CareQuality
Commission

NHS

NHS Patient Survey Programme

2019 Adult Inpatient Survey

Identifying outliers within trust-level results

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Summary

The 2019 Inpatient Survey included 143[a] NHS trusts. Feedback was received from 76,915 people a response rate of 45.3%[b].

All patients aged 16 years or over at the time of their hospital stay were eligible to take part if they were treated in the trust during July 2019. Fieldwork took place between August 2019 and January 2020.

We have published an analysis of the national results from the survey on our [website.](#) This separate analysis identifies trusts where patient 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 patient experience 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'.

Better than expected trusts

Nine 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. All of these trusts are classed as specialist trusts.

Of these, seven had the same banding in 2018, demonstrating consistently high levels of positive patient experience:

- Liverpool Heart and Chest Hospital NHS Foundation Trust
- Queen Victoria Hospital NHS Foundation Trust
- The Christie NHS Foundation Trust
- The Clatterbridge Cancer Centre NHS Foundation Trust

[a] Since the 2018 survey, there have been two trust mergers. These are between South Tyneside NHS Foundation Trust (RE9) and City Hospitals Sunderland NHS Foundation Trust (RLN); and Derby Teaching Hospitals NHS Foundation Trust (RTG) with Burton Hospitals NHS Foundation Trust (RJF).
[b] We report the 'adjusted' response rate. The adjusted base is calculated by subtracting the number of questionnaires returned as undeliverable, or if someone had died, from the total number of questionnaires sent out. The adjusted response rate is then calculated by dividing the number of returned useable questionnaires by the adjusted base.

- The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust
- The Royal Marsden NHS Foundation Trust
- The Royal Orthopaedic Hospital NHS Foundation Trust

Two trusts have improved, with Liverpool Women's NHS Foundation Trust moving from 'about the same' in 2018 to 'much better' in 2019; and Royal Papworth Hospital NHS Foundation Trust moving from 'better' in 2018 to 'much better' in 2019.

Patients from three other trusts experienced care that was 'better than expected':

- Northumbria Healthcare NHS Foundation Trust
- Royal Brompton and Harefield NHS Foundation Trust
- The Walton Centre NHS Foundation Trust

Worse than expected trusts

Six trusts have been identified as achieving 'worse than expected' results. Four trusts had the same banding in 2018:

- Lewisham and Greenwich NHS Trust
- Medway NHS Foundation Trust
- North Middlesex University Hospital NHS Trust
- Southend University Hospital NHS Foundation Trust[c]

One trust has moved from 'much worse' in 2018 to 'worse' in 2019:

- Croydon Health Services NHS Trust

One trust has moved from being 'about the same' in 2018 to 'worse' in 2019:

- Walsall Healthcare NHS Trust

No trusts were classed as 'much worse than expected' this year.

[c]Southend University Hospital NHS Foundation Trust merged with Basildon and Thurrock University Hospitals NHS Foundation Trust and Mid Essex Hospital Services NHS Trust on 1 April 2020 to form Mid and South Essex NHS Foundation Trust. Sampling for this survey occurred before this merger.

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 the scored questions in the survey.[d]

We use the following question from the 2019 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, if 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'[e] is calculated for the difference between 'most positive' trust proportions, which in this example is -2.92. This means this trust has a higher proportion of 'positive' responses than average. 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'.

Finally, each table within the report includes the most recent trust-wide CQC rating.

In order to provide more granular analysis, we have also re-run the analysis according to whether patients received 'medical' or 'surgical' care. Please see Appendix A for a description of medical and surgical care and Appendix D for the results.

For full details of the analytical method used to calculate these results, please see appendix C.

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

Results

Trusts achieving 'much better than expected' results

Nine acute trusts were classed as 'much better than expected' in 2019. Seven of these had the same banding in 2018, demonstrating consistently high levels of positive patient experience. All nine trusts are classed as specialist trusts.

	Historic results		Overall results			Core service		Overall CQC rating
	2018	2019	Most Positive (%)	Middle (%)^f	Most Negative (%)	Medical care	Surgical	
			66	18	16			
Liverpool Heart and Chest Hospital NHS Foundation Trust	MB	MB	76	13	11	MB	MB	O
Liverpool Women's NHS Foundation Trust	S	MB	77	12	12	MB	N/A	G
Queen Victoria Hospital NHS Foundation Trust	MB	MB	81	11	9	MB	MB	G
Royal Papworth Hospital NHS Foundation Trust	B	MB	78	12	9	MB	B	O
The Christie NHS Foundation Trust	MB	MB	76	13	10	MB	B	O
The Clatterbridge Cancer Centre NHS Foundation Trust	MB	MB	76	14	9	MB	N/A	G
The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust	MB	MB	82	10	8	S	MB	G
The Royal Marsden NHS Foundation Trust	MB	MB	78	14	8	MB	MB	O
The Royal Orthopaedic Hospital NHS Foundation Trust	MB	MB	76	15	10	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)

^{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?'.

Trusts achieving 'better than expected' results

Three trusts were classed as 'better than expected' across the entire survey. One trust Northumbria Healthcare NHS Foundation Trust has gone from 'about the same' in 2018 to 'better' this year. One trust Royal Brompton and Harefield NHS Foundation Trust has moved from 'much better' in 2018 to 'better' this year.

	Historic results		Overall results			Core service		Overall CQC rating
	2018	2019	Most Positive (%)	Middle (%)	Most Negative (%)	Medical care	Surgical	
Trust average			**66**	**18**	**16**			
Northumbria Healthcare NHS Foundation Trust	S	B	73	15	13	S	MB	O
Royal Brompton and Harefield NHS Foundation Trust	MB	B	74	15	11	MB	S	G
The Walton Centre NHS Foundation Trust	N/A^g	B	73	15	12	B	B	O

Key:

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

g The Walton Centre NHS Foundation Trust was excluded from the results of the 2018 Inpatient Survey due to errors in the mailing process. For further information please see the 2018 Quality and Methodology report

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Trusts achieving 'worse than expected' results

Six trusts were classed as 'worse than expected'. Four trusts had the same banding in 2018. Croydon Health Services NHS Trust has moved from 'much worse' in 2018 to 'worse' in 2019. Walsall Healthcare NHS Trust has moved from 'about the same' in 2018 to 'worse' in 2019. No trusts were classed as 'much worse than expected' this year.

	Historic results		Overall results			Core service		Overall CQC rating
	2018	2019	Most Positive (%)	Middle (%)	Most Negative (%)	Medical care	Surgical	
Trust average			**66**	**18**	**16**			
Croydon Health Services NHS Trust	MW	W	58	22	20	S	W	RI
Lewisham and Greenwich NHS Trust	W	W	59	21	20	W	W	RI
Medway NHS Foundation Trust	W	W	59	21	20	W	S	RI
North Middlesex University Hospital NHS Trust	W	W	59	21	20	W	W	RI
Southend University Hospital NHS Foundation Trust	W	W	60	20	20	W	W	G
Walsall Healthcare NHS Trust	S	W	61	19	20	MW	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)

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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 good 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)[h] 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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[h] 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](). In 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. This provides feedback on specific areas where trusts can target improvement. 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.

While both approaches are useful, analysing individual questions can hide variation in people's experience as the scores are 'averaged'. The approach used in this report allows CQC to identify potential concerns raised by people across the survey in its entirety.

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[i]

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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[i]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:

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

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

This analysis identified trusts performing better / worse than expected according to whether patients received 'medical' or 'surgical' care.

Medical care

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

- Liverpool Heart and Chest Hospital NHS Foundation Trust
- Liverpool Women's NHS Foundation Trust
- Queen Victoria Hospital NHS Foundation Trust
- Royal Brompton and Harefield NHS Foundation Trust
- Royal National Orthopaedic Hospital NHS Trust
- Royal Papworth Hospital NHS Foundation Trust
- The Christie NHS Foundation Trust
- The Clatterbridge Cancer Centre NHS Foundation Trust
- The Royal Marsden NHS Foundation Trust

One trust was classed as **'better than expected'** for medical care:

- The Walton Centre NHS Foundation Trust

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

- East Kent Hospitals University NHS Foundation Trust
- Isle of Wight NHS Trust
- Lewisham and Greenwich NHS Trust
- Medway NHS Foundation Trust
- Milton Keynes University Hospital NHS Foundation Trust
- North Middlesex University Hospital NHS Trust
- Northampton General Hospital NHS Trust
- Southend University Hospital NHS Foundation Trust
- The Hillingdon Hospitals NHS Foundation Trust
- The Rotherham NHS Foundation Trust

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

- Walsall Healthcare NHS Trust

Surgical

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

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

Six trusts were identified as being **'better than expected'** for surgical experiences:

- Northern Devon Healthcare NHS Trust
- Royal Papworth Hospital NHS Foundation Trust
- The Christie NHS Foundation Trust
- The Newcastle upon Tyne Hospitals NHS Foundation Trust
- The Royal Orthopaedic Hospital NHS Foundation Trust
- The Walton Centre NHS Foundation Trust

Seven trusts were identified as being **'worse than expected'** for surgical experiences:

- Croydon Health Services NHS Trust
- Lewisham and Greenwich NHS Trust
- North Middlesex University Hospital NHS Trust
- Northern Lincolnshire and Goole NHS Foundation Trust
- Southend University Hospital NHS Foundation Trust
- The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust
- Walsall Healthcare NHS Trust

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

Appendix E: Date of published CQC ratings

Trusts achieving 'much better than expected' results

Trust name	Rating	Date
Liverpool Heart and Chest Hospital NHS Foundation Trust	O	03/07/2019
Liverpool Women's NHS Foundation Trust	G	22/04/2020
Queen Victoria Hospital NHS Foundation Trust	G	23/05/2019
Royal Papworth Hospital NHS Foundation Trust	O	16/10/2019
The Christie NHS Foundation Trust	O	12/10/2018
The Clatterbridge Cancer Centre NHS Foundation Trust	G	16/04/2019
The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust	G	21/02/2019
The Royal Marsden NHS Foundation Trust	O	16/01/2020
The Royal Orthopaedic Hospital NHS Foundation Trust	G	20/12/2019

Trusts achieving 'better than expected' results

Trust name	Rating	Date
Northumbria Healthcare NHS Foundation Trust	O	16/10/2019
Royal Brompton and Harefield NHS Foundation Trust	G	22/02/2019
The Walton Centre NHS Foundation Trust	O	19/08/2019

Trusts achieving 'worse than expected' results

Trust name	Rating	Date
Croydon Health Services NHS Trust	RI	11/02/2020
Lewisham and Greenwich NHS Trust	RI	11/01/2019
Medway NHS Foundation Trust	RI	30/04/2020
North Middlesex University Hospital NHS Trust	RI	25/10/2019
Southend University Hospital NHS Foundation Trust	G	01/01/2019
Walsall Healthcare NHS Trust	RI	27/07/2019

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