Trust	50.67
	Shared Services Agency/Partnership	43
	Private Sector Organisation	43
MRSA rates	Acute/General Trust	48.08
	PCT	43.86
	Mental Health Trust	16
	Shared Services Agency/Partnership	52.92
	Private Sector Organisation	29.33

Table VII - Type of organisation the respondent works for and the most appropriate measure of 'health outcome' when trying to assess the contribution of FM in the NHS

<sup>6</sup> Primary care trusts host general practitioner providers and other first contact point services.

<sup>7</sup> In this context a Shared Services Agency/Partnership is usually a public sector organisation set up to provide non-clinical services to a number of NHS organisations including acute, mental health and primary care trusts.

## Secondary Data Analysis

The following secondary data has been used to further investigate for a relationship between FM and health outcomes. All the data are from acute/general and specialist hospital trusts in England and relates to the financial year 2004/2005<sup>8</sup>. The following data sources are used:

### Patient Environment Assessment Team (PEAT)

Each year all trusts in England are subjected to an assessment of their patient environment by a multidisciplinary team and provided a score known as a PEAT score. The trust receives a PEAT score for various aspects of their patient environment, including a score to rank their cleaning services and their catering services. The data is available on the Healthcare Commission Website:

<http://ratings2005.healthcarecommission.org.uk/Trust/Indicator/indicators.asp?trustType=1>

### MRSA rate per 1000 bed days

The MRSA rate per 1000 bed days relates to the financial year 2004/2005. All the bed occupancy figures used to calculate the rates apply only to overnight admissions. Consequently MRSA bacteraemias in patients who are not admitted overnight, e.g., in renal units, may make a Trust's rate look falsely high, as these patients will feature in the numerator but not in the denominator. The data is available on the Department of Health Website: <http://www.dh.gov.uk/assetRoot/04/12/79/21/04127921.xls>

### MRSA banding results

The MRSA banding results relate to the financial year 2004/2005. The indicator is a combination of the overall MRSA rates, as well as improvements in the rate and presence of near patient alcohol gel on the wards. The indicator contains the three measures, which have been combined to determine the level of performance. Acute Trusts that exhibit a small number of MRSA reports (12 or fewer) have been given a 'Data not available score' i.e. it has been left blank. The banding results are as follows:

Good	Band 5
	Band 4
	Band 3
	Band 2
Poor	Band 1

The data is available from the Healthcare Commission Website:

<http://ratings2005.healthcarecommission.org.uk/Downloads/MoreInformationPageDocs/'1348'!A1>

### Average Patient Length of Stay

The average inpatient length of stay data relates to the financial year 2004/2005. The mean (average) and median (middle in ranking) of the spell duration in days. A spell is a period of continuous admitted patient care within a particular NHS trust, calculated by subtracting the admission date from the discharge date. The data is available from the HES Online website: <http://www.hesonline.nhs.uk/Ease/servlet/DynamicPageBuild?siteID=1802&categoryID=212&catName=Hospital%20providers>

### National In-patient satisfaction survey data

Over 88,000 patients were involved in the 2004 in-patient survey. The survey asked patients from 169 acute and specialist NHS trusts across England about their recent experience of inpatient care. The patients surveyed were discharged Sept, Oct and Nov 2003. The data used from the in-patient survey related to Questions 13 - 15.

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<sup>8</sup> Apart from the National In-patient satisfaction survey data. The patients surveyed were discharged Sept, Oct and Nov 2003

Question 13: In your opinion, how clean was the hospital room or ward that you were in?  
 Question 14: How clean were the toilets and bathrooms that you used in hospital?

Very Clean    Fairly clean    Not very clean    Not at all clean

Question 15: How would you rate the hospital food?

Very good    Good    Fair    Poor

Data from the Healthcare Commission 2004 National Inpatient Survey is available from:  
<http://www.healthcarecommission.org.uk/assetRoot/04/00/78/31/04007831.xls>

The following variables were tested for any kind of statistically significant correlations:

Variable	Variable	Test
a. PEAT cleaning score	and MRSA rate/1000 bed days	Spearman's
b. PEAT cleaning score	and MRSA Banding Result	ANOVA
c. PEAT cleaning score	and Average length of in-patient stay	Spearman's
d. PEAT cleaning score	and National In-patient satisfaction survey data (2 questions relating to cleaning standards)	Spearman's
e. PEAT Food Score	and Average length of in-patient stay	Spearman's
f. PEAT Food Score	and National In-patient satisfaction survey data (1 question relating to food standards)	Spearman's

**a. PEAT cleaning score and MRSA rate per 1000 bed days**

There is an overall negative correlation between the PEAT cleaning score and the MRSA rate per 1000 bed days i.e. as the PEAT cleaning score increases the MRSA rate per 1000 bed days decreases. However, the correlation is not statistically significant.

**b. PEAT cleaning score and MRSA banding result**

As the PEAT cleaning score band increases there is also an upwards trend for the average MRSA Band results. The results are not statistically significant, however table VIII below does show a noticeable difference in the mean MRSA Band results for the different PEAT cleaning scores.

Cleaning Score	Number	Mean MRSA Band result
2.0	21	3.5390
3.0	90	3.6315
4.0	18	3.6412
5.0	11	4.1131
Total	140	3.6567

Table VIII - PEAT cleaning score and MRSA banding results

The table shows that for the PEAT cleaning scores 2.0 - 4.0 the mean average MRSA Band result was between 3.5390 and 3.6412. Those Trusts that had a PEAT cleaning score of 5.0 had a mean average MRSA Band result of 4.1131 (MRSA Band 5 = Excellent, MRSA Band 1 = Poor).

**c. PEAT cleaning score and average length of in-patient stay**



Using either the mean or the median average length of stay for in-patients, there is no statistically significant correlation between this and the PEAT cleaning scores.

#### **d. PEAT cleaning score and national in-patient satisfaction survey data.**

There were two questions included in the 2004 National In-patient satisfaction survey that related to cleaning:

- Question 13: In your opinion, how clean was the hospital room or ward that you were in?
- Question 14: How clean were the toilets and bathrooms that you used in hospital?

In their response to the above questions, patients were asked to indicate whether they thought the rooms were either:

- Very clean
- Fairly clean
- Not very clean
- Not at all clean

Statistically there was a weak correlation between the PEAT cleaning score and the in-patient satisfaction survey results, for both questions. There was a positive correlation between the PEAT cleaning scores and patients who thought the rooms or toilets were very clean i.e. those Trusts with a higher cleaning score had a greater percentage of patients indicating that the rooms or toilets were very clean. However, there was a negative correlation between the PEAT cleaning scores and patients who thought the rooms and toilets were fairly clean, not very clean or not at all clean. This would be expected for the categories of not very clean or not at all clean. However one might expect to observe a positive correlation between the PEAT cleaning score and those patients who thought the rooms or toilets were fairly clean.

#### **e. PEAT food score and average length of in-patient stay**

Using either the mean or the median average length of stay for in-patients, there is no statistically significant correlation between this and the PEAT food scores.

#### **f. PEAT food score and national in-patient satisfaction survey data.**

There was one question included in the 2004 National In-patient satisfaction survey that related to food:

- Question 15: How would you rate the hospital food?

Patients were asked to indicate whether they thought the food was either:

- Very good
- Fairly good
- Fair
- Poor

Statistically there was a moderate correlation between the PEAT food score and the in-patient satisfaction survey results related to food. There was a moderate positive correlation between the PEAT food score and the patients who thought the food was either very good or good i.e. those Trusts with a higher food score had a greater percentage of patients who thought the food was either very good or good. In addition to this, there was a moderate negative correlation between the PEAT food score and the patients who thought the food was either fair or poor i.e. those Trusts with a higher food score had a smaller percentage of patients who thought the food was either fair or poor.

## Conclusions

In terms of the building design, space and sensory environments, there is a growing evidence base in the relationship with health outcomes. However, it seems there is little or no evidence from pre-existing research to prove the contribution of FM - and specifically the food and cleaning services - in terms of health outcomes. This lack of evidence is hardly surprising, due to the relatively small amount of research funding directly allocated to the area. However in spite of this 59% of facilities managers in the NHS believe that the contribution of FM can be measured. It is then a little disappointing to find only a relatively small number of Trusts (16%) have attempted to measure the contribution of FM.

Unfortunately the analysis of the secondary data does not show any conclusive evidence of a correlation between FM and health outcomes. Using the PEAT scores as a measure of FM performance, there is no correlation between the cleaning scores and average length of in-patient stay (mean or median). Nor is there any correlation between better hospital food scores and average length of in-patient stay. In addition, there is no correlation between the PEAT cleaning scores and MRSA rates. The only variables that displayed any statistically significant correlations are those between the PEAT cleaning/better hospital food scores and the national in-patient satisfaction survey. One possible explanation for the lack of correlation is to question the validity of the PEAT scores as a measure of FM in the NHS, however there may be other reasons.

The challenge for NHS facilities directors is to prove the contribution of FM to patient well-being, especially if they want to make an impact at board level. This is important as the medical profession are, for obvious reasons, a scientific facing community; here the randomised double blind control trial is the gold standard. For facilities directors and managers in the NHS, the problem is not only deciding what appropriate measures to use, but also how to conduct a scientifically valid study - it would not be acceptable to deliberately serve poor food or leave a ward dirty in order to make comparisons between good and bad wards. In addition, it would be difficult, if not impossible, to control for any extraneous variables, and therefore difficult to infer any statistically significant correlations that are purely down to FM factors.

So where does this leave NHS facilities managers who want to prove, using scientific evidence, the contribution of FM to health outcomes? This paper probably poses more questions than answers, and certainly can't provide the way forward. One possible way forward is through patient choice. The early research findings from patients exercising choice, suggests they are considering the hospital cleanliness and quality of food when deciding which hospital to attend. NHS facilities directors need to build upon these positives and exploit the contribution that FM can make to patient care. Another way is to observe and learn from the medical community in terms of what they consider, "scientific research." This may require facilities managers to work more closely with clinical research teams in order to design studies which are acceptable, and hold currency, with the medical community.

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