CareQuality Commission

NHS

NHS Patient Survey Programme

2018 Adult Inpatient Survey

Identification of outliers within trust-level results

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Summary

The 2018 adult inpatient survey received feedback from 76,668 patients who received care in 144 NHS acute and NHS foundation trusts during July 2018.

We have published analysis of the national results on our website. This separate analysis identifies trusts where patients experience is better, or worse than expected, when we compare survey results across trusts. The analysis methodology used in this report allows for an overall picture of performance across the survey as a whole, based on considering the results for all evaluative (scored) questions simultaneously. It supplements the approach used in trust level benchmark reporting, which provides results for individual questions.

More information on the difference between approaches used to explore differences in patients' experiences between trusts is available within the section 'difference between outlier analysis and trust-level benchmark reports'.

Each trust has been assigned one of five bands: 'much worse than expected', 'worse than expected', 'about the same', 'better than expected' or 'much better than expected'.

Eight acute specialist trusts have been categorised within the highest band, identified as 'much better than expected' with results that indicate patient experience was substantially better than elsewhere. One of these, The Royal Orthopaedic Hospital NHS Foundation Trust, was also rated 'much better than expected' in 2017, and six were also rated 'much better' in both the 2016 and 2017 surveys: Liverpool Heart and Chest Hospital NHS Foundation Trust, The Christie NHS Foundation Trust, The Clatterbridge Cancer Centre NHS Foundation Trust, The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust, Queen Victoria Hospital NHS Foundation Trust, and The Royal Marsden NHS Foundation Trust. The Royal Brompton & Harefield NHS Foundation Trust have scored 'much better than expected' this year for the first time.

Patients from three other trusts experienced care that was 'better than expected': Royal National Orthopaedic Hospital NHS Trust, Royal Papworth Hospital NHS Foundation Trust, and The Newcastle Upon Tyne Hospitals NHS Foundation Trust.

Seven trusts have been identified as achieving 'worse than expected' results: Bradford Teaching Hospitals NHS Foundation Trust, Southend University Hospital NHS Foundation Trust, North Middlesex University Hospital NHS Trust, Lewisham and Greenwich NHS Trust, Medway NHS Foundation Trust, Pennine Acute Hospitals NHS Trust, Sandwell and West Birmingham Hospitals NHS Trust

Patients from one trust reported experiencing care that was 'much worse than expected' in 2018: Croydon Health Services NHS Trust.

Our Chief Inspector of Hospitals, Professor Ted Baker, has written to all trusts identified as better or worse in the statistical release. The eight trusts identified as being worse, or much worse, will be asked to review their results and to outline what actions they will take to address the areas of concern. CQC will review their progress on their next planned inspections.

Interpreting the results

To provide a comprehensive picture of inpatient experience within each NHS trust, we have calculated the overall proportion of responses each trust received for the 'most negative', 'middle' and 'most positive' answer option(s) across most of the scored questions in the survey.[a]

We use the following question from the 2018 adult inpatient survey to show how responses are categorised as either 'most negative', 'middle' and 'most positive':

Q16. In your opinion, how clean was the hospital room or ward that you were in?

- Very clean – **most positive**
- Fairly clean – **middle**
- Not very clean – **middle**
- Not at all clean – **most negative**

Where people's experiences of a trust's inpatient care are better or worse than elsewhere, there will be a significant difference between the trust's result and the average result across all trusts. Each trust is then assigned a banding of either 'much worse than expected', 'worse than expected', 'about the same', 'better than expected' or 'much better than expected' depending on how significant that variation is. Consistent with our trust-level benchmarking methodology, specialist and non-specialist trusts have been compared with one another.

For example, a trust's proportion of responses breaks down as: 'most negative' 12%, 'middle' 14% and 'most positive' 74%. This is then compared to the average of 'most negative' 16%, 'middle' 18% and 'most positive' 66% for all trusts. An 'adjusted z-score'[b] is calculated for the difference between 'most negative' trust proportions, which in this example is -2.92. This means this trust has a higher proportion of 'positive' responses than average, but not the 'most positive'. This is considered significant with a p-value of less than 0.25 but not less than 0.01. As a result, the trust is classed as 'better'.

In order to provide more granular analysis, we have also re-run the analysis according to whether patients received 'medical' or 'surgical' care.

Finally, each table within the report includes the most recent trust-wide CQC rating. For full details of the analytical method used to calculate these results, please see appendix C.

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[a] Filter questions, such as Q1 *'Was your most recent hospital stay planned in advance or an emergency?',* were not included within this analysis.
[b] Z scores give an indication of how different a trust's proportion is from the average.

Results

Trusts achieving 'much better than expected' results

Eight acute trusts were classed as 'much better than expected' in 2018. Seven of these had the same banding in 2017 and six had the same banding in 2016, demonstrating consistently high levels of positive patient experience. All of these trusts are classed as specialist trusts.

	Historic results		Overall results			Core service		Overall CQC rating
	2017	2018	Most Negative (%)	Middle (%)[c]	Most Positive (%)	Medical care	Surgery	
Trust average			16	18	66			
The Christie NHS Foundation Trust	MB	MB	9	12	79	MB	MB	O
The Clatterbridge Cancer Centre NHS Foundation Trust	MB	MB	11	13	76	MB	N/A	G
Liverpool Heart and Chest Hospital NHS Foundation Trust	MB	MB	10	12	78	MB	MB	O
Queen Victoria Hospital NHS Foundation Trust	MB	MB	9	11	81	MB	MB	G
Royal Brompton & Harefield NHS Foundation Trust	B	MB	11	14	75	MB	B	G
The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust	MB	MB	8	11	81	MB	MB	G
The Royal Marsden NHS Foundation Trust	MB	MB	8	12	80	MB	MB	O
The Royal Orthopaedic Hospital NHS Foundation Trust	MB	MB	10	15	75	N/A	B	G

Key:

Trust performance	About the same (S)	Better (B)	Much better (MB)	
CQC rating	Inadequate (I)	Requires Improvement (RI)	Good (G)	Outstanding (O)

[c] Where a number of options lay between the negative and positive responses, they are placed at equal intervals along the scale. For example, 'yes, sometimes' is the middle option (scored as 5/10) for the question *'When you had important questions to ask a doctor, did you get answers that you could understand?'*.

Trusts achieving 'better than expected' results

Three trusts were classed as 'better than expected' across the entire survey. The Newcastle Upon Tyne Hospitals NHS Foundation Trust was also 'better than expected' in 2017, while last year Royal Papworth Hospital NHS Foundation Trust had achieved a higher band of 'much better than expected'. Royal National Orthopaedic Hospital NHS Trust has gone from 'about the same' in 2017, to 'better than expected' this year.

	Historic results		Overall results			Core service		Overall CQC rating
	2017	2018	Most Negative (%)	Middle[d] (%)	Most Positive (%)	Medical care	Surgery	
Trust average			**16**	**18**	**66**			
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	B	B	13	15	72	B	S	O
Royal National Orthopaedic Hospital NHS Trust	S	B	12	16	73	B	S	G
Royal Papworth Hospital NHS Foundation Trust	MB	B	12	14	74	MB	S	G

Key:

Trust performance	About the same (**S**)	Better (**B**)	Much better (**MB**)	
CQC rating	Inadequate (**I**)	Requires Improvement (**RI**)	Good (**G**)	Outstanding (**O**)

[d] Where a number of options lay between the negative and positive responses, they are placed at equal intervals along the scale. For example, 'yes, sometimes' is the middle option (scored as 5/10) for the question *'When you had important questions to ask a doctor, did you get answers that you could understand?'.*

Trusts achieving 'worse than expected' results

Seven trusts were classed as 'worse than expected'. Four trusts had the same banding in 2017, but Lewisham and Greenwich NHS Trust, Medway NHS Foundation Trust and Southend University Hospital NHS Foundation Trust have gone from 'about the same' in 2017 to 'worse than expected' for this year.

	Historic results		Overall results			Core service		Overall CQC rating
	2017	2018	Most Negative (%)	Middle (%)e	Most Positive (%)	Medical care	Surgery	
Trust average			**16**	**18**	**66**			
Bradford Teaching Hospitals NHS Foundation Trust	W	W	20	22	58	W	W	RI
Lewisham and Greenwich NHS Trust	S	W	20	20	60	W	W	RI
Medway NHS Foundation Trust	S	W	20	20	61	MW	S	RI
North Middlesex University Hospital NHS Trust	W	W	20	23	57	W	W	RI
Pennine Acute Hospital NHS Trust	W	W	19	19	62	S	W	RI
Sandwell and West Birmingham Hospitals NHS Trust	W	W	19	20	61	S	S	RI
Southend University Hospital NHS Foundation Trust	S	W	19	19	62	W	S	G

Key:

Trust performance	About the same (S)	Worse (W)	Much worse (MW)	
CQC rating	Inadequate (I)	Requires Improvement (RI)	Good (G)	Outstanding (O)

e Where a number of options lay between the negative and positive responses, they are placed at equal intervals along the scale. For example, 'yes, sometimes' is the middle option (scored as 5/10) for the question *'When you had important questions to ask a doctor, did you get answers that you could understand?'*.

Trusts achieving 'much worse than expected' results

One trust was identified as 'much worse than expected' when assessing overall experiences for all patients.

	Historic results		Overall results			Core service		Overall CQC rating
	2017	**2018**	**Most Negative (%)**	**Middle (%)[f]**	**Most Positive (%)**	**Medical care**	**Surgery**	
Trust average			**16**	**18**	**66**			
Croydon Health Services NHS Trust	**S**	**MW**	21	24	56	**W**	**W**	**RI**

Key:

Trust performance	About the same (**S**)	Worse (**W**)	Much worse (**MW**)	
CQC rating	Inadequate (**I**)	Requires Improvement (**RI**)	Good (**G**)	Outstanding (**O**)

[f] Where a number of options lay between the negative and positive responses, they are placed at equal intervals along the scale. For example, 'yes, sometimes' is the middle option (scored as 5/10) for the question *'When you had important questions to ask a doctor, did you get answers that you could understand?'*

Appendix A: Analysis methodology

Identifying worse than expected patient experience

The analytical approach to identifying those trusts where patient experience was 'worse than expected' uses responses for most scored questions (question 68 "Overall…" is excluded).

For each trust, a count of the number of responses scored as '0' (the most negative option) is calculated. This is then divided by the total number of responses scored as 0 to 10 to calculate the trust-level proportion of poor experience. A higher percentage of negative responses indicates poor patient experience.

Within the analysis, we use z-scores that give an indication of how different a trust's poor experience proportion is from the average.

There are two thresholds for flagging trusts with concerning levels of poor patient experience:

- **Worse than expected**: z-score lower than -1.96

- **Much worse than expected**: z-score lower than -3.09

Appendix C provides full technical detail of the analytical process used.

Identifying better than expected patient experience

In order to identify 'better than expected' patient experience a count of the number of responses scored as '10' (the most positive option) is calculated for each trust.

This is then divided by the total number of responses scored as 0 to 10 to calculate the trust-level proportion of poor experience.

A higher percentage of positive responses indicates good patient experience.

Our analysis has found that those trusts with the highest proportion of positive responses also have the lowest proportion of negative responses.

There are two thresholds for identifying trusts with high levels of good patient experience:

- **Better than expected**: z-score lower than -1.96

- **Much better than expected**: z-score lower than -3.09

Medical care and surgery core service results

For this analysis, a patient is counted as a medical case or surgical case based on the 'treatment function code' assigned to them during their time as an inpatient. Surgical care includes most surgical activity in a hospital. Surgical disciplines include (where they are provided) trauma and orthopaedics, urology, ENT, cardiac surgery, vascular, ophthalmic surgery, neurosurgery and general surgery. Medical care includes services that involve assessment, diagnosis and treatment of adults by means of medical interventions rather than surgery.

Core service results have been included to give trusts an indication of where improvement is most needed. We acknowledge that due to the different respondent numbers across trusts when looking at medical care and surgery experiences separately, some trusts with small samples may not have flagged as 'better' or 'worse' because their measurement error is too great.

When comparing experiences across all trusts for all inpatients (medical care and surgery combined), this limitation is mitigated as each trust has similar sample sizes and data for all questions.

Weighting

As in the national tables, results have been standardised by the age, sex and method of admission (emergency or elective)[g] of the sample to make sure that no trust will appear better or worse than another because of its respondent profile.

Standardisation enables a more accurate comparison of results from trusts with different population profiles. In most cases, this will not have a large impact on trust results. However, it does make comparisons between trusts as fair as possible.

Scoring

For each question in the survey, the individual (standardised) responses are converted into scores on a scale from 0 to 10. A score of 10 represents the best possible response and a score of 0 the worst. The higher the score for each question, the better the trust is performing.

It is not appropriate to score all questions in the questionnaire as not all of the questions assess a trust's performance. For example, they may be descriptive questions such as Q1 asking respondents if their inpatient stay was planned in advance or an emergency.

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[g] For medical care and surgery core service analysis, results have instead been weighted by age, gender and to the average medical care / surgery profile.

Appendix B: Difference between outlier analysis and trust-level benchmark reports

To analyse trust variation in this report, we focused on identifying significantly higher levels of better or worse patient experience **across the entire survey**.

This holistic approach is different to the technique used to analyse results within trust benchmarking reports that have already been made available to each trust. Within those reports trust results, for each scored question, are assigned bands of either 'better', 'worse' or 'about the same' when compared with the findings for all other trusts. However, trust benchmark reports do not attempt to look across all questions concurrently and as a result do not provide an overall assessment of the proportion of positive or negative patient experience reported across the entire survey.

Analysis of individual questions can hide variation in people's experiences as the scores are 'averaged' in that analysis. This approach allows CQC to identify that variation and highlight potential concerns raised by people across the survey.

Appendix C: Analytical stages of the outlier model

The analytical approach to identifying outliers is based on all evaluative items in the survey. These are the questions that are scored for benchmarking purposes. The scored variables are the source data, and are required at case level. These variables take values between 0 (representing the worst rating of experience) and 10 (representing the best rating). The approach also makes use of the standardisation weight for the survey.

1. Count the poor-care ratings made by each respondent[h]

Count of the '0' responses across the scored questions answered by each respondent (excluding the "Overall…" question).

2. Count the questions given specific (scored) answers by each respondent

Count of all '0 to 10' responses across the scored questions answered by each respondent (excluding the "Overall…" question).

3. Weight the data

Apply the standardisation weight for respondents. The weight adjusts the population of respondents within each trust to the national average proportions for age, gender and route of admission.

4. Aggregate to trust-level and compute proportion of poor ratings

Obtain a weighted numerator and denominator for each trust. Divide the numerator by the denominator to obtain the trust-level proportion of poor care ratings. For example, the overall percentage of responses which were scored as 0.

5. Compute the mean of the trust-level proportions

Sum all proportions and divide by the number of trusts to obtain the average trust-level proportion of poor care ratings.

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[h]The analytical approach used to identify positive patient experience uses a numerator count of the '10' responses across all scored questions (excluding the "overall…" question) to calculate the 'good-care ratings'. There are no other differences between the analytical approaches for identifying poor and good patient experience.

6. Compute the z-score for the proportion

The Z-score formula used is:

$$z_i = -2\sqrt{n_i}\left\{sin^{-1}\left(\sqrt{p_i}\right) - sin^{-1}\left(\sqrt{p_0}\right)\right\} \qquad (1)$$

where: n_i is the denominator for the trust

                 p_i is the trust proportion of poor care ratings

                 p_0 is the mean proportion for all trusts

7. Winsorize the z-scores

Winsorizing consists of shrinking in the extreme Z-scores to some selected percentile, using the following method:

       1. Rank cases according to their naive Z-scores.

       2. Identify Z_q and $Z_{(1-q)}$, the 100q% most extreme top and bottom naive Z-scores. For this work, we used a value of q=0.1

       3. Set the lowest 10% of Z-scores to Z_q, and the highest 10% of Z-scores to $Z_{(1-q)}$. These are the Winsorized statistics.

This retains the same number of Z-scores but discounts the influence of outliers.

8. Calculate dispersion using Winsorized z-scores

An over dispersion factor $\hat{\phi}$ is estimated which allows us to say if the data are over dispersed or not:

$$\hat{\phi} = \frac{1}{I}\sum_{i=1}^{I} z_i^2 \qquad (2)$$

Where I is the sample size (number of trusts) and z_i is the Z score for the ith trust given by (1). The Winsorized Z scores are used in estimating $\hat{\phi}$.

9. Adjust for overdispersion

If I $\hat{\phi}$ is greater than (I - 1) then we need to estimate the expected variance between trusts. We take this as the standard deviation of the distribution of p_i (trust proportions) for trusts, which are on target, we give this value the symbol $\hat{\tau}$, which is estimated using the following formula:

$$\hat{\tau}^2 = \frac{I\hat{\phi} - (I-1)}{\sum_i w_i - \sum_i w_i^2 / \sum_i w_i} \quad (3)$$

where $s_i = (p_i - p_o)/z_i$, $w_i = 1/s_i^2$ and $\hat{\phi}$ is from (2). Once $\hat{\tau}$ has been estimated, the Z_D score is calculated as:

$$z_i^D = \frac{p_0 - p_i}{\sqrt{s_i^2 + \hat{\tau}^2}} \quad (4)$$

Appendix D: Additional core service results

As part of this analysis, a number of trusts were identified as being worse/better than expected for either medical care or surgery, but not when combining experiences of patients across these services.

Medical care only

Eight trusts were identified as being '**much better than expected**' for medical care experiences:

- The Christie NHS Foundation Trust
- The Clatterbridge Cancer Centre NHS Foundation Trust
- Liverpool Heart and Chest Hospital NHS Foundation Trust
- Queen Victoria Hospital NHS Foundation Trust
- The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust
- Royal Papworth Hospital NHS Foundation Trust
- The Royal Marsden NHS Foundation Trust
- Royal Brompton and Harefield NHS Foundation Trust

Three trusts were classed as '**better than expected**' for medical care:

- Liverpool Women's NHS Foundation Trust
- The Newcastle Upon Tyne Hospitals NHS Foundation Trust
- Royal National Orthopaedic Hospital NHS Trust

Eight trusts were identified as being '**worse than expected**' for medical care experiences:

- Bradford Teaching Hospitals NHS Foundation Trust
- Croydon Health Services NHS Trust
- The Dudley Group NHS Foundation Trust
- Isle of Wight NHS Trust
- Lewisham and Greenwich NHS Trust
- North Middlesex University Hospital NHS Trust
- Southend University Hospital NHS Foundation Trust
- Tameside and Glossop Integrated Care NHS Foundation Trust

One trust was identified as being '**much worse than expected**' for medical care experiences:

- Medway NHS Foundation Trust

Surgery only

Five trusts were identified as being '**much better than expected**' for surgery experiences:

- The Christie NHS Foundation Trust
- Liverpool Heart and Chest Hospital NHS Foundation Trust
- The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust
- Queen Victoria Hospital NHS Foundation Trust
- The Royal Marsden NHS Foundation Trust

Four trusts were identified as being '**better than expected**' for surgery experiences:

- Northumbria Healthcare NHS Foundation Trust
- Sherwood Forest Hospitals NHS Foundation Trust
- The Royal Orthopaedic Hospital NHS Foundation Trust
- University Hospitals Bristol NHS Foundation Trust

Eight trusts were identified as being '**worse than expected**' for surgery experiences:

- Bradford Teaching Hospitals NHS Foundation Trust
- Croydon Health Services NHS Trust
- East and North Hertfordshire NHS Trust
- Lewisham and Greenwich NHS Trust
- London North West University Healthcare NHS Trust
- North Middlesex University Hospital NHS Trust
- Northern Lincolnshire and Goole NHS Foundation Trust
- Pennine Acute Hospitals NHS Trust

No trusts were identified as being '**much worse than expected**' for surgery experiences.

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