2019 survey of women's experiences of maternity care

Identifying outliers in trust-level results

Contents

Summary

The 2019 Maternity Survey included 126 NHS trusts. Feedback was received from 17,151 mothers, a response rate of 37%.

Women aged 16 and over at the time of delivery were eligible for the survey if they had a live birth during February 2019[a] and received care from an NHS trust.

We have published an analysis of the national results from the survey on our website. In this separate analysis, we identify the trusts where women's experiences are better, or worse, than expected when we compare the survey results across trusts.

The maternity survey asks women about their experiences of care at three different stages of their maternity journey, during: antenatal care, labour and birth, and postnatal care. This report assesses the variation in trust results for questions on labour and birth only. This is because women can receive antenatal and postnatal care from different providers than the one where they gave birth, and we cannot yet guarantee how reliable the attributed data is for antenatal and postnatal care.

The analysis methodology used to identify variation in results at trust-level (detailed in appendices A and B) differs from the approach used in trust-level benchmark reporting, which provides mean scores for individual questions only. Appendix C provides more information on our different approaches to using survey data to explore variation in experience between trusts.

Each trust has been categorised into 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

There were three trusts flagged as 'much better than expected':

- City Hospitals Sunderland NHS Foundation Trust

- The Newcastle upon Tyne Hospitals NHS Foundation Trust

- Lancashire Teaching Hospitals NHS Foundation Trust

Furthermore, there were six trusts identified as 'better than expected':

- Yeovil District Hospital NHS Foundation Trust

- Taunton and Somerset NHS Foundation Trust

- Mid Cheshire Hospitals NHS Foundation Trust

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[a] 52 of the 126 NHS trusts also sampled women who had given birth in January 2019 to produce a sufficient sample size.

- North Cumbria University Hospitals NHS Trust
- Leeds Teaching Hospitals NHS Trust
- United Lincolnshire Hospitals NHS Trust

Worse than expected trusts

Results from analysis categorised three trusts as 'worse than expected':

- The Hillingdon Hospitals NHS Foundation Trust
- Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust
- Mid Yorkshire Hospitals NHS Trust

Furthermore, there were three trusts categorised as 'much worse than expected' when all questions were analysed simultaneously:

- Barts Health NHS Trust
- University Hospitals Birmingham NHS Foundation Trust
- Sandwell and West Birmingham Hospitals NHS Trust

CQC's Chief Inspector of Hospitals, Professor Ted Baker, has written to all trusts identified as much better, better, worse or much worse than expected within the outlier analysis. The trusts identified as 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

We have calculated the overall proportion of responses that each trust received for the 'most negative', 'middle' and 'most positive' answer option(s) across all scored questions in the survey.[b]

We use the following question from the 2019 maternity survey to show how responses are categorised as either 'most negative', 'middle' and 'most positive'.

C21. Did you have confidence and trust in the staff caring for you during your **labour and birth**?

- Yes, definitely - **most positive**

- Yes, to some extent - **middle**

- No - **most negative**

- Don't know - not included

Where people's experience of using a trust's services are either better or worse than elsewhere, there will be a significant difference between that trust's results and the average results 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.

For example, if a trust's proportion of responses breaks down as: 'most negative' 15%, 'middle' 24% and 'most positive' 61%. This is then compared with the England average of 'most negative' 20%, 'middle' 25% and 'most positive' 55%. An 'adjusted z-score' is calculated for the difference between 'most positive' trust proportions which, in this example, is -2.12. This means that this trust has a higher proportion of 'positive' responses than the trust average. This is considered significant with a p-value of less than 0.25 (z-score lower than -1.96) but not less than 0.01 (z-score -3.09). As a result, the trust is classed as 'better'.

Finally, each table in the report includes the most recent trust-wide and maternity service CQC ratings. More details about the stages of this analysis can be found in Appendix B.

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b. The analysis only includes questions that can be scored. Please see the scored questionnaire to see which questions these are.

Results

Trusts achieving 'much better than expected' results

Three trusts were flagged as 'much better than expected' across all scored labour and birth questions.

Two of these trusts were previously flagged in the 2018 survey as 'better than expected' and one was previously flagged as 'about the same'.

	Historic results	Overall results				Overall CQC rating	Maternity service rating		
	2018	2019	Most Negative (0/10)	Middle	Most Positive (10/10)		Site 1	Site 2	Site 3
England average			**9**	**13**	**78**				
City Hospitals Sunderland NHS Foundation Trust	B	MB	4	7	88	G	G		
Lancashire Teaching Hospitals NHS Foundation Trust	S	MB	5	8	87	RI	G	G	
The Newcastle upon Tyne Hospitals NHS Foundation Trust	B	MB	6	8	86	O	O		

Key:

Trust performance	Much worse (MW)	Worse (W)	About the same (S)	Better (B)	Much better (MB)
CQC rating	Inadequate (I)	Requires improvement (RI)	Good (G)	Outstanding (O)	No rating (NR)

Trusts achieving 'better than expected' results

Six trusts were flagged as 'better than expected' across all scored labour and birth questions.

One trust was previously flagged in the 2018 survey as 'better than expected' and five were previously flagged as 'about the same'.

	Historic results	Overall results				Overall CQC rating	Maternity service rating		
	2018	2019	Most Negative (0/10)	Middle	Most Positive (10/10)		Site 1	Site 2	Site 3
England average			**9**	**13**	**78**				
Mid Cheshire Hospitals NHS Foundation Trust	S	B	5	10	85	G	G	G	
Yeovil District Hospital NHS Foundation Trust	S	B	6	10	84	RI	G		
North Cumbria University Hospitals NHS Trust	S	B	8	8	84	RI	G	G	G
Leeds Teaching Hospitals NHS Trust	B	B	7	9	84	G	G	G	
Taunton and Somerset NHS Foundation Trust	S	B	7	10	83	G	G		
United Lincolnshire Hospitals NHS Trust	S	B	7	10	83	RI	G	RI	

Key:

Trust performance	Much worse (**MW**)	Worse (**W**)	About the same (**S**)	Better (**B**)	Much better (**MB**)
CQC rating	Inadequate (**I**)	Requires improvement (**RI**)	Good (**G**)	Outstanding (**O**)	No rating (**NR**)

Trusts achieving 'worse than expected' results

Three trusts were flagged as 'worse than expected' overall across all scored questions relating to experience of labour and birth.

Two trusts were previously flagged in the 2018 survey as 'about the same' and one was previously flagged as 'worse than expected'.

	Historic results	Overall results				Overall CQC rating	Maternity service rating		
	2018	2019	Most Negative (0/10)	Middle	Most Positive (10/10)		Site 1	Site 2	Site 3
England average			**9**	**13**	**78**				
The Hillingdon Hospitals NHS Foundation Trust	S	W	14	14	72	RI	G		
Mid Yorkshire Hospitals NHS Trust	W	W	15	13	72	RI	G	RI	G
Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust	S	W	13	17	70	RI	G	RI	

Key:

Trust performance	Much worse (**MW**)	Worse (**W**)	About the same (**S**)	Better (**B**)	Much better (**MB**)
CQC rating	Inadequate (**I**)	Requires improvement (**RI**)	Good (**G**)	Outstanding (**O**)	No rating (**NR**)

Trusts achieving 'much worse than expected' results

Three trusts were flagged as 'much worse than expected' overall across all scored questions relating to experience of labour and birth.

One trust was previously flagged in the 2018 survey as 'about the same' and two were previously flagged as 'worse than expected'.

	Historic results	Overall results				Overall CQC rating	Maternity service rating		
	2018	2019	Most Negative (0/10)	Middle	Most Positive (10/10)		Site 1	Site 2	Site 3
England average			**9**	**13**	**78**				
Sandwell and West Birmingham Hospitals NHS Trust	S	MW	16	14	70	RI	G		
Barts Health NHS Trust	W	MW	14	17	68	RI	RI	G	G
University Hospitals Birmingham NHS Foundation Trust[3]	W	MW	15	17	68	G	RI	G	G

Key:

Trust performance	Much worse (**MW**)	Worse (**W**)	About the same (**S**)	Better (**B**)	Much better (**MB**)
CQC rating	Inadequate (**I**)	Requires improvement (**RI**)	Good (**G**)	Outstanding (**O**)	No rating (**NR**)

[3] Heart of England NHS Foundation Trust merged with University Hospitals Birmingham NHS Foundation Trust on 1 April 2018

Appendix A: Analysis methodology

Identifying worse than expected patient experience

The analytical approach to identifying those trusts where women's experiences were 'much/worse than expected' uses responses for all scored questions asking about labour and birth.

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

The analysis uses z-scores to indicate how different a trust's poor experience proportion is from the average.

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

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

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

Appendix B provides full technical detail of the analytical process.

Identifying better than expected patient experience

To identify 'much/better than expected' experience, we calculate a count of the number of responses scored as '10' (the most positive option) for each trust.

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

A higher percentage of positive responses is indicative of good experience.

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

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

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

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

Weighting

Results have been weighted or standardised by women's age and parity (whether women have given birth previously or not) to ensure that no trust will appear better or worse than another because of the profile of its respondents. This is because a patient's age, and whether women have given birth before can have an influence on the way they respond to questions about their experiences.

Standardisation allows a more accurate comparison of results from trusts that have different population profiles. In most cases, this will not have a large impact on a trust's 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 them assess trusts' performance. For example, they may be descriptive questions such as asking women if they had a home birth. Questions were only used in this analysis if they asked about labour and birth.

Appendix B: 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 respondent 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[4]

Count of the '0' responses across the scored labour and birth questions answered by each respondent.

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

Count of all '0-10' responses across the scored labour and birth questions answered by each respondent.

3. Weight the data

Apply the standardisation weight for respondents. The weight adjusts the population of respondents in each trust to the national average proportions for age and parity (whether women previously had a baby).

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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[4]. The analytical approach used to identify positive patient experience uses a numerator count of the '10' responses across all scored labour and birth questions 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:

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

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 zi is the Z score for the ith trust given by (1). The Winsorized Z scores are used in estimating $\hat{\phi}$.

9. Adjust for over dispersion

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 $s_i = (p_i - p_0)/z_i$, $w_i = 1/s_i^2$ and $\hat{\phi}$ is from (2). Once $\hat{\tau}$ has been estimated, the Z_D score is calculated as:

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

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

The approach used to analyse trust variation in this report is focused on identifying significantly higher levels of better or worse experience **across the entire survey.**

This holistic approach is different to the technique used to analyse results in trust benchmarking reports. In these 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 therefore do not provide an overall assessment of the proportion of positive or negative experiences 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 D: Date of published CQC ratings

The following tables provide the date the CQC Inspection ratings, provided within results section of this report, were most recently published. These have been provided for:

- Trust (provider) – overall rating
- Hospital site (location) – Maternity: Core service – overall rating

Trusts achieving 'much better than expected' results:

Provider / location name	Rating	Date
City Hospitals Sunderland NHS Foundation Trust	G	23/08/2018
Sunderland Royal Hospital	G	23/08/2018
Lancashire Teaching Hospitals NHS Foundation Trust	RI	07/11/2019
Chorley and South Ribble Hospital	G	17/10/2018
Royal Preston Hospital	G	17/10/2018
The Newcastle upon Tyne Hospitals NHS Foundation Trust	O	29/05/2019
Royal Victoria Infirmary	O	06/06/2016

Trusts achieving 'better than expected' results:

Provider / location name	Rating	Date
Mid Cheshire Hospitals NHS Foundation Trust	G	19/09/2018
Leighton Hospital	G	19/09/2018
Victoria Infirmary	G	15/01/2015
Yeovil District Hospital NHS Foundation Trust	RI	08/05/2019
Yeovil District Hospital	G	08/05/2019
North Cumbria University Hospitals NHS Trust	RI	22/11/2018
Cumberland Infirmary	G	22/11/2018
Penrith Hospital	G	22/11/2018
West Cumberland Hospital	G	22/11/2018
Leeds Teaching Hospitals NHS Trust	G	15/02/2019
Leeds General Infirmary	G	27/09/2016
St James's University Hospital	G	27/09/2016
Taunton and Somerset NHS Foundation Trust	G	05/12/2017
Musgrove Park Hospital	G	25/05/2016

Provider / location name	Rating	Date
United Lincolnshire Hospitals NHS Trust	RI	17/10/2019
Lincoln County Hospital	G	17/10/2019
Pilgrim Hospital	RI	17/10/2019

Trusts achieving 'worse than expected' results:

Provider / location name	Rating	Date
The Hillingdon Hospitals NHS Foundation Trust	RI	24/07/2018
The Hillingdon Hospital	G	24/07/2018
Mid Yorkshire Hospitals NHS Trust	RI	07/12/2018
Dewsbury & District Hospital	G	07/12/2018
Pinderfields Hospital	RI	07/12/2018
Pontefract Hospital	G	07/12/2018
Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust	RI	10/07/2018
Bassetlaw District General Hospital	G	10/07/2018
Doncaster Royal Infirmary	RI	10/07/2018

Trusts achieving 'much worse than expected' results:

Provider / location name	Rating	Date
Sandwell and West Birmingham Hospitals NHS Trust	RI	05/04/2019
City Hospital	G	05/04/2019
Barts Health NHS Trust	RI	12/02/2019
Newham University Hospital	RI	05/04/2019
The Royal London Hospital	G	05/04/2019
Whipps Cross University Hospital	G	15/12/2016
University Hospitals Birmingham NHS Foundation Trust	G	13/02/2019
Birmingham Heartlands Hospital	RI	13/02/2019
Good Hope Hospital	G	13/02/2019
Solihull Hospital	G	13/02/2019

How to contact us

Call us on: 03000 616161

Email us at: enquiries@cqc.org.uk

Look at our website: www.cqc.org.uk

Write to us at: Care Quality Commission
Citygate
Gallowgate
Newcastle upon Tyne
NE1 4PA

Follow us on Twitter: @CareQualityComm