Does the experience of staff working in the NHS link to the patient experience of care?

An analysis of links between the 2007 acute trust inpatient and NHS staff surveys.

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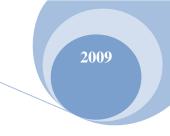**Institute for Health Services Effectiveness**
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Contents

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Key Findings

The research found a large number of associations between the NHS Staff and Acute trust in-patient surveys. Further analysis and interpretation of the associations provides the following key findings:

- The more staff who have had health and safety training, the better the patient perceptions of greater conscientiousness and availability of staff.

- Organisations where staff have clear, planned goals are more likely to have patients who report positive experiences of communication; in particular around patients being involved in decisions on care/treatment, family members being able to speak to doctors, the medical information patients were given, and doctors acknowledging the presence of the patient directly when talking about their case with others.

- When employees are considering leaving their organisation, it is more likely that there are poor levels of communication with patients, particularly around medicine.

- Patient perceptions of staffing levels and the respect and dignity shown towards them are correlated to employee's feelings of work pressure and staffing levels

- Prevalence of discrimination against staff is related to several areas of patient experience, particularly their perceptions of nursing staff.

- High levels of bullying, harassment and abuse against staff by outsiders relates to many negative patient experiences.

- Staff views on the confidentiality of patient information are mirrored by patient views of the privacy they are given.
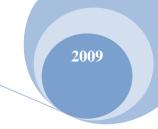
Executive Summary

It should not be surprising to find that the experiences of NHS staff and patients are closely linked with each other. Research in various sectors has shown how employee attitudes, behaviours and experiences are linked with customer or client satisfaction[1], and the close nature of the working relationship between healthcare professionals and patients would suggest these associations are likely to be at least as prominent, if not more so, than in many non-healthcare sectors. The context of the report by Lord Darzi, *High Quality Care for All*, which clearly links the importance of staff development and well being with patient outcomes, supports this analysis to explore the experiences in more detail.

This report links the results of the 2007 acute inpatient & staff surveys using a series of statistical analyses intended to highlight the most important relationships between the two surveys. This uses an exploratory approach to discover which areas in the surveys are closely related, rather than simply looking for anticipated or intuitive associations.

A number of themes are apparent here: bad treatment of staff by patients (whether via bullying, harassment, abuse or discrimination) is associated with poorer patient experiences; clear staff goals and greater commitment to the organisation are associated with better communication with patients; an emphasis on health and safety and on patient confidentiality are associated with patients' feelings of respect and dignity; and perceptions of insufficient staffing levels lead to poorer patient experiences.

Various conclusions can be drawn, although it is not always possible to deduce clear actions that need to be taken as a result. Obviously bullying, harassment and abuse, and discrimination, are factors which trusts should be attempting to reduce in any case, and the evidence here only adds to that need. Likewise the need for patient confidentiality and sufficient staffing levels are obvious. The more striking results are those which are less obvious at first glance: the need for staff to have clear, planned goals being a particularly strong example of this.
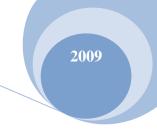
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[1] e.g. Schneider et al., 2003; Koys, 2001

1. Background

1.1.   To date there has been little research that explicitly links the experiences of staff and patients in the NHS, and in particular very little that has focused on relationships at the organisational (trust) level.

1.2.   The availability of two linked data sources – the national NHS staff and patient surveys – gives a good opportunity to do exactly this. Therefore this report describes a set of analyses conducted on data from the 2007 national NHS staff survey and national acute inpatient survey, run by the (then) Healthcare Commission[2].

1.3.   The acute inpatient survey was chosen in part because it is the most established of the various patient surveys, but also because inpatients are more likely than outpatients to encounter experiences with multiple staff over longer periods of time, and therefore their perceptions are more likely to be closely related to those of staff.

1.4.   This report takes an exploratory approach to compare these data sources. Each of the questionnaires includes several dozen questions, and for many pairs of questions some form of relationship would seem reasonable. Therefore we do not present a set of specific hypotheses, but instead we start by looking at all possible pairs of variables, and then narrowing it down to the relationships that appear the most substantial, regardless of the nature of these relationships.

1.5.   The approach is entirely led by the data analysis, rather than any theoretical or policy implications. The methods we used are detailed in the next section.

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[2] The survey programmes have now been transferred to the Care Quality Commission

2. Methods

2.1.   Data from the 2007 staff and inpatient surveys were used for all 163 acute trusts in England that participated in both surveys[3].

2.2.   The details of the methodology used for these surveys are reported on the relevant survey pages of the Care Quality Commission[4] web site, and are not repeated here.

2.3.   The focus of the research is to link the two data sources, and this can only be done at the trust level, all the data were aggregated to the trust level to start.

2.4.   For questions that were binary in nature (e.g. yes/no) this led to percentage scores within each trust; for questions that were measured on an ordinal scale (e.g. strongly disagree, disagree, neither agree nor disagree, agree, strongly agree), these were given numeric scores (e.g. 1 to 5) for which the aggregate version was an average.

2.5.   All respondents were included in this aggregation, including staff who did not necessarily have regular contact with inpatients. This is an acknowledgement of the fact that the care delivered to patients is affected not only directly by those staff with whom the patient has contact, but less directly by other staff who play an important role in the running of the organisation.

2.6.   The inpatient survey included 62 questions which indicated quality of experiences or satisfaction (i.e. excluding those which served merely as filters, or biographical information).

2.7.   The staff survey included 168 such questions. In addition, 27 "key scores" published by the Healthcare Commission, which mostly use multiple questions to describe an important area of staff experience (e.g. job satisfaction, measured by seven questionnaire items), were also included in the analysis.

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[3] This is reduced from 171 due to the absence of some specialist trusts from the patient survey, and the merger of two trusts

[4] http://www.cqc.org.uk/usingcareservices/healthcare.cfm

2.8. An additional factor analysis of the staff survey items indicated three new or adjusted composite scores – usefulness of training, importance of infection control, and availability of hand washing materials – should be included also. Details of this factor analysis can be found in appendix 2.

2.9. To start with, each staff survey item or composite score was correlated with each patient survey question, producing a total of 12,214 correlations, of which 56% were statistically significant. Progressing this necessitated a systematic approach to identify the most important relationships – as such the following approach was taken:

a. Two staff survey scores that are more intuitively dependent variables – experience of bullying, harassment or abuse from patients or their relatives, and employees' intention to leave their organisations – were removed from further analysis. However, individual items that constituted these scores were retained as they could be interpreted more usefully

b. Staff survey items relating to availability of hand washing materials were removed, as only one of these related specifically to patients and this was already covered by the composite score.

c. Patients survey scores that did not relate closely to perceptions of care were also removed.

d. Variables that had at least one correlation coefficient of magnitude 0.50 or greater (0.45 for composite scores) were retained.[5]

2.10. The approach described above led to eight staff survey composite scores, 16 staff survey individual items and 24 patient survey items being retained for further analysis.

2.11. The correlations between these items were then studied in detail, and multiple regression analysis conducted, with patient survey scores as dependent variables, controlling for specialist, teaching and foundation status of the trusts, and for trust size (number of employees) and whether or not the trust was in London (the only region where results on the inpatient survey differed substantially from other regions).

2.12. This regression was conducted both with individual staff survey variables entered, and all simultaneously. The latter analysis is perhaps the most important, as many staff survey variables are highly correlated with each other, and by entering all in a single regression analysis it is

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[5] A correlation of 1 is a perfect relationship, whereas a correlation of 0.50 is considered to be a "large" effect according to many experts, e.g. Cohen (1988)

possible to establish which are the most important correlates with the patient data. Details of the regression analysis are given in appendix 3, while the following sections describe the key results found.

2.13. It is important to note that the data from the two sources were collected at very similar points in time, and that no inference about causality can be drawn from the analysis.

2.14. Although for some relationships there may be a clear presumed causal effect in one direction (e.g. staff saying that there were enough staff for them to do their job properly, and patients saying there were enough nurses on duty), for many, there may be the possibility of causal effects in either direction (for example, aggression from patients towards staff may result in poorer quality care; alternatively, poorer perceptions of the quality of care by patients may increase the likelihood of patients being aggressive towards staff), and there may be a third variable in turn affecting both staff and patient views.

2.15. Overall, it cannot be assumed that by making a change to something in the staff survey, patient experiences will change as a result (or vice versa).

3. Results

3.1. As indicated earlier and in the results shown in appendices 2 and 3, there were a large number of substantial and significant correlations.

3.2. This section summarises those that were consistently high, not only in the correlation analysis but also in the regression analyses.

3.1. Discrimination

3.1.1. The staff survey item that was most consistently strongly linked to patient survey scores was discrimination, in particular discrimination on the basis of ethnic background. This was calculated as a proportion of staff from a black or minority ethnic (BME) background who reported they had experienced discrimination at work in the previous 12 months on the basis of their ethnic background, so was not simply a result of the number of BME staff within trusts.

3.1.2. The strongest correlations were with two patient survey items relating to nurses: When you had important questions to ask a nurse, did you get answers that you could understand? and Did you have confidence and trust in the nurses treating you?. In both cases the correlation was -0.64, which is a remarkably strong correlation for data from separate surveys.

3.1.3 It must be noted here that this research cannot draw conclusions on the reasons behind the correlations observed. To expand on this point, this finding could be caused by any number of factors, for instance the relative complexity of information being given or the difficulty for nurses in treating particular patient cases.

3.1.4. Bearing the above point in mind, throughout the analysis this discrimination variable remained significant and strong in both types of regression analysis for both these patient survey variables.

3.1.5. The discrimination variable was also significant linked to several other patient variables, including Did you get enough help from staff to eat your meals?, Did doctors talk in front of you as if you weren't there?, Did nurses talk in front of you as if you weren't there?, Were you involved as much as you wanted to be in decisions about your care and treatment?, Did you find

someone on the hospital staff to talk to about your worries and fears?, Did you feel you were involved in decisions about your discharge from hospital?, Overall, did you feel you were treated with respect and dignity while you were in the hospital?, and Overall, how would you rate the care you received?.

3.1.6. All of the variables /questions mentioned in 3.9. had correlations of at least 0.40 in magnitude, and even entered in regression analysis had coefficients of at least 0.30 in magnitude. Several other patient survey variables had significant, although slightly less strong correlations.

3.1.7. Again, it must be stressed that despite the very strong correlations and regression results here, it is difficult to conclude anything concrete due to the cross-sectional nature of the research.

3.1.8. The staff survey does not draw any distinction between discrimination from patients and discrimination from staff, and as such it is possible that the causality is in either direction: discrimination shown towards staff could lead to a lower standard of patient care, thus influencing patient survey scores; or where patients feel they are not getting a satisfactory standard of care, a few may be more likely to abuse staff. In reality it may work both ways.
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3.2. Bullying, Harassment and Abuse

3.2.1. The proportion of all staff experiencing bullying, harassment or abuse was also closely linked to several areas from the patient survey.

3.2.2. It was the experience of bullying, harassment or abuse from relatives of patients, or from other members of the public, that gave the strongest links, rather than from patients themselves.

3.2.3. The strongest of all these links was between bullying, harassment or abuse from other members of the public and the patient survey item Overall, did you feel you were treated with respect and dignity while you were in the hospital?, where the correlation was -0.65, and the link remained strong in both forms of regression analysis.

3.2.4. Although this source of bullying, harassment or abuse was also highly correlated with many other patient survey scores, in most cases it was not so strong in the regression analysis; this suggests that the score may be reflective of other factors better measured by other questions on the staff survey.

3.2.5. One exception was the patient survey item Were you given enough privacy when discussing your condition or treatment?, the link for which remained strong in all types of analysis.

3.2.6. In contrast, the extent of bullying, harassment or abuse from relatives of patients was strong in several multiple regression analyses. As well as strong correlations, the following patient survey items had strong relationships with this score even when tested with all other staff survey scores: If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?, Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?, Did a member of staff tell you about medication side effects to watch for when you went home?, Were you told how to take your medication in a way you could understand?, and While in hospital, did you ever see any posters or leaflets explaining how to complain about the care you received?.

3.2.7. It seems relatively unhelpful to try to dissect the specific relationships here. What is clear is that the bullying, harassment and abuse of staff is generally related to poor patient experience, and the slightly different regression analysis results a mere quirk of detail.

3.2.8. As with the discrimination findings, it is obvious that these effects could take on either, or both, causal directions: aggression from patients towards staff could be a result of perceptions of poor quality of care, and/or could result in poorer quality care being delivered.

3.3. Clear Planned Goals

3.3.1. Of all the staff survey items relating to intrinsic features of the job (rather than relationships with others), the item *I have clear, planned goals for my job* is the most consistently strongly linked with patient survey scores. The strongest link was with the patient survey item *If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?*, which had a correlation of 0.57 and where the regression coefficient was still strong with all staff survey variables included, suggesting this was a key predictor. With similarly strong links were the scores *How much information about your condition or treatment was given to you?*, and *Were you involved as much as you wanted to be in decisions about your care and treatment?*, followed by *Did doctors talk in front of you as if you weren't*

there?, suggesting in combination that in trusts where staff have clear, planned goals as part of their job, communication with patients is better.

3.3.2. There were also strong correlations with several other patient survey items, but these were the four where clear, planned goals came out ahead of other staff survey scores.

3.3.3. These relationships are consistent with goal setting theory[6], which suggests that a relatively small number of clear objectives leads to improved performance. These are normally agreed as part of an appraisal process, although it is interesting that it is the clear, planned goals item, rather than the appraisal per se, that comes out the strongest – suggesting that it is the content of the appraisal, not the presence of the appraisal itself that is the important feature.

3.3.4. The relationships are somewhat less controversial in terms of the direction of causality, although a caveat should still be in place. It seems likely that staff who have been provided with clear goals – including a focus on patient care and communication – will lead to improvements in these areas, although it remains possible that a third variable affects both these areas.

3.4. Work Pressure

3.4.1. Three staff survey scores relating to workload and the associated pressure on staff came out as strongly related to patient survey items.

3.4.2. The scale summary score Work Pressure, comprising four separate staff survey items, was unsurprisingly strongly correlated with the patient survey score In your opinion, were there enough nurses on duty to care for you in hospital? – although this did not retain its strength when included in a regression analysis with other staff survey variables, instead being trumped by the staff survey item Care of patients is my trust's top priority, which many staff may see as being reflected by a sufficient number of employees.

3.4.3. The staff survey item There are enough staff at this trust for me to do my job properly was also strongly related to the same patient survey score, along with the two more general questions How would you rate how well the doctors and nurses worked together? and Overall, how would you rate the

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[6] e.g. Locke & Latham, 1990, 2002

care you received?, but again did not stay a strong associate of any of these when other staff survey scores were taken into account.

3.4.4. However the proportion of staff who said they had witnessed an error, near miss or incident in the previous month due to staffing levels was strongly related to a number of patient survey scores: If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?, Were you given enough privacy when discussing your condition or treatment?, Did you have confidence and trust in the doctors treating you?, and Overall, did you feel you were treated with respect and dignity while you were in the hospital?, in particular.

3.4.5. These findings suggest that a high workload impacts on patient experience in a number of ways: patients would appear to notice if there are insufficient staff, but they may also feel a lack of respect, dignity and confidence in the staff that are there.

3.5. Health and Safety

3.5.1. The proportion of staff who had undertaken health and safety training since joining their trust was not quite as strongly correlated with patient survey items as some of the previously discussed staff survey scores, but interestingly came out strongly when other staff survey scores were taken into account.

3.5.2. Three patient survey scores in particular were strongly related: Did you have confidence and trust in the nurses treating you?, In your opinion, were there enough nurses on duty to care for you in hospital?, and Did you find someone on the hospital staff to talk to about your worries and fears?.

3.5.3. These links do not appear as obvious as some of the others reported; however, it could be that a focus on health and safety results in staff taking better care of their working environment, which is interpreted by patients as greater conscientiousness and availability of staff.

3.5.4. Alternatively, a focus on health and safety could be indicative of an overall concern for patient and staff well-being in the trust.

3.6. Intention to Leave

3.6.1. One staff survey item relating to the employees' propensity to leave the organisation, I often think about leaving this trust, was strongly related to several patient survey items.

3.6.2. Like the health and safety training score, the raw correlations were not quite as strong as some, but the following patient survey scores were all strongly linked to this item even after taking all other featured staff survey scores into account: Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?, Were you told how to take your medication in a way you could understand?, Did a member of staff tell you about medication side effects to watch for when you went home?, Did you find someone on the hospital staff to talk to about your worries and fears?, Were you involved as much as you wanted to be in decisions about your care and treatment?, Did doctors talk in front of you as if you weren't there?, and When you had important questions to ask a nurse, did you get answers that you could understand?.

3.6.3. Again, the direction of causality for some of these may be unclear, but one interpretation would be that when staff are less committed to their organisation, one aspect to suffer is communication with patients – particularly those aspects that may be considered by some "discretionary" communication.

3.6.4. The particularly strong links with items relating to communication about medicines, however, is especially worrying, as these were consistent across all three patient survey items on this matter.

3.7. Confidential treatment of patient information

3.7.1. The staff survey item "Patient information is treated confidentially by staff in this trust" was strongly associated with a number of patient survey items. In particular, there were two items for which it stood out ahead of other staff survey scores: Were you given enough privacy when discussing your condition or treatment?, and Did nurses talk in front of you as if you weren't there?.

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3.7.2. Again, the link is clear to see – both sets of items relate to a respect for patient confidentiality and privacy from staff.

4. Discussion of findings and next steps

4.1. This report has presented merely a selection of the totality of relationships between the two surveys.

4.2. As suggested earlier, there are so many links that in order to make sense of them, a set of decisions needed to be made to isolate the most important.

4.3. Although these decisions could be debated, they did succeed in producing a manageable number of relationships to study in greater depth, and it is noteworthy that these associations are all intuitively sensible.

4.4. Whether these relationships are indeed the absolute most important is debatable; what is not debatable is the importance or significance of the findings.

4.5. The main findings fitted into a number of themes, some of which are highly intuitive: bad treatment of staff by patients (whether via bullying, harassment, abuse or discrimination) is associated with poorer patient experiences; clear staff goals and greater commitment to the organisation are associated with better communication with patients; an emphasis on health and safety and on patient confidentiality are associated with patients' feelings of respect and dignity; and insufficient staffing levels lead to poorer patient experiences.

4.6. It is difficult to say in absolute terms what should be drawn from these results in terms of actions. Clearly bullying, harassment and abuse, and discrimination, are factors which trusts should be attempting to stamp out or minimise in any case for multiple reasons, and the evidence here only adds to that need.

4.7. Likewise the need for patient confidentiality and sufficient staffing levels are clear for all to see. Perhaps the more striking results are those which are less obvious at first glance: the need for staff to have clear, planned goals (something which is alluded to, but not explicitly stated, in the first two staff pledges in the NHS Constitution) is a particular example of this.

4.8. It is important to remember, however, that this is an exploratory analysis that does not provide any firm evidence for causal links.

4.9. Further investigation of these relationships, via other surveys or qualitative work, would be beneficial, and other investigative methods using the survey data may provide more enlightenment, particularly for those scores not focused on in this report.

4.10. In addition, longitudinal analysis of staff and patient survey data (which are now available for five consecutive years with relatively few changes) would allow a greater exploration of the nature of the effects shown: in particular, giving further evidence for whether or not the effects are causal in nature.

4.11. Nevertheless this report, despite presenting exploratory analysis, provides a valuable addition to the evidence base, and is one of relatively few studies suggesting that staff and patient experiences are linked to each other – often strongly.

Appendices

Appendix 1: Factor Analysis of NHS Staff Survey Data

Background

This appendix describes a factor analysis of the scale items from the 2007 NHS national staff survey. It includes both exploratory and confirmatory procedures. It is designed to be the first step of comparison of staff survey results with inpatient survey results, so the data analysis is limited to individuals from acute trusts.

Procedures used

In line with current best practice, the analysis includes both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA)[7]. EFA is used on a random 50% subset of the data in order to discover possible constructs underlying the data. This generates one or more "solutions" based on a certain number of constructs; these solutions (factor structures) are then tested on the remaining 50% of the data using CFA, and their relative fit to the data compared, in order to distinguish the factor structure with the best validity. Reliability analysis (using Cronbach's alpha) is also applied to the second subsample to test the internal consistency of the factors.

Items included

This analysis includes all items in the acute trust staff survey, 2007, which were measured on a "Likert scale" (one with a number – usually 5 – of ordered answer choices). It is important only to use items of the same type to preserve the validity of the procedures used. The items were as follows:

Item no.	Wording
q2a	My employer is committed to helping staff balance their work and home life
q2b	My immediate manager helps me find a good work-life balance
q2c	I can approach my manager to talk openly about flexible working
q4a	My supervisor encourages those who work for her or him to work as a team.
q4b	My supervisor can be counted on to help me with a difficult task at work.

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[7] Williams, L., Ford, L., & Nguyen, N. (2002). Basic and advanced measurement models for confirmatory factor analysis. In Rogelberg, S. (Ed.), *Handbook of Research Methods in Industrial and Organisational Psychology*, 366-389. Blackwell Publishers, Oxford UK

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q4c	My supervisor gives me clear feedback on my work.
q4d	My supervisor asks for my opinion before making decisions that affect my work.
q4e	My supervisor is supportive in a personal crisis.
q4f	My supervisor helps me when my workload is not manageable
q11a	My training, learning and development has helped me to do my job better
q11b	My training, learning and development has improved my chances of promotion
q11c	My training, learning and development has helped me stay up-to-date with my job
q11d	My training, learning and development has helped me stay up-to-date with professional requirements
q13a	I have, clear, planned goals and objectives for my job.
q13b	I often have trouble working out whether I am doing well or poorly in this job.
q13c	I am involved in changes that affect my work area.
q13d	I cannot meet all the conflicting demands on my time at work.
q13e	I have adequate materials, supplies and equipment to do my work.
q13f	There are enough staff at this Trust for me to do my job properly.
q14a	I often think about leaving this Trust.
q14b	I will probably look for a new job in the 12 months.
q14c	As soon as I can find another job, I will leave this Trust.
q14d	If I leave my current job, I would want to stay in the NHS.
q15a	How satisfied are you with the recognition you get for good work?
q15b	How satisfied are you with the support you get from your manager?
q15c	How satisfied are you with the freedom you have to choose your own method of working?
q15d	How satisfied are you with the support you get from work colleagues?
q15e	How satisfied are you with the amount of responsibility you are given?
q15f	How satisfied are you with the opportunities you have to use your abilities?
q15g	How satisfied are you with the extent to which your employer values your work?
q15h	How satisfied are you with your level of pay?
q16a	I always know what my responsibilities are.
q16b	I am consulted about changes that affect my work area.
q16c	I do not have time to carry out all my work.
q16d	I get clear feedback about how well I am doing my job.
q16e	Relationships at work are strained
q16f	I can decide on my own how to go about doing my work
q17a	Senior managers here try to involve staff in important decisions.
q17b	Communication between senior management and staff is effective.
q17c	Senior Managers encourage staff to suggest new ideas for improving services.
q17d	On the whole, different parts of the organisation communicate effectively with each other.
q17e	Care of patients / service users is my Trusts top priority.
q17f	Patient information is treated confidentially by staff in this Trust.
q23a	My employer takes effective action if staff are physically attacked by

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patients/clients, relatives or other members of the public.

q23b	My employer takes effective action if staff are physically attacked by other members of staff.
q23c	My employer takes effective action if staff are bullied, harassed or abused by patients/clients, relatives or other members of the public.
q23d	My employer takes effective action if staff are bullied, harassed or abused by other members of staff.
q27a	My Trust treats fairly staff who are involved in an error, near miss or incident.
q27b	My Trust encourages us to report errors, near misses or incidents.
q27c	My Trust treats reports of errors, near misses or incidents confidentially.
q27d	My Trust blames or punishes people who make errors, near misses or incidents.
q27e	When errors, near misses or incidents are reported, my Trust takes action to ensure that they do not happen again.
q27f	We are informed about errors, near misses and incidents that happen in the Trust.
q27g	We are given feedback about changes made in response to reported errors, near misses and incidents.
q31a	The Trust does enough to promote the importance of hand washing to staff
q31b	The Trust does enough to promote the importance of hand washing to patients, service users and visitors
q31c	Infection control applies to me in my role
q32a	Hot water, soap and paper towels, or alcohol rubs are available when they are needed by staff
q32b	Hot water, soap and paper towels, or alcohol rubs are available when they are needed by patients
q32c	Hot water, soap and paper towels, or alcohol rubs are available when they are needed by visitors

For the remainder of this report, items will be referred to by their item number only, to aid readability.

Samples

There were 68,420 responses from employees in acute trusts that had valid responses to at least 50% of the above items. These were therefore used for analysis. The 50% is to strike a balance between using only respondents who answered a good proportion of the questionnaire, but not automatically excluding respondents who may have missed out a small number of items (this would be listwise deletion, which has been shown to produce biased results[8]).

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[8] Newman, D. A. (2003). Longitudinal modeling with randomly and systematically missing data: A simulation of ad hoc, maximum likelihood, and multiple imputation techniques. Organisational Research Methods, 6, 328-362.

A split was made on the basis of a randomly generated variable. This produced a first subsample of 34,103 individuals who were used for EFA. The remaining 34,317 individuals were used for CFA and reliability analysis.

Exploratory Factor Analysis (EFA)

In line with recommendations about best practice for factor analysing organisational survey data[9], we performed EFA using the principal axis factoring method of extraction, and an oblique ("Oblimin") rotation of the factors. The eigenvalues associated with the first 20 factors are shown in the following table:

Factor	Eigenvalue	% variance explained	Cumulative % variance explained
1	9.86	16.43	16.43
2	5.87	9.79	26.22
3	4.50	7.50	33.72
4	3.63	6.05	39.76
5	2.91	4.85	44.61
6	2.76	4.59	49.20
7	2.41	4.01	53.22
8	2.36	3.93	57.15
9	2.06	3.43	60.58
10	1.44	2.40	62.98
11	1.42	2.36	65.34
12	1.33	2.21	67.56
13	1.11	1.86	69.41
14	0.84	1.40	70.81
15	0.78	1.30	72.11
16	0.73	1.22	73.33
17	0.68	1.13	74.46
18	0.64	1.07	75.53
19	0.62	1.03	76.56
20	0.59	0.98	77.53

These are shown graphically by the following scree plot:

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As is often the case with EFA, the number of underlying factors is not absolutely certain; however, on the basis of the table and plot above we can limit it to one of two possibilities: either nine or thirteen factors. The former

[9] Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory factor analysis practices in organisational research. *Organisational Research Methods*, 6, 147-168.

solution would explain over 60% of the total variance, the latter nearly 70%. Therefore we study both possible structures here.

9 factor structure

The complete factor loadings are shown in the accompanying Excel file. Loadings of magnitude 0.4 or higher are highlighted in red. Usual criteria for determining whether an item belongs on a factor are:

- Its loading is above a certain magnitude (0.4 in this case)
- It does not load significantly onto more than one factor
- Its loading is not well below (e.g. more than 0.2 below) loadings of other items on that factor

Using these criteria, the nine factors can be described as follows:

- Questions 2 & 4 together (work-life balance & support from line managers)
- Question 11 (usefulness of training, learning & development)
- Question 13 (job design)
- Question 14a-c + Q16e (intention to leave jobs)
- Question 15 + Question 16a, b, d, f (job satisfaction plus)
- Question 17 (extent of positive feeling in organisation)
- Question 23 (affirmative action following violence & abuse)
- Question 27 (effectiveness and fairness of incident reporting procedures)
- Questions 31 & 32 together (infection control & hand washing materials)

13 factor structure

The complete factor loadings of this solution are also shown in the accompanying Excel fine. Using the same criteria, the 13 factors extracted can be described thus:

- Question 2 (work-life balance)
- Question 4 (support from line managers)
- Question 11 (usefulness of training, learning & development)
- Question 13 (job design 1 – although item d cross-loads)
- Question 14a-c (intention to leave jobs)
- Question 15 (job satisfaction)
- Question 16a, b, d, f (job design 2)
- Question 16c, e (work pressure)
- Question 17 (extent of positive feeling in organisation)

- Question 23 (affirmative action following violence & abuse)
- Question 27 (effectiveness and fairness of incident reporting procedures)
- Question 31 (importance of infection control)
- Question 32b, c (availability of hand washing materials)

Interestingly, this structure is almost identical to the factors used in the survey key scores. The one difference is the break-up of the job design and work pressure factors. It is thought that this may be due to the mixing of questions with different parts of the questionnaire. For this reason, these two factor structures are tested with CFA along with the existing factor structure used in the survey key scores currently.

Confirmatory Factor Analysis (CFA)

CFA was conducted using the software Mplus. The aim of CFA is to demonstrate that a hypothesised factor structure (whether derived theoretically or empirically, e.g. from EFA) provides a good fit to the data. It does not provide a test of whether a factor structure is correct, just of whether the data suggest it is likely. However, by comparing the fit of different models it is sometimes possible to choose between them.

We used the technique for missing data known as full information maximum likelihood (FIML) estimation; this uses all available data to estimate the fit, rather than deleting cases with missing values or imputing unknown values.

Fit indices from the three models tested are shown in the following table:

Index	9-factor model	13-factor model	Original model	Recommended cutoff
CFI	.858	.936	.903	> .90
TLI	.850	.930	.895	> .90
RMSEA	.057	.039	.048	< .05
SRMR	.055	.040	.055	< .10

It can be seen that there is a clear preference for the 13-factor model over the 9-factor model. The original model used for the key scores has a substantially better fit than the 9-factor model, although it is not as good as that of the 13-factor model.

Reliability of Factors

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The value of Cronbach's alpha (a measurement of internal consistency) of each of these scales, as measured from the second sub-sample, is shown in the following table:

Questions	Reliability
Q2	0.81
Q4	0.91
Q11	0.95
Q13	0.64
Q14	0.85
Q15	0.90
Q16a, b, d, f	0.78
Q16c, e	0.59
Q17	0.88
Q23	0.95
Q27	0.94
Q31	0.85
Q32	0.93

For the sake of comparison, the "Quality of job design" factor used in the key scores (composed of items Q13a-c, Q16a. b and d) has a reliability of 0.78, and the "Work pressure" factor (items Q13d-f and Q16c) has a reliability of 0.71.

All but two of these factors therefore have reliability that surpasses the usually recommended 0.70. The two which do not are Q13 and Q16 (c & e).

Interpretation of Factors and Recommendations

For ten of the 13 factors, these are identical to those currently used in the staff survey reporting as key scores, or those implied by them. These are as follows:

- Question 2 (work-life balance)
- Question 4 (support from line managers)
- Question 11 (usefulness of training, learning & development)
- Question 14a-c (intention to leave jobs)
- Question 15 (job satisfaction)
- Question 17 (extent of positive feeling in organisation)
- Question 23 (affirmative action following violence & abuse)
- Question 27 (effectiveness and fairness of incident reporting procedures)
- Question 31 (importance of infection control)

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- Question 32b, c (availability of hand washing materials)

The reliability of these factors is satisfactory (or better) in all cases. However, in the other three factors, there are problems with reliability. Question 13 (relating to job design) has a low reliability of 0.64, and question 16 items c & e (relating to work pressure) has an even lower reliability of 0.59. (Although it may be tempting to say that reliability is expected to be low as there are only two items, this does not alter the fact that the factor is less reliable, nor the fact that that one other two-item scale, Q32b &c, has excellent reliability.)

In contrast, the alternative arrangement of these items (along with Q16a, b and d) used in the staff survey key score reporting results in more satisfactory reliability – the two scales, Quality of Job Design and Work Pressure having Cronbach's alphas of 0.78 and 0.71 respectively. Although these would ideally be higher, they still meet the commonly used criterion of 0.70.

Therefore, taking into account the similarity of the 13-factor solution to that already used in the staff survey reporting, the satisfactory CFA results of this solution, the improved reliability of scales compared with the 13-factor solution, and the consistency in interpretation of the meaning of the factors, it is recommended that the following 12 factors be used in subsequent analysis:

- Support for work-life balance (Q2a-c)
- Support from line managers (Q4a-f)
- Usefulness of training, learning & development (Q11a-d)[10]
- Quality of job design (Q13a-c, Q16a, b, d)
- Intention to leave jobs (Q14a-c)
- Staff job satisfaction (Q15a-h)
- Work pressure (Q13d-f, Q16c)
- Extent of positive feeling in organisation (Q17a-f)
- Affirmative action following violence & abuse (Q23a-d)
- Effectiveness and fairness of incident reporting procedures (Q27a-g)
- Importance of infection control (Q31a-c)[4]
- Availability of hand washing materials (Q32b-c)[11]

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[10] Not currently used as a key score, but consistent in interpretation of items with existing key scores
[11] Differs from key score in that item a is excluded

Appendix 2: Correlations between Selected Staff and Inpatient Survey Scores

The following pages show all correlations between staff survey key scores and items (shown in the left hand columns) and patient survey scores (shown in the top row) that were used for the regression analysis.

Staff survey key scores:	Patient survey items:							
	Did you get enough help from staff to eat your meals?	When you had important questions to ask a doctor, did you get answers that you could understand?	Did you have confidence and trust in the doctors treating you?	Did doctors talk in front of you as if you weren't there?	When you had important questions to ask a nurse, did you get answers that you could understand?	Did you have confidence and trust in the nurses treating you?	Did nurses talk in front of you as if you weren't there?	In your opinion, were there enough nurses on duty to care for you in hospital?
% staff undertaking health and safety training in previous year	.39	.33	.31	.35	.48	.49	.40	.30
% staff experiencing physical violence from colleagues	-.29	-.28	-.29	-.35	-.44	-.45	-.40	-.18
Quality of work life balance	.23	.42	.41	.34	.28	.31	.25	.49
Extent of positive feeing in the organisation	.10	.34	.31	.18	.08	.13	.04	.44
Fairness and effectiveness of incident reporting procedures	.25	.43	.44	.30	.32	.37	.22	.43
Staff job satisfaction	.18	.38	.35	.31	.23	.26	.20	.41
Work pressure	-.25	-.43	-.44	-.30	-.30	-.32	-.17	-.59
Availability of hand washing materials	.42	.27	.27	.39	.51	.55	.42	.26
% staff undertaking health and safety training since joining trust	.40	.33	.31	.36	.50	.52	.40	.32
I have clear, planned goals for my job	.34	.52	.51	.42	.40	.41	.31	.58
There are enough staff at this trust for me to do my job properly	.33	.50	.51	.36	.37	.39	.25	.64

Staff survey items:	Did you get enough help from staff to eat your meals?	When you had important questions to ask a doctor, did you get answers that you could understand?	Did you have confidence and trust in the doctors treating you?	Did doctors talk in front of you as if you weren't there?	When you had important questions to ask a nurse, did you get answers that you could understand?	Did you have confidence and trust in the nurses treating you?	Did nurses talk in front of you as if you weren't there?	In your opinion, were there enough nurses on duty to care for you in hospital?
I often think about leaving this trust	-.29	-.40	-.36	-.38	-.33	-.34	-.27	-.44
Care of patients is my trust's top priority	.15	.40	.38	.22	.13	.18	.06	.52
	Patient Survey Items:							
Patient information is treated confidentially by staff in this trust	.33	.51	.47	.45	.45	.47	.41	.45
Does your Trust act fairly with regard to career progression / promotion, regardless of ethnic background, gender, religion, sexual orientation, disability or age?	.47	.36	.36	.49	.56	.61	.57	.23
% staff experiencing discrimination	-.45	-.28	-.28	-.44	-.54	-.58	-.55	-.15
% staff experiencing discrimination on the grounds of ethnic background	-.52	-.31	-.30	-.50	-.64	-.64	-.62	-.12
Physical violence from relatives of patients	-.46	-.43	-.34	-.46	-.48	-.49	-.47	-.39
Physical violence from other members of the public	-.37	-.40	-.33	-.41	-.48	-.49	-.40	-.39
Bullying/harassment/abuse from patients	-.46	-.48	-.44	-.48	-.45	-.45	-.39	-.53
Bullying/harassment/abuse from relatives of patients	-.51	-.56	-.51	-.51	-.49	-.49	-.42	-.57
Bullying/harassment/abuse from other members of the public	-.44	-.56	-.50	-.50	-.52	-.53	-.42	-.56
Errors witnessed due to staffing levels	-.28	-.44	-.48	-.24	-.28	-.29	-.18	-.47

	Were you involved as much as you wanted to be in decisions about your care and treatment?	How much information about your condition or treatment was given to you?	If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?	Did you find someone on the hospital staff to talk to about your worries and fears?	Were you given enough privacy when discussing your condition or treatment?	Were you given enough privacy when being examined or treated?	Did you feel you were involved in decisions about your discharge from hospital?	Did a member of staff explain the purpose of the medicines you were to take at home in a way you could
When errors, near misses or incidents are reported, my Trust takes action to ensure that they do not happen again	.26	.43	.45	.27	.31	.38	.18	.47

Patient survey items:

Staff survey key scores:

	Were you involved as much as you wanted to be in decisions about your care and treatment?	How much information about your condition or treatment was given to you?	If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?	Did you find someone on the hospital staff to talk to about your worries and fears?	Were you given enough privacy when discussing your condition or treatment?	Were you given enough privacy when being examined or treated?	Did you feel you were involved in decisions about your discharge from hospital?	Did a member of staff explain the purpose of the medicines you were to take at home in a way you could
% staff undertaking health and safety training in previous year	.41	.31	.20	.37	.25	.33	.34	.28
% staff experiencing physical violence from colleagues	-.32	-.25	-.20	-.36	-.20	-.28	-.37	-.22
Quality of work life balance	.44	.44	.42	.40	.48	.48	.40	.42
Extent of positive feeing in the organisation	.32	.38	.39	.27	.41	.36	.33	.38
Fairness and effectiveness of incident reporting procedures	.47	.46	.46	.40	.42	.44	.46	.46
Staff job satisfaction	.37	.39	.32	.36	.45	.42	.35	.40
Work pressure	-.41	-.44	-.53	-.39	-.44	-.45	-.40	-.48
Availability of hand washing materials	.41	.27	.20	.44	.30	.30	.37	.27
% staff undertaking health and safety training since joining trust	.42	.32	.20	.39	.26	.33	.37	.28
I have clear, planned goals for my job	.54	.55	.57	.49	.50	.52	.48	.51
There are enough staff at this trust for me to do my job properly	.50	.52	.59	.48	.52	.50	.46	.51
I often think about leaving this trust	-.43	-.44	-.33	-.44	-.44	-.42	-.45	-.51

Staff survey items:	Were you involved as much as you wanted to be in decisions about your care and treatment?	How much information about your condition or treatment was given to you?	If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?	Did you find someone on the hospital staff to talk to about your worries and fears?	Were you given enough privacy when discussing your condition or treatment?	Were you given enough privacy when being examined or treated?	Did you feel you were involved in decisions about your discharge from hospital?	Did a member of staff explain the purpose of the medicines you were to take at home in a way you
Care of patients is my trust's top priority	.38	.44	.48	.34	.46	.41	.39	.43
Patient information is treated confidentially by staff in this trust	.54	.50	.48	.55	.53	.47	.56	.45
Does your Trust act fairly with regard to career progression / promotion, regardless of ethnic background, gender, religion, sexual orientation, disability or age?	.48	.38	.18	.49	.31	.36	.47	.34
% staff experiencing discrimination	-.40	-.28	-.14	-.45	-.19	-.29	-.41	-.33
% staff experiencing discrimination on the grounds of ethnic background	-.44	-.29	-.15	-.49	-.22	-.31	-.43	-.30
Physical violence from relatives of patients	-.50	-.45	-.43	-.53	-.39	-.42	-.46	-.39
Physical violence from other members of the public	-.44	-.39	-.35	-.47	-.38	-.38	-.36	-.35
Bullying/harassment/abuse from patients	-.55	-.46	-.52	-.52	-.49	-.53	-.47	-.38
Bullying/harassment/abuse from relatives of patients	-.60	-.49	-.59	-.59	-.54	-.53	-.55	-.46
Bullying/harassment/abuse from other members of the public	-.61	-.50	-.50	-.58	-.52	-.59	-.54	-.38
Errors witnessed due to staffing levels	-.38	-.44	-.53	-.36	-.46	-.43	-.40	-.47
When errors, near misses or incidents are reported, my Trust	.45	.49	.51	.43	.44	.45	.46	.45

Patient Survey Items:

takes action to ensure that they do not happen again									

Staff survey key scores:	Patient survey items:							
	Did a member of staff tell you about medication side effects to watch for when you went home?	Were you told how to take your medication in a way you could understand?	Did a member of staff tell you about any danger signals you should watch for after you went home?	Did the doctors or nurses give your family or someone close to you all the information they needed to help care for you?	Overall, did you feel you were treated with respect and dignity while you were in the hospital?	How would you rate how well the doctors and nurses worked together?	Overall, how would you rate the care you received?	While in hospital, did you ever see any posters or leaflets explaining how to complain about the care you received?
% staff undertaking health and safety training in previous year	.24	.28	.34	.26	.41	.41	.41	.19
% staff experiencing physical violence from colleagues	-.29	-.23	-.31	-.23	-.36	-.36	-.36	-.17
Quality of work life balance	.41	.38	.45	.43	.46	.45	.46	.37
Extent of positive feeing in the organisation	.35	.37	.32	.40	.33	.33	.32	.31
Fairness and effectiveness of incident reporting procedures	.44	.39	.42	.43	.48	.51	.50	.46
Staff job satisfaction	.35	.37	.37	.36	.40	.37	.40	.27
Work pressure	-.46	-.43	-.47	-.49	-.49	-.54	-.51	-.45
Availability of hand washing materials	.23	.17	.29	.23	.41	.42	.44	.30
% staff undertaking health and safety training since joining trust	.23	.27	.34	.25	.43	.43	.43	.19
I have clear, planned goals for my job	.49	.45	.52	.52	.58	.58	.58	.49
There are enough staff at this trust for me to do my job properly	.50	.49	.51	.55	.56	.59	.58	.47
I often think about leaving this trust	-.42	-.46	-.40	-.41	-.43	-.42	-.44	-.30
Care of patients is my trust's top priority	.43	.42	.39	.46	.40	.42	.40	.41
Patient information is treated confidentially by staff in this trust	.52	.43	.46	.50	.54	.57	.56	.46

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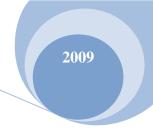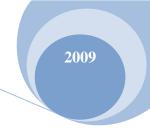|	Patient Survey Items:							
Staff survey items:	Did a member of staff tell you about medication side effects to watch for when you went home?	Were you told how to take your medication in a way you could understand?	Did a member of staff tell you about any danger signals you should watch for after you went home?	Did the doctors or nurses give your family or someone close to you all the information they needed to help care	Overall, did you feel you were treated with respect and dignity while you were in the hospital?	How would you rate how well the doctors and nurses worked together?	Overall, how would you rate the care you received?	While in hospital, did you ever see any posters or leaflets explaining how to complain about the care you received?
Does your Trust act fairly with regard to career progression / promotion, regardless of ethnic background, gender, religion, sexual orientation, disability or age?	.30	.30	.35	.28	.48	.46	.50	.21
% staff experiencing discrimination	-.28	-.25	-.33	-.22	-.41	-.40	-.43	-.25
% staff experiencing discrimination on the grounds of ethnic background	-.29	-.25	-.31	-.20	-.44	-.42	-.45	-.23
Physical violence from relatives of patients	-.44	-.37	-.50	-.41	-.56	-.54	-.54	-.44
Physical violence from other members of the public	-.35	-.33	-.40	-.31	-.52	-.48	-.49	-.29
Bullying/harassment/abuse from patients	-.47	-.41	-.49	-.48	-.57	-.57	-.56	-.57
Bullying/harassment/abuse from relatives of patients	-.55	-.52	-.54	-.54	-.60	-.62	-.62	-.60
Bullying/harassment/abuse from other members of the public	-.48	-.44	-.48	-.45	-.65	-.60	-.63	-.47
Errors witnessed due to staffing levels	-.40	-.45	-.45	-.43	-.48	-.51	-.49	-.36
When errors, near misses or incidents are reported, my Trust takes action to ensure that they do not happen again	.49	.41	.46	.46	.48	.53	.50	.49

Appendix 3: Details of Regression Analysis Results

Each of the following tables shows the results of a series of regression analyses with a different dependent variable (from the inpatient survey). Figures shown are standardised regression coefficients; in the first column these represent results when the staff survey variables are entered individually (along with the control variables); in the second column, these are shown as entered together.

The control variables were included in all regressions, but coefficients are only shown once in each table to avoid confusion. The staff survey variables are identified by their short labels for the sake of preserving space: a key to these is given here.

hands	% staff undertaking health and safety training in previous year
violcol	% staff experiencing physical violence from colleagues
balance	Quality of work life balance
orgclim	Extent of positive feeing in the organisation
incident	Fairness and effectiveness of incident reporting procedures
jobsat	Staff job satisfaction
wkpres	Work pressure
handwash	Availability of hand washing materials
q10a	% staff undertaking health and safety training since joining trust
q13e	I have clear, planned goals for my job
q13f	There are enough staff at this trust for me to do my job properly
q14a	I often think about leaving this trust
q17e	Care of patients is my trust's top priority
q17f	Patient information is treated confidentially by staff in this trust
q18a	Does your Trust act fairly with regard to career progression / promotion, regardless of ethnic background, gender, religion, sexual orientation, disability or age?
q18b	% staff experiencing discrimination
q18c1	% staff experiencing discrimination on the grounds of ethnic background
q21b	Physical violence from relatives of patients
q21c	Physical violence from other members of the public
q22a	Bullying/harassment/abuse from patients
q22b	Bullying/harassment/abuse from relatives of patients
q22c	Bullying/harassment/abuse from other members of the public
q26c3	Errors witnessed due to staffing levels

q27e   When errors, near misses or incidents are reported, my Trust takes action to
              ensure that they do not happen again

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Results for dependent variable: pq25 (Did you get enough help from staff to eat your meals?)

	Dependent variable: pq25	
	Entered separately	Entered together
Control variables:		
Size		0.045
Specialist status		0.130
Teaching status		-0.032
Foundation status		-0.045
London		-0.241*
Staff survey variables:		
hands	0.172*	0.366
violcol	-0.020	0.085
balance	0.021	-0.076
orgclim	0.018	-0.230
incident	0.050	0.016
jobsat	0.018	-0.131
wkpres	-0.156	0.435
handwash	0.145	0.077
q10a	0.167*	-0.287
q13e	0.209**	0.256
q13f	0.253**	0.356
q14a	-0.110	-0.147
q17e	0.114	0.231
q17f	0.029	-0.040
q18a	0.204*	0.092
q18b	-0.175*	0.090
q18c1	-0.306**	-0.218
q21b	0.188*	0.010
q21c	-0.109	-0.037
q22a	-0.263**	0.001
q22b	-0.348***	-0.282
q22c	-0.189*	0.055
q26c3	-0.266***	-0.125
q27e	0.055	-0.131

*$p < .05$; ** $p < .01$; *** $p < .001$

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Results for dependent variable: pq26 (When you had important questions to ask a doctor, did you get answers that you could understand?)

	Dependent variable: pq26	
	Entered separately	Entered together
Control variables:		
Size		0.068
Specialist status		0.492***
Teaching status		0.076
Foundation status		0.098
London		0.100
Staff survey variables:		
hands	0.177**	-0.489
violcol	-0.101	0.087
balance	0.127	-0.049
orgclim	0.091	-0.211
incident	0.120	-0.035
jobsat	0.156*	0.115
wkpres	-0.117	0.265
handwash	0.122	-0.054
q10a	0.192**	0.676
q13e	0.218**	0.210
q13f	0.168*	-0.094
q14a	-0.181*	-0.134
q17e	0.145	0.252
q17f	0.181*	0.131
q18a	0.248**	-0.048
q18b	-0.197*	0.163
q18c1	-0.282**	-0.383*
q21b	-0.062	0.109
q21c	-0.074	0.001
q22a	-0.075	0.238
q22b	-0.215**	-0.267
q22c	-0.245**	-0.148
q26c3	-0.222**	-0.158
q27e	0.095	-0.104

$* \ p < .05; \ ** \ p < .01; \ *** \ p < .001$

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Results for dependent variable: pq27 (Did you have confidence and trust in the doctors treating you?)

	Dependent variable: pq27	
	Entered separately	Entered together
Control variables:		
Size		-0.078
Specialist status		0.490***
Teaching status		0.235**
Foundation status		0.097
London		-0.062
Staff survey variables:		
hands	0.148*	-0.557
violcol	-0.118	0.001
balance	0.113	-0.011
orgclim	0.056	-0.253
incident	0.154*	0.035
jobsat	0.110	0.059
wkpres	-0.162*	0.231
handwash	0.128	-0.004
q10a	0.166*	0.649
q13e	0.216**	0.117
q13f	0.209*	0.111
q14a	-0.112	0.001
q17e	0.123	0.234
q17f	0.130	0.056
q18a	0.225**	0.007
q18b	-0.184*	0.065
q18c1	-0.239**	-0.236
q21b	0.092	0.241*
q21c	0.014	0.004
q22a	-0.017	0.189
q22b	-0.121	-0.215
q22c	-0.141	-0.078
q26c3	-0.290***	-0.226*
q27e	0.138	-0.099

$* \ p < .05; ** \ p < .01; *** \ p < .001$

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Results for dependent variable: pq28 (Did doctors talk in front of you as if you weren't there?)

	Dependent variable: pq28	
	Entered separately	Entered together
Control variables:		
Size		-0.134
Specialist status		0.471***
Teaching status		0.094
Foundation status		0.030
London		-0.054
Staff survey variables:		
hands	0.126	-0.290
violcol	-0.119	0.021
balance	0.047	-0.116
orgclim	-0.020	-0.376
incident	0.030	0.079
jobsat	0.101	0.029
wkpres	-0.077	0.277
handwash	0.114	-0.041
q10a	0.135*	0.392
q13e	0.187*	0.289*
q13f	0.107	0.077
q14a	-0.181*	-0.406**
q17e	0.024	0.151
q17f	0.127	0.147
q18a	0.286***	0.082
q18b	-0.240**	0.232
q18c1	-0.372***	-0.420**
q21b	-0.084	0.032
q21c	-0.070	0.058
q22a	-0.063	-0.032
q22b	-0.123	-0.009
q22c	-0.125	-0.007
q26c3	-0.123	-0.049
q27e	-0.044	-0.349*

*$p < .05$; ** $p < .01$; *** $p < .001$

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Results for dependent variable: pq30 (When you had important questions to ask a nurse, did you get answers that you could understand?)

	Dependent variable: pq30	
	Entered separately	Entered together
Control variables:		
Size		0.024
Specialist status		0.232**
Teaching status		0.058
Foundation status		-0.132*
London		-0.128
Staff survey variables:		
Hands	0.230***	-0.523
Violcol	-0.150*	0.005
Balance	0.067	-0.029
Orgclim	0.002	-0.392*
Incident	0.130	0.040
Jobsat	0.075	-0.134
Wkpres	-0.212**	0.215
Handwash	0.249**	0.063
q10a	0.249***	0.686
q13e	0.258**	0.087
q13f	0.293***	0.343
q14a	-0.167*	-0.287*
q17e	0.094	0.137
q17f	0.177*	0.164
q18a	0.288***	-0.020
q18b	-0.263**	0.271*
q18c1	-0.442***	-0.517***
q21b	-0.134	0.062
q21c	-0.183**	-0.069
q22a	-0.118	0.043
q22b	-0.211**	-0.069
q22c	-0.229**	-0.080
q26c3	-0.234***	-0.045
q27e	0.114	-0.084

$* p < .05; ** p < .01; *** p < .001$

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Results for dependent variable: pq31 (Did you have confidence and trust in the nurses treating you?)

	Dependent variable: pq31	
	Entered separately	Entered together
Control variables:		
Size		-0.01
Specialist status		0.212*
Teaching status		0.086
Foundation status		0.086
London		-0.247*
Staff survey variables:		
hands	0.223***	-0.606
violcol	-0.147**	0.016
balance	0.094	-0.038
orgclim	0.058	-0.329
incident	0.178*	0.012
jobsat	0.093	-0.071
wkpres	-0.216**	0.050
handwash	0.261***	0.085
q10a	0.246***	-0.746*
q13e	0.235**	-0.052
q13f	0.294***	0.260
q14a	-0.138*	-0.046
q17e	0.150*	0.302
q17f	0.173**	0.070
q18a	0.309***	0.083
q18b	-0.274***	0.131
q18c1	-0.389***	-0.347**
q21b	-0.118	0.079
q21c	-0.177**	-0.117
q22a	-0.113	0.056
q22b	-0.173*	-0.049
q22c	-0.226**	-0.103
q26c3	-0.234***	-0.025
q27e	0.179*	0.005

*$p < .05$; ** $p < .01$; *** $p < .001$

Results for dependent variable: pq32 (Did nurses talk in front of you as if you weren't there?)

	Dependent variable: pq32	
	Entered separately	Entered together
Control variables:		
Size		-0.033
Specialist status		0.293**
Teaching status		0.071
Foundation status		-0.066
London		-0.325***
Staff survey variables:		
hands	0.132*	0.407
violcol	-0.116	0.011
balance	0.043	-0.001
orgclim	-0.027	-0.255
incident	0.016	0.130
jobsat	0.057	-0.070
wkpres	-0.057	0.320
handwash	0.064	-0.070
q10a	0.126	-0.350
q13e	0.153*	0.238
q13f	0.109	0.254
q14a	-0.096	-0.185
q17e	0.011	0.131
q17f	0.167*	0.268**
q18a	0.281***	0.088
q18b	-0.261*	0.082
q18c1	-0.372***	-0.287
q21b	-0.137	-0.056
q21c	-0.091	0.040
q22a	-0.047	-0.021
q22b	-0.101	0.048
q22c	-0.086	0.014
q26c3	-0.148*	-0.110
q27e	-0.069	-0.473**

$* \, p < .05; \, ** \, p < .01; \, *** \, p < .001$

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Results for dependent variable: pq33 (In your opinion, were there enough nurses on duty to care for you in hospital?)

	Dependent variable: pq33	
	Entered separately	Entered together
Control variables:		
Size		0.089
Specialist status		0.345***
Teaching status		0.085
Foundation status		-0.095
London		0.068
Staff survey variables:		
hands	0.202**	-1.272**
violcol	-0.023	0.125
balance	0.247**	-0.058
orgclim	0.269**	-0.216
incident	0.177*	-0.117
jobsat	0.218**	-0.039
wkpres	-0.401***	0.047
handwash	0.226**	0.070
q10a	0.238***	1.431**
q13e	0.359***	0.070
q13f	0.477***	0.247
q14a	-0.300***	-0.077
q17e	0.384***	0.413*
q17f	0.154	0.032
q18a	0.158*	0.010
q18b	-0.097	-0.062
q18c1	-0.072	0.030
q21b	-0.061	0.140
q21c	-0.103	-0.140
q22a	-0.197*	0.050
q22b	-0.287**	-0.138
q22c	-0.288***	-0.120
q26c3	-0.271***	-0.057
q27e	0.210**	-0.053

$* \ p < .05;\ ** \ p < .01;\ *** \ p < .001$

Results for dependent variable: pq36 (Were you involved as much as you wanted to be in decisions about your care and treatment?)

	Dependent variable: pq36	
	Entered separately	Entered together
Control variables:		
Size		0.044
Specialist status		0.465***
Teaching status		0.083
Foundation status		0.016
London		-0.011
Staff survey variables:		
hands	0.192**	-0.391
violcol	-0.068	0.099
balance	0.122	-0.017
orgclim	0.106	-0.240
incident	0.183**	0.178
jobsat	0.122	-0.103
wkpres	-0.124	0.461*
handwash	0.189**	0.024
q10a	0.209**	0.542
q13e	0.248**	0.298*
q13f	0.209**	0.213
q14a	-0.197**	-0.235*
q17e	0.178**	0.212
q17f	0.185**	0.094
q18a	0.276***	0.003
q18b	-0.212**	0.131
q18c1	-0.303***	-0.326**
q21b	-0.085	0.054
q21c	-0.062	0.052
q22a	-0.124	0.128
q22b	-0.217**	-0.182
q22c	-0.242**	-0.149
q26c3	-0.190**	-0.053
q27e	0.124	-0.248

*$p < .05$; ** $p < .01$; *** $p < .001$

Results for dependent variable: pq37 (How much information about your condition or treatment was given to you?)

	Dependent variable: pq37	
	Entered separately	Entered together
Control variables:		
Size		0.047
Specialist status		0.383***
Teaching status		0.131
Foundation status		-0.114
London		0.000
Staff survey variables:		
hands	0.168*	-0.419
violcol	-0.066	0.087
balance	0.189*	-0.058
orgclim	0.228**	-0.170
incident	0.248**	-0.073
jobsat	0.200**	-0.030
wkpres	-0.206*	0.519*
handwash	0.154	-0.046
q10a	0.183**	0.515
q13e	0.341***	0.374*
q13f	0.296***	0.256
q14a	-0.279***	-0.237
q17e	0.305***	0.192
q17f	0.240**	0.111
q18a	0.296***	0.026
q18b	-0.209*	0.072
q18c1	-0.244**	-0.171
q21b	-0.118	-0.043
q21c	-0.087	-0.037
q22a	-0.073	0.069
q22b	-0.120	-0.007
q22c	-0.166*	-0.028
q26c3	-0.263***	-0.135
q27e	0.271**	0.044

$* p < .05; ** p < .01; *** p < .001$

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Results for dependent variable: pq38 (If your family or someone else close to you wanted to talk to a doctor, did they have enough opportunity to do so?)

	Dependent variable: pq38	
	Entered separately	Entered together
Control variables:		
Size		0.122
Specialist status		0.392***
Teaching status		0.030
Foundation status		-0.022
London		0.118
Staff survey variables:		
hands	0.078	-0.203
violcol	-0.055	0.021
balance	0.109	0.056
orgclim	0.127	0.033
incident	0.179*	0.013
jobsat	0.075	-0.137
wkpres	-0.232**	0.341
handwash	0.149*	0.061
q10a	0.088	0.188
q13e	0.288***	0.277*
q13f	0.297***	0.250
q14a	-0.112	0.029
q17e	0.208*	-0.021
q17f	0.163*	0.107
q18a	0.097	-0.177
q18b	-0.116	0.064
q18c1	-0.179*	-0.214
q21b	-0.106	-0.005
q21c	-0.019	0.034
q22a	-0.136	0.194
q22b	-0.288***	-0.352**
q22c	-0.145	0.009
q26c3	-0.303***	-0.203*
q27e	0.221**	0.076

$* p < .05; ** p < .01; *** p < .001$

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Results for dependent variable: pq39 (Did you find someone on the hospital staff to talk to about your worries and fears?)

	Dependent variable: pq39	
	Entered separately	Entered together
Control variables:		
Size		0.019
Specialist status		0.502***
Teaching status		0.143*
Foundation status		-0.029
London		-0.133
Staff survey variables:		
hands	0.117*	-0.811*
violcol	-0.080	0.099
balance	0.090	-0.147
orgclim	0.094	-0.299
incident	0.093	-0.138
jobsat	0.132*	0.080
wkpres	-0.141*	0.288
handwash	0.199**	0.023
q10a	0.138*	0.929*
q13e	0.209**	0.168
q13f	0.208**	0.105
q14a	-0.218***	-0.228*
q17e	0.186*	0.354*
q17f	0.201**	0.142
q18a	0.238***	-0.049
q18b	-0.237**	0.089
q18c1	-0.317***	-0.366**
q21b	-0.104	0.077
q21c	-0.091	-0.038
q22a	-0.061	0.158
q22b	-0.193**	-0.176
q22c	-0.184**	-0.067
q26c3	-0.186**	-0.089
q27e	0.111	-0.031

*$p < .05$; ** $p < .01$; *** $p < .001$

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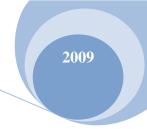Birmingham

Results for dependent variable: pq40 (Were you given enough privacy when discussing your condition or treatment?)

	Dependent variable: pq40	
	Entered separately	Entered together
Control variables:		
Size		-0.043
Specialist status		0.281**
Teaching status		0.080
Foundation status		0.004
London		-0.007
Staff survey variables:		
hands	0.124	-0.480
violcol	-0.060	0.091
balance	0.231**	0.048
orgclim	0.216**	-0.094
incident	0.167*	-0.175
jobsat	0.252***	0.175
wkpres	-0.193*	0.394
handwash	0.206**	0.070
Q10a	0.136	0.543
Q13e	0.244**	0.150
Q13f	0.285**	0.138
Q14a	-0.252**	-0.067
Q17e	0.269**	0.105
Q17f	0.293**	0.304**
Q18a	0.211*	-0.077
Q18b	-0.086	0.320*
Q18c1	-0.178*	-0.354*
q21b	-0.053	0.116
q21c	-0.106	-0.099
q22a	-0.143	0.057
q22b	-0.231**	-0.131
q22c	-0.228**	-0.032
q26c3	-0.311***	-0.311**
q27e	0.169*	-0.067

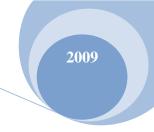$* p < .05; ** p < .01; *** p < .001$

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Results for dependent variable: pq41 (Were you given enough privacy when being examined or treated?)

	Dependent variable: pq41	
	Entered separately	Entered together
Control variables:		
Size		-0.010
Specialist status		0.268*
Teaching status		0.094
Foundation status		-0.028
London		0.005
Staff survey variables:		
hands	0.177*	-0.266
violcol	-0.108	0.038
balance	0.258**	0.129
orgclim	0.202*	-0.223
incident	0.220**	-0.007
jobsat	0.246**	0.027
wkpres	-0.252**	-0.023
handwash	0.160	-0.013
q10a	0.189**	0.376
q13e	0.313***	0.086
q13f	0.287**	-0.190
q14a	-0.255**	-0.131
q17e	0.265**	0.178
q17f	0.185**	0.124
q18a	0.243**	-0.060
q18b	-0.177*	0.223
q18c1	-0.248**	-0.365*
q21b	-0.091	-0008
q21c	-0.079	0.060
q22a	-0.224*	-0.043
q22b	-0.217*	0.058
q22c	-0.347***	-0.272*
q26c3	-0.285***	-0.152
q27e	0.213*	-0.013

* $p < .05$; ** $p < .01$; *** $p < .001$
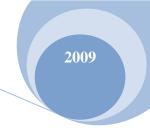
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Results for dependent variable: pq53 (Did you feel you were involved in decisions about your discharge from hospital?)

	Dependent variable: pq53	
	Entered separately	Entered together
Control variables:		
Size		0.030
Specialist status		0.314**
Teaching status		0.053
Foundation status		0.103
London		-0.008
Staff survey variables:		
hands	0.131	-0.752
violcol	-0.156*	-0.008
balance	0.126	0.022
orgclim	0.140	-0.172
incident	0.170*	0.085
jobsat	0.120	-0.164
wkpres	-0.114	0.069
handwash	0.151	-0.057
q10a	0.155*	0.869
q13e	0.176*	0.017
q13f	0.170*	-0.144
q14a	-0.208**	-0.248
q17e	0.212*	0.244
q17f	0.249**	0.198
q18a	0.282***	-0.004
q18b	-0.242**	0.167
q18c1	-0.312***	-0.384*
q21b	-0.097	0.016
q21c	-0.016	0.106
q22a	-0.123	0.150
q22b	-0.254**	-0.225
q22c	-0.227**	-0.158
q26c3	-0.217**	-0.139
q27e	0.148	-0.122

$* \ p < .05; ** \ p < .01; *** \ p < .001$
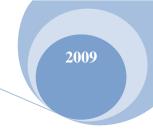
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Results for dependent variable: pq58 (Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?)

	Dependent variable: pq58	
	Entered separately	Entered together
Control variables:		
Size		0.068
Specialist status		0.364**
Teaching status		0.052
Foundation status		0.036
London		0.136
Staff survey variables:		
hands	0.151*	-0.162
violcol	-0.067	0.101
balance	0.188*	-0.064
orgclim	0.197*	-0.256
incident	0.233**	0.249
jobsat	0.216**	-0.058
wkpres	-0.266**	0.062
handwash	0.179*	-0.035
q10a	0.164*	0.289
q13e	0.291**	0.087
q13f	0.298**	-0.133
q14a	-0.365***	-0.503**
q17e	0.251**	0.227
q17f	0.173	-0.002
q18a	0.271**	-0.166
q18b	-0.350***	-0.183
q18c1	-0.336***	-0.196
q21b	-0.119	0.042
q21c	-0.100	-0.121
q22a	-0.058	0.229
q22b	-0.211*	-0.344*
q22c	-0.079	0.182
q26c3	-0.303***	-0.187
q27e	0.193*	-0.198

* $p < .05$; ** $p < .01$; *** $p < .001$
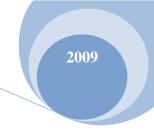
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Results for dependent variable: pq59 (Did a member of staff tell you about medication side effects to watch for when you went home?)

	Dependent variable: pq59	
	Entered separately	Entered together
Control variables:		
Size		0.108
Specialist status		0.513***
Teaching status		0.044
Foundation status		0.006
London		0.064
Staff survey variables:		
hands	0.058	0.088
violcol	-0.091	-0.013
balance	0.109	-0.008
orgclim	0.137	-0.231
incident	0.149*	0.017
jobsat	0.119	-0.069
wkpres	-0.153*	-0.057
handwash	0.069	-0.108
q10a	0.060	-0.037
q13e	0.165*	-0.050
q13f	0.182*	-0.151
q14a	-0.230**	-0.324*
q17e	0.212*	0.195
q17f	0.199*	0.113
q18a	0.161*	-0.128
q18b	-0.199*	0.062
q18c1	-0.240**	-0.348*
q21b	-0.082	-0.027
q21c	0.005	0.063
q22a	-0.044	0.222
q22b	-0.189*	-0.288*
q22c	-0.087	0.000
q26c3	-0.158*	-0.039
q27e	0.198*	0.159

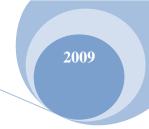$* p < .05; ** p < .01; *** p < .001$

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Results for dependent variable: pq60 (Were you told how to take your medication in a way you could understand?)

	Dependent variable: pq60	
	Entered separately	Entered together
Control variables:		
Size		0.015
Specialist status		0.398***
Teaching status		0.106
Foundation status		0.075
London		0.092
Staff survey variables:		
hands	0.164*	0.029
violcol	-0.101	0.040
balance	0.128	-0.143
orgclim	0.159	-0.208
incident	0.113	-0.009
jobsat	0.176*	0.063
wkpres	-0.167	0.172
handwash	0.050	-0.149
q10a	0.168*	0.166
q13e	0.170	-0.013
q13f	0.236**	-0.065
q14a	-0.299***	-0.415**
q17e	0.211*	0.252
q17f	0.146	0.060
q18a	0.219*	-0.138
q18b	-0.237**	-0.023
q18c1	-0.275**	-0.298
q21b	-0.067	0.138
q21c	-0.066	-0.066
q22a	-0.086	0.276
q22b	-0.274**	-0.428**
q22c	-0.163	0.041
q26c3	-0.265**	-0.185
q27e	0.121	-0.027

*$p < .05$; ** $p < .01$; *** $p < .001$
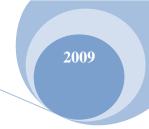
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Results for dependent variable: pq62 (Did a member of staff tell you about any danger signals you should watch for after you went home?)

	Dependent variable: pq62	
	Entered separately	Entered together
Control variables:		
Size		0.020
Specialist status		0.461***
Teaching status		0.096
Foundation status		-0.017
London		-0.029
Staff survey variables:		
hands	0.172**	-0.174
violcol	-0.106	-0.013
balance	0.180*	0.096
orgclim	0.114	-0.454*
incident	0.149*	0.007
jobsat	0.163*	0.047
wkpres	-0.228**	0.013
handwash	0.129	-0.034
q10a	0.185**	0.331
q13e	0.248**	0.029
q13f	0.252**	-0.123
q14a	-0.206**	-0.185
q17e	0.197*	0.360
q17f	0.121	0.005
q18a	0.196*	-0.118
q18b	-0.238**	-0.058
q18c1	-0.232**	-0.109
q21b	-0.159*	-0.127
q21c	-0.060	-0.014
q22a	-0.076	0.119
q22b	-0.166*	-0.138
q22c	-0.088	0.099
q26c3	-0.265***	-0.169
q27e	0.180*	0.058

$* p < .05; ** p < .01; *** p < .001$
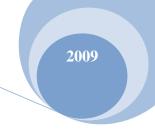
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Results for dependent variable: pq63 (Did the doctors or nurses give your family or someone close to you all the information they needed to help care for you?)

	Dependent variable: pq63	
	Entered separately	Entered together
Control variables:		
Size		0.065
Specialist status		0.489***
Teaching status		0.102
Foundation status		-0.059
London		0.007
Staff survey variables:		
hands	0.122	0.204
violcol	-0.069	0.001
balance	0.148*	-0.041
orgclim	0.203**	-0.046
incident	0.168*	0.109
jobsat	0.138*	-0.127
wkpres	-0.229**	0.133
handwash	0.119	-0.019
q10a	0.125	-0.162
q13e	0.238**	0.099
q13f	0.283**	0.179
q14a	-0.229**	-0.174
q17e	0.265**	0.138
q17f	0.213**	0.134
q18a	0.185*	-0.022
q18b	-0.166*	-0.079
q18c1	-0.152	-0.053
q21b	-0.042	0.007
q21c	0.038	0.054
q22a	-0.064	0.138
q22b	-0.183*	-0.222
q22c	-0.056	0.062
q26c3	-0.217**	-0.099
q27e	0.168*	-0.172

$* p < .05; ** p < .01; *** p < .001$
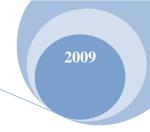
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Results for dependent variable: pq66 (Overall, did you feel you were treated with respect and dignity while you were in the hospital?)

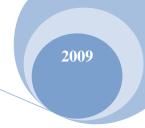|	Dependent variable: pq66	
	Entered separately	Entered together
Control variables:		
Size		0.025
Specialist status		0.400***
Teaching status		0.157*
Foundation status		0.030
London		0.012
Staff survey variables:		
hands	0.208***	-0.599
violcol	-0.116	0.081
balance	0.149*	-0.023
orgclim	0.093	-0.338
incident	0.173*	0.079
jobsat	0.161**	0.021
wkpres	-0.206**	0.176
handwash	0.247***	0.081
q10a	0.231***	0.736
q13e	0.285***	0.149
q13f	0.268***	0.096
q14a	-0.181**	-0.076
q17e	0.172*	0.323
q17f	0.159*	0.090
q18a	0.304***	0.024
q18b	-0.278***	0.055
q18c1	-0.353***	-0.236
q21b	-0.176**	-0.26
q21c	-0.166**	-0.031
q22a	-0.168*	0.020
q22b	-0.209**	0.023
q22c	-0.307***	-0.188*
q26c3	-0.282***	-0.154*
q27e	0.127	-0.216

$* p < .05; ** p < .01; *** p < .001$

Results for dependent variable: pq67 (How would you rate how well the doctors and nurses worked together?)

	Dependent variable: pq67	
	Entered separately	Entered together
Control variables:		
Size		0.092
Specialist status		0.485***
Teaching status		0.124*
Foundation status		0.000
London		-0.048
Staff survey variables:		
hands	0.194***	-0.463
violcol	-0.084	0.061
balance	0.117*	-0.060
orgclim	0.101	-0.345*
incident	0.201**	0.106
jobsat	0.119*	-0.028
wkpres	-0.258***	-0.057
handwash	0.246***	0.083
q10a	0.215***	0.571
q13e	0.264***	-0.035
q13f	0.307***	0.081
q14a	-0.164**	-0.038
q17e	0.202**	0.357*
q17f	0.179**	0.064
q18a	0.262***	0.054
q18b	-0.243***	0.017
q18c1	-0.291***	-0.176
q21b	-0.107	0.010
q21c	-0.083	-0.026
q22a	-0.125	0.107
q22b	-0.207**	-0.130
q22c	-0.188**	-0.077
q26c3	-0.289***	-0.125
q27e	0.198**	-0.090

$* \ p < .05; ** \ p < .01; *** \ p < .001$

Results for dependent variable: pq68 (Overall, how would you rate the care you received?)

	Dependent variable: pq68	
	Entered separately	Entered together
Control variables:		
Size		0.062
Specialist status		0.458***
Teaching status		0.162**
Foundation status		-0.025
London		0.003
Staff survey variables:		
hands	0.196***	-0.506
violcol	-0.101	0.084
balance	0.154**	-0.025
orgclim	0.104	-0.352
incident	0.201**	0.090
jobsat	0.159**	-0.021
wkpres	-0.243***	0.168
handwash	0.288***	0.121
q10a	0.219***	0.599
q13e	0.283***	0.065
q13f	0.317***	0.236
q14a	-0.203**	-0.097
q17e	0.190**	0.267
q17f	0.193**	0.085
q18a	0.320***	0.057
q18b	-0.297***	0.001
q18c1	-0.353***	-0.193
q21b	-0.119	0.039
q21c	-0.115	-0.029
q22a	-0.121	0.115
q22b	-0.217**	-0.114
q22c	-0.242***	-0.124
q26c3	-0.298***	-0.135
q27e	0.177**	-0.144

* p < .05; ** p < .01; *** p < .001

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Results for dependent variable: pq70 (While in hospital, did you ever see any posters or leaflets explaining how to complain about the care you received?)

	Dependent variable: pq70	
	Entered separately	Entered together
Control variables:		
Size		0.133
Specialist status		0.430***
Teaching status		0.081
Foundation status		0.065
London		0.161
Staff survey variables:		
hands	0.027	-0.265
violcol	0.030	0.099
balance	0.057	0.087
orgclim	0.041	-0.274
incident	0.189*	0.268
jobsat	0.022	-0.080
wkpres	-0.130	-0.214
handwash	0.230**	0.156
q10a	0.041	0.261
q13e	0.165*	0.037
q13f	0.104	-0.348
q14a	-0.056	0.043
q17e	0.146	0.362
q17f	0.109	-0.095
q18a	0.067	-0.195
q18b	-0.211**	-0.116
q18c1	-0.217**	-0.258
q21b	-0.106	-0.033
q21c	0.066	0.125
q22a	-0.247**	0.062
q22b	-0.303***	-0.410**
q22c	-0.098	0.007
q26c3	-0.098	0.081
q27e	0.198*	0.043

*$p < .05$; ** $p < .01$; *** $p < .001$