Care Quality Commission (CQC)

Technical details – patient survey information
2015 Maternity Survey
December 2015

Contents

1. Introduction

This document outlines the methods used by the Care Quality Commission to score and analyse the trust level results for the 2015 Maternity Survey, as available on the Care Quality Commission website and in the benchmark reports for each trust.

The survey results are available for the 'labour and birth' section of the questionnaire for each trust on the CQC website. The survey data is shown in a simplified way, identifying whether a trust performed 'better' or 'worse' or 'about the same' as the majority of other trusts for each question. This analysis is done using a statistic called the 'expected range' (see section 6.3). On publication, an A-to-Z list of trust names is available at the link below, containing further links to the labour and birth survey data for all NHS trusts that took part in the survey: **www.cqc.org.uk/maternitysurvey**

The CQC webpage also contains the results for England in the form of a report containing CQC's response and a statistical release document containing the percentage of respondents for England as a whole, alongside relevant national policy and comparisons with the results from the 2013 survey. Further information on the survey is available in the Quality and Methodology report.

A benchmark report is also available for each trust. Results displayed in the benchmark report are a graphical representation of the results displayed for the public on the CQC website (see Further Information, section 7). These have been provided to all trusts and will be available on the survey co-ordination centre website at: **www.nhssurveys.org.**

2. Selecting data for the reporting

Survey data from the labour and birth section of the questionnaire is available on the CQC website. More data is available from the survey covering antenatal and postnatal care. However, this is not as reliable as the labour and birth data it has only been published on the patient survey co-ordination centre website alongside caveats to be considered when looking at the data (see section 6 'The maternity survey attribution exercise' below for more detail).

Scores are assigned to responses to questions that are of an evaluative nature: in other words, those questions where results can be used to assess the performance of a trust (see Appendix A 'Scoring for the 2015 Maternity Survey results' for more detail). Questions that are not presented in this way tend to be those included solely for 'filtering' respondents past any questions that may not be relevant to them, such as: 'In the first few days after the birth how was your baby fed?' or those used for descriptive or information purposes.

The scores for each labour and birth question are grouped on the website according to the subheadings of the questionnaire as completed by respondents. For example, the data published on the CQC website includes sections on 'labour and birth', 'care in hospital after the birth' and 'staff'. The average score for each trust, for each section, is also calculated and presented on the website.

Alongside both the question and the section scores on the website are one of three statements:

- Better (the trust is performing 'better' compared with most other trusts in the survey)

- About the same (the trust is performing 'about the same' as most other trusts in the survey)
- Worse (the trust is performing 'worse' compared with most other trusts in the survey)

This analysis is done using a statistic called the 'expected range' (see section 6.3)

3. The CQC organisation search tool

The organisation search tool is intended for a public audience and contains information from various areas within the Care Quality Commission's functions. The presentation of the survey data was designed using feedback from people who use the data, so that as well as meeting their needs, it presents the groupings of the trust results in a simple and fair way, to show where we are more confident that a trust's score is 'better' or 'worse' than we'd expect when compared with most other trusts.

The survey data can be found from the A to Z link available at:
www.cqc.org.uk/maternitysurvey

Or by searching for a provider from the CQC home page, then clicking on 'Patient survey information' on the right hand side then clicking 'latest patient survey results'.

4. Trust benchmark reports

Benchmark reports should be used by NHS trusts to identify how they are performing in relation to most other trusts that took part in the survey. Tables at the back of the report also contain the 2013 results and indicate whether any change is statistically significant. From this, areas for improvement can be identified. The reports are available from the survey co-ordination centre website: **www.nhssurveys.org**

The graphs included in the reports display the scores for a trust compared with the full range of results from all other trusts that took part in the survey. Each bar represents the range of results for each question across all trusts that took part in the survey. In the graphs, the bar is divided into three sections:

- If a trust score lies in the orange section of the graph, the trust result is 'about the same' as most other trusts in the survey
- If a trust scores lies in the red section of the graph, the trust result is 'worse' than expected when compared with most other trusts in the survey.
- If a score lies in the green section of the graph, the trust result is 'better' than expected when compared with most other trusts in the survey

A black diamond represents the score for this trust. The black diamond (score) is not shown for questions answered by fewer than 30 people because the uncertainty around the result would be too great.

5. The maternity survey attribution exercise

Some of the questions in the maternity survey relate to care that women may have received from their GP or other provider rather than the acute trust where they gave birth, which is used as the basis for sampling. Hence the NHS trust that provided the care during labour and birth may not have provided the antenatal and postnatal care that a woman would have been referring to when completing those sections of the questionnaire. Due to this uncertainty, trust level data for the 2010 survey was only

published for 19 questions (out of a total of 77 questions). This data was contained in the trust benchmark reports and was displayed on the CQC organisational search tool on the CQC website. The trust data was published this way as the scored question responses were from women who were definitely referring to care received from the acute trust rather than other providers. The responses to all questions were published in the national summary on the CQC website.

During the development of the 2013 survey, a number of options were considered for improving the attribution of responses to providers, and pilot work was conducted to determine the most effective approach. It was decided that trusts would be asked to use postcode details and/or General Medical Practice codes to identify the women in their sample who lived within their catchment area – and we refer to this as the attribution exercise. However, if trusts held electronic records on the provision of antenatal and postnatal care then this information was used. This same process was followed in 2015.

In total, 118 trusts (out of 133) were able to complete the attribution exercise successfully, with all 118 trusts able to identify women that were likely to have received their antenatal care and / or postnatal care from their trust, based on their home address (via partial postcodes). This information was used to identify the respondents who were likely to have been referring to the acute trust when responding to the antenatal and postnatal care sections of the questionnaire. Scored results were then produced based only on those respondents, and reports produced for antenatal and postnatal care.

The data for the antenatal and postnatal sections cannot be considered as statistically robust as the data for labour and birth, for several reasons:

1. Although the value of the data is improved when looking at individual trust performance, due to the more accurate attribution of responses to provider, the lack of complete coverage across all trusts means that we cannot fairly say that one trust is 'better' or 'worse' than all others. Hence trusts are only identified as being 'better' or 'worse' within the subset of trusts that completed the attribution exercise. We cannot say that the subset of trusts is representative of all trusts, and so it is not a true benchmark for performance across England.
2. The attribution was based on the location of respondents. There were no means available to identify women who had received care from a different provider for other reasons, such as due to requiring specialist care, or having moved house during pregnancy. So although the attribution exercise improved the data to a considerable degree, it may remain that some respondents are included in the data despite having received care from another provider.
3. The NHS trusts completed the attribution themselves, and due to the limitations of the process the co-ordination centre were unable to verify the accuracy of the exercise. This means we cannot be certain about the reliability of the attribution of the data, as there were limited opportunities to check for errors.

The antenatal and postnatal survey data from the trusts that completed the attribution exercise will be shared with those trusts. The data will be considered by the Care Quality Commission (CQC) to inform its intelligence model and will be shared with CQC inspectors. The reports will be published on the surveys coordination centre website here **http://www.nhssurveys.org/** but not the CQC website for the reasons described above.

Those trusts with antenatal and postnatal benchmark reports should bear in mind the above caveats when viewing their data.

6. Interpreting the data

6.1 Scoring

The questions are scored on a scale from 0 to 10. Details of the scoring for all sections of this survey are available in Appendix A at the end of this document.

The scores represent the extent to which the respondents' experience could be improved. A score of 0 was assigned to all responses that reflect considerable scope for improvement, whereas a response that was assigned a score of 10 referred to the most positive possible experience. Where a number of options lay between the negative and positive responses, they were placed at equal intervals along the scale. Where options were provided that did not have any bearing on the trusts' performance in terms of respondent experience, the responses were classified as "not applicable" and a score was not given. Where respondents stated they could not remember or did not know the answer to a question, a score was not assigned. The average score for all respondents within each trust is then presented, having applied standardisation (see below).

6.2 Standardisation

Results are based on 'standardised' data. We know that the views of a respondent can reflect not only their experience of NHS services, but can also relate to certain demographic characteristics, such as their age. For example, older respondents tend to report more positive experiences than younger respondents. Because the mix of patients varies across trusts (for example, one trust may have a larger proportion of younger respondents than another), this could potentially lead to the results for a trust appearing better or worse than they would if they had a slightly different profile of people. To account for this we 'standardise' the data. Standardising data adjusts for these differences and enables the results for trusts to be compared more fairly than could be achieved using non-standardised data.

The maternity survey is standardised by age and parity (whether the woman is a first time mother or has had other children).

6.3 Expected range

The better / about the same / worse categories shown on the website are based on the 'expected' range that is calculated for each question for each trust. This is the range within which we would expect a particular trust to score if it performed about the same as most other trusts in the survey. The range takes into account the number of respondents from each trust as well as the scores for all other trusts, and allows us to identify which scores we can confidently say are 'better' or 'worse' than the majority of other trusts (see Appendix C for more details). The red, green and orange sections in the benchmark report charts display the expected range for a score for a trust. The orange section is the 'expected range', the green section shows where a score would lie if it were better than expected, and the red section signifies worse than expected performance.

Analysing the survey information in such a way allows for fairer conclusions to be made in terms of each trust's performance. This approach presents the findings in a way that takes account of all necessary factors, yet is presented in a simple manner. As the 'expected range' calculation takes into account the number of respondents at each trust who answer a question, it is not necessary to present confidence intervals around each score for the purposes of comparing across all trusts.

6.4 Conclusions made on performance

It should be noted that the data only show performance relative to other trusts: there are no absolute thresholds for 'good' or 'bad' performance. Thus, a trust may score low relative to others on a certain question whilst still performing very well on the whole. This is particularly true on questions where the majority of trusts score very highly. The limitations of the antenatal and postnatal care data must also be considered, as described in section 5 above.

The better / worse categories are intended to help trusts identify areas of good or poor performance. However, when looking at scores within a trust over time, it is important to be aware that they are relative to the performance of other trusts. If, for example, a trust was 'better' for one question, then 'about the same' the following year, it may not indicate an actual decrease in the performance of the trust, but instead may be due to an improvement in many other trusts' scores, leaving the trust to appear more 'average'. Hence it is more accurate to look at actual changes in scores and to test for statistically significant differences.

It is also important to remember that there is no overall indicator or figure for 'patient experience', so it is not accurate to say that a trust is the 'best in the country' or 'best in the region' *overall*. Adding up the number of 'better' and 'worse' categories to find out which trust did better or worse overall can be misleading. The number of questions on each topic in the survey varies, and often so does trusts performance across these. So if you counted across all of them, some topics will have more influence on the overall average than others, when in fact some might not be so important.

6.5 Comparing scores across trusts or across survey years

The expected range statistic is used to arrive at a judgement about how a trust is performing compared with all other trusts that took part in the survey. However, if you want to use the scored data in another way, to compare scores (either as trend data for an individual trust or between different trusts) you will need to undertake an appropriate statistical test to ensure that any changes are 'statistically significant'. 'Statistically significant' means that you can be very confident that any change between scores is real and not due to chance. The benchmark report for each trust includes a comparison to the 2013 survey scores and indicates whether the change is statistically significant.

7. Further information

The full national results for the 2015 survey are on the CQC website, together with an A to Z list to view the results for each trusts 'labour and birth' questions, and this technical document outlining the methodology and the scoring applied to each question:
www.cqc.org.uk/maternitysurvey

For the trusts who compiled attribution data, the reports for antenatal and postnatal care are available on the NHS surveys website, along with the 'labour and birth' reports for all trusts, at:
www.nhssurveys.org/surveys/876

The results for the 2007, 2010 and 2013 surveys can be found on the NHS surveys website at:
www.nhssurveys.org/surveys/299

Full details of the methodology for the survey can be found at:
www.nhssurveys.org/surveys/843

More information on the programme of NHS patient surveys is available at:
www.cqc.org.uk/public/reports-surveys-and-reviews/surveys

Appendix A: Scoring for the 2015 Maternity Survey results

The following describes the scoring system applied to the evaluative questions. Question C3 asked respondents if, during labour, women were able to move around and choose the position that made them most comfortable. The option of "No" was allocated a score of 0, as this suggests that the woman's experience needs to be improved. A score of 10 was assigned to the option 'Yes, most of the time', as it reflects a positive experience. The remaining option, 'Yes, sometimes, was assigned a score of 5 as the woman was only sometimes able to move around and choose a position that made them most comfortable. Hence it was placed on the midpoint of the scale.

If the respondent ticked 'No, but this was not possible due to medical reasons', this was classified as a 'not applicable' response, as this option was not a direct measure of the question.

Figure A1 Scoring example:
Question C3 (2015 Maternity Survey)

C3. During your labour, were you able to move around and choose the position that made you most comfortable?	
Yes, most of the time	10
Yes, sometimes	5
No	0
No, but this was not possible due to medical reasons	Not applicable

Where a number of options lay between the negative and positive responses, they were placed at equal intervals along the scale. For example, question D7 asks how clean the hospital or ward was (Figure A2). The following response options were provided:

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

A score of 10 was assigned to the option 'Very clean', as this represents best outcome in terms of patient experience. A response of 'Not at all clean' was given a score of 0. The remaining two answers were assigned a score that reflected their position in terms of quality of experience, spread evenly across the scale and shown in Figure A2 below.

Figure A2 Scoring example:
Question D7 (2015 Maternity survey)

D7. Thinking about your stay in hospital, how clean was the hospital room or ward you were in?	
Very clean	10
Fairly clean	6.7
Not very clean	3.3
Not at all clean	0
Don't know / can't remember	Not applicable

Details of the method used to calculate the scores for each trust, for individual questions and each section of the questionnaire, are available in Appendix B. This also includes an explanation of the technique used to identify scores that are better, worse, or about the same as most other trusts.

The below sets out the scoring assigned to each question used in the analysis, under headings to identify which report they are contained within.

ANTENATAL CARE REPORTS

Section B: Care while you were pregnant (Antenatal care)

B4. Were you offered any of the following choices about where to have your baby? (Cross *ALL* that apply)	
I was offered a choice of hospitals	2.5
I was offered a choice of giving birth in a midwife led unit or birth centre	2.5
I was offered a choice of giving birth in a consultant led unit	2.5
I was offered a choice of giving birth at home	2.5
I was not offered any choices	0
I had no choices due to medical reasons	Not applicable
Don't know	Not applicable
Answered by all	

B6. Did you get enough information from either a midwife or doctor to help you decide where to have your baby?	
Yes, definitely	10
Yes, to some extent	5
No	0
No, but I did not need this information	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

Antenatal check-ups

B7. During your pregnancy were you given a choice about where your antenatal check-ups would take place?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all	

B10. During your antenatal check-ups, did the midwives appear to be aware of your medical history?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know / can't remember	Not applicable
Answered by all	

B11. During your antenatal check-ups, were you given enough time to ask questions or discuss your pregnancy?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know	Not applicable
Answered by all	

B12. During your antenatal check-ups, did the midwives listen to you?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all	

B13. During your antenatal check-ups, did a midwife ask you how you were feeling emotionally?	
Yes, definitely	10
Yes, to some extent	5
No	0
Don't know/can't remember	Not applicable

During your pregnancy

B14. During your pregnancy, did you have a telephone number for a midwife or midwifery team that you could contact?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all	

B15. During your pregnancy, if you contacted a midwife, were you given the help you needed?	
Yes, always	10
Yes, sometimes	5
No	0
No, as I was not able to contact a midwife	0
I did not contact a midwife	Not applicable
Answered by all	

B16. Thinking about your antenatal care, were you spoken to in a way you could understand?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all	

B17. Thinking about your antenatal care, were you involved enough in decisions about your care?	
Yes, always	10
Yes, sometimes	5
No	0
I did not want/need to be involved	Not applicable
Don't know/can't remember	Not applicable

Answered by all

LABOUR AND BIRTH REPORTS

Section C: Your labour and the birth of your baby

C1. At the very start of your labour, did you feel that you were given appropriate advice and support when you contacted a midwife or the hospital?	
I did not contact a midwife or the hospital	Not applicable
Yes	10
No	0

Answered by all those who did not have a planned caesarean

C3. During your labour, were you able to move around and choose the position that made you most comfortable?	
Yes, most of the time	10
Yes, sometimes	5
No	0
No, but it was not possible to move around	Not applicable

Answered by all those who did not have a planned caesarean

C10. Did you have skin to skin contact (*baby naked, directly on your chest or tummy*) with your baby shortly after the birth?	
Yes	10
Yes, but I did not want this	0
No	0
No, but this was not possible for medical reasons	Not applicable
I did not want skin to skin contact with my baby	Not applicable

Answered by all

C11. If your partner or someone else close to you was involved in your care during labour and birth, were they able to be involved as much as they wanted?	
Yes	10
No	0
They did not want to be involved	Not applicable
I did not want them to be involved	Not applicable
I did not have a partner or companion with me	Not applicable

Answered by all

The staff caring for you

C12. Did the staff treating and examining you introduce themselves?	
Yes, all of the staff introduced themselves	10
Some of the staff introduced themselves	5
Very few or none of the staff introduced themselves	0
Don't know / can't remember	Not applicable
Answered by all	

C13. Were you (and/or your partner or a companion) left alone by midwives or doctors at a time when it worried you? (Cross *ALL* that apply)	
Yes, during early labour	0
Yes, during the later stages of labour	0
Yes, during the birth	0
Yes, shortly after the birth	0
No, not at all	10
Answered by all	

C14. If you raised a concern during labour and birth, did you feel that it was taken seriously?	
Yes	10
No	0
I did not raise any concerns	Not applicable
Answered by all	

C15. If you needed attention during labour and birth, were you able to get a member of staff to help you within a reasonable time?	
Yes, always	10
Yes, sometimes	5
No	0
A member of staff was with me all the time	10
I did not want / need this	Not applicable
Don't know / can't remember	Not applicable
Answered by all	

C16. Thinking about your care during labour and birth, were you spoken to in a way you could understand?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all	

C17. Thinking about your care during labour and birth, were you involved enough in decisions about your care?	
Yes, always	10
Yes, sometimes	5
No	0
I did not want/need to be involved	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

C18. Thinking about your care during labour and birth, were you treated with respect and dignity?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all	

C19. Did you have confidence and trust in the staff caring for you during your labour and birth?	
Yes, definitely	10
Yes, to some extent	5
No	0
Don't know/can't remember	Not applicable
Answered by all	

POSTNATAL CARE REPORTS

Section D: Care in hospital after the birth (postnatal care)

D2. Looking back, do you feel that the length of your stay in hospital after the birth was...	
Too long?	0
Too short?	0
About right?	10
Not sure/Don't know	Not applicable
Answered by all who went to hospital	

D3. If you needed attention while you were in hospital after the birth, were you able to get a member of staff to help you within a reasonable time?	
Yes, always	10
Yes, sometimes	5
No	0
I did not want / need this	Not applicable
Don't know / can't remember	Not applicable
Answered by all who went to hospital	

D4. Thinking about the care you received in hospital after the birth of your baby, were you given the information or explanations you needed?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all who went to hospital	

D5. Thinking about the care you received in hospital after the birth of your baby, were you treated with kindness and understanding?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all who went to hospital	

D6. Thinking about your stay in hospital, If your partner or someone else close to you was involved in your care, were they able to stay with you as much as they wanted?	
Yes	10
No, as they were restricted to visiting hours	0
No, as there was no accommodation for them in the hospital	0
No, they were not able to stay for another reason	Not applicable
I did not have a partner or companion with me	Not applicable
Answered by all who went to hospital	

D7. Thinking about your stay in hospital, how clean was the hospital room or ward you were in?	
Very clean	10
Fairly clean	6.7
Not very clean	3.3
Not at all clean	0
Don't know/can't remember	Not applicable
Answered by all who went to hospital	

D8. Thinking about your stay in hospital, how clean were the toilets and bathrooms you used?	
Very clean	10
Fairly clean	6.7
Not very clean	3.3
Not at all clean	0
Don't know/can't remember	Not applicable
I did not use the toilet/bathroom	Not applicable
Answered by all who went to hospital	

Section E: Feeding your baby

E1. During your pregnancy did midwives provide relevant information about feeding your baby?	
Yes, definitely	10
Yes, to some extent	5
No	0
I did not want or need this information	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

E4. Were your decisions about how you wanted to feed your baby respected by midwives?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all	

E5. Did you feel that midwives and other health professionals gave you consistent advice about feeding your baby?	
Yes, always	10
Yes, sometimes	5
No	0
I did not want or need any advice	Not applicable
I did not receive any advice	0
Don't know/can't remember	Not applicable
Answered by all	

E6. Did you feel that midwives and other health professionals gave you active support and encouragement about feeding your baby?	
Yes, always	10
Yes, sometimes	5
No	0
I did not want/need this	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

Section F: Care at home after the birth

F1. When you were at home after the birth of your baby, did you have a telephone number for a midwife or midwifery team that you could contact?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all	

F2. If you contacted a midwife were you given the help you needed?	
Yes, always	10
Yes, sometimes	5
No	0
No as I was not able to contact a midwife	0
I did not contact a midwife	Not applicable
Answered by all	

F6. Would you have liked to have seen a midwife...	
More often?	0
Less often?	0
I saw a midwife as much as I wanted	10
Answered by all who saw a midwife postnatally	

F7. Did the midwife or midwives that you saw appear to be aware of the medical history of you and your baby?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all who saw a midwife postnatally	

F8. Did you feel that the midwife or midwives that you saw always listened to you?	
Yes, always	10
Yes, sometimes	5
No	0
Don't know/can't remember	Not applicable
Answered by all who saw a midwife postnatally	

F9. Did the midwife or midwives that you saw take your personal circumstances into account when giving you advice?	
Yes, always	10
Yes, sometimes	5
No	0
That was not necessary	Not applicable
Don't know/can't remember	Not applicable
Answered by all who saw a midwife postnatally	

F10. Did you have confidence and trust in the midwives you saw after going home?	
Yes, definitely	10
Yes, to some extent	5
No	0
Don't know/can't remember	Not applicable
Answered by all who saw a midwife postnatally	

F11. Did a midwife tell you that you would need to arrange a postnatal check-up of your own health with your GP? (Around 4-8 weeks after the birth)	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all who saw a midwife postnatally	

F12. Did a midwife or health visitor ask you how you were feeling emotionally?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all	

F13. Were you given enough information about your own physical recovery after the birth?	
Yes, definitely	10
Yes, to some extent	5
No	0
No, but I did not need this information	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

F14. In the six weeks after the birth of your baby did you receive help and advice from a midwife or health visitor about feeding your baby?	
Yes, definitely	10
Yes, to some extent	5
No	0
I did not need any	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

F15. If, during evenings, nights or weekends, you needed support or advice about feeding your baby, were you able to get this?	
Yes, always	10
Yes, sometimes	5
No	0
I did not need this	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

F16. In the six weeks after the birth of your baby did you receive help and advice from health professionals about your baby's health and progress?	
Yes, definitely	10
Yes, to some extent	5
No	0
I did not need any	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

F17. Were you given enough information about any emotional changes you might experience after the birth?	
Yes, definitely	10
Yes, to some extent	5
No	0
No, but I did not need this information	Not applicable
Don't know/can't remember	Not applicable
Answered by all	

F18. Were you told who you could contact if you needed advice about any emotional changes you might experience after the birth?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all	

F19. Were you given information or offered advice from a health professional about contraception?	
Yes	10
No	0
Don't know/can't remember	Not applicable
Answered by all	

Appendix B: Calculating the trust score and category

Calculating trust scores

The question and section scores for each trust, for each of the three reports, were calculated using the method described below.

Weights were calculated to adjust for any variation between trusts that resulted from differences in the age and parity groupings of respondents. A weight was calculated for each respondent by dividing the national proportion of respondents in their age/parity group by the corresponding trust proportion. The reason for weighting the data was that younger people tend to be more critical in their responses than older people and we have reason to believe parity may also influence responses to some questions. If a trust had a large population of young people, for example, their performance might be judged more harshly than if there was a more consistent distribution of age and parity of respondents.

Weighting survey responses

The first stage of the analysis involved calculating the national age/ parity proportions. It must be noted that the term “national proportion” is used loosely here as it was obtained from pooling the survey data from all trusts, and was therefore based on the respondent population rather than the entire population of England.

The questionnaire asked respondents to state their year of birth. The approximate age of each woman was then calculated by subtracting the figure given from 2015. Parity was determined according to responses to question G3 (“How many babies have you given birth to before this pregnancy”). The respondents were then grouped according to the categories shown in Figure B1.

If a respondent did not fill in their year of birth on the questionnaire, this information was inputted from the sample file. If information on a respondent’s age was missing from both the questionnaire and the sample file, or if they didn’t complete question G3 to provide information on parity, the woman was excluded from the analysis as it is not possible to assign a weight.

The national age/parity proportions relate to the proportion of women of different age groups, split according to whether they have previously given birth to a child. As shown in Figure B1 below, the proportion of respondents who were first time mothers (primiparous) aged 27 to 32 years is 0.202; the proportion who had previously had children (multiparous) and were aged 27 to 32 years is 0.169, etc.

Figure B1 National Proportions

Parity	Age Group	National proportion 2015
Primiparous	16-26	0.107
	27-32	0.202
	33 and over	0.175
Multiparous	16-26	0.050
	27-32	0.169
	33 and over	0.297

Note: All proportions are given to three decimals places for this example. The analysis included these figures to nine decimal places, and can be provided on request from the CQC surveys team at patient.survey@cqc.org.uk.

These proportions were then calculated for each trust, using the same procedure.

The next step was to calculate the weighting for each individual. Age/parity weightings were calculated for each respondent by dividing the national proportion of respondents in their age/parity group by the corresponding trust proportion.

If, for example, a lower proportion of primiparous women who were aged between 27 and 32 years within Trust A responded to the survey, in comparison with the national proportion, then this group would be under-represented in the final scores for the trust. Dividing the national proportion by the trust proportion results in a weighting greater than one for members of this group (Figure B2). This increases the influence of responses made by respondents within that group in the final score, thus counteracting the low representation.

Figure B2 Proportion and Weighting for Trust A

Parity	Age Group	National Proportion	Trust A Proportion	Trust A Weight (National/Trust A)
Primiparous	16-26	0.107	0.108	0.991
	27-32	0.202	0.099	2.040
	33 +	0.175	0.179	0.978
Multiparous	16-26	0.05	0.092	0.543
	27-32	0.169	0.175	0.966
	33+	0.297	0.299	0.993

Note: All proportions are given to three decimals places for this example. The analysis included these figures to nine decimal places

Likewise, if a considerably higher proportion of multiparous women aged 33 and over from Trust B responded to the survey (Figure B3), then this group would be over-represented within the sample, compared with national representation of this group. Subsequently this group would have a greater influence over the final scores for the trust. To counteract this, dividing the national proportion by the proportion for Trust B results in a weighting of less than one for this group.

Figure B3 Proportion and Weighting for Trust B

Parity	Age Group	National Proportion	Trust B Proportion	Trust B Weight (National/Trust B)
Primiparous	16-26	0.107	0.101	1.059
	27-32	0.202	0.125	1.616
	33+	0.175	0.189	0.926
Multiparous	16-26	0.050	0.045	1.111
	27-32	0.169	0.207	0.816
	33+	0.297	**0.324**	0.917

Note: All proportions are given to three decimals places for this example. The analysis included these figures to nine decimal places

To prevent the possibility of excessive weight being given to respondents in an extremely under-represented group, the maximum value for any weight was set at five. There was no minimum weight for respondents as applying very small weights to over-represented groups does not have the same potential to give excessive impact to the responses of small numbers of individual respondents.

Calculating question scores

The trust score for each question displayed on the website and in the benchmark reports was calculated by applying the weighting for each respondent to the scores allocated to each response.

The below is a working example of this process for the 'care in hospital after birth' section of the questionnaire which for simplicity uses three respondents.

The responses given by each respondent were entered into a dataset using the 0-10 scale described in section 5.1 and outlined in Appendix A. Each row corresponded to an individual respondent, and each column related to a survey question. For those questions that the respondent did not answer (or received a "not applicable" score for), the relevant cell remained empty. Alongside these were the weightings allocated to each respondent (Figure B4).

Figure B4 Scoring for the 'Care in hospital after the birth' section of the Labour and birth report, 2015 Maternity survey, Trust B

Respondent	**Scores**							
	D2	**D3**	**D4**	**D5**	**D6**	**D7**	**D8**	**Weight**
1	0	5		10	0	6.7	10	1.059
2		10	10	5		0	0	0.926
3	10	5	0	0	10	3.3		0.816

Respondents' scores for each question were then multiplied individually by the relevant weighting, in order to obtain the numerators for the trust scores (Figure B5).

Figure B5 Numerators for the 'Care in hospital after the birth' section of the Labour and birth report, 2015 Maternity survey, Trust B

Respondent	Numerators							
	D2	D3	D4	D5	D6	D7	D8	Weight
1	0.000	5.295		10.590	0.000	7.095	10.590	1.059
2	0.000	9.260	9.260	4.630		0.000	0.000	0.926
3	8.160	4.080	0.000	0.000	8.160	2.693	0.000	0.816

Obtaining the denominators for each domain score

A second dataset was then created. This contained a column for each question, and again with each row corresponding to an individual respondent. A value of one was entered for the questions where a response had been given by the respondent, and all questions that had been left unanswered or allocated a scoring of "not applicable" were set to missing (Figure B6).

Figure B6 Values for non-missing responses, for the 'Care in hospital after the birth' section of the Labour and birth report, 2015 Maternity survey, Trust B

Respondent	Values							
	D2	D3	D4	D5	D6	D7	D8	Weight
1	1	1		1	1	1	1	1.059
2	1	1	1	1		1	1	0.926
3	1	1	1	1	1	1	1	0.816

The denominators were calculated by multiplying each of the cells within the second dataset by the weighting allocated to each respondent. This resulted in a figure for each question that the respondent had answered (Figure B7). Again, the cells relating to the questions that the respondent did not answer (or received a 'not applicable' score for) remained set to missing.

Figure B7 Denominators for the 'Care in hospital after the birth' section of the Labour and birth report, 2015 Maternity survey, Trust B

Respondent	Denominators							
	D2	D3	D4	D5	D6	D7	D8	Weight
1	1.059	1.059		1.059	1.059	1.059	1.059	1.059
2	0.926	0.926	0.926	0.926		0.926	0.926	0.926
3	0.816	0.816	0.816	0.816	0.816	0.816	0.816	0.816

The weighted mean score for each trust, for each question, was calculated by dividing the sum of the weighted scores for a question (i.e. numerators), by the weighted sum of all eligible respondents to the question (i.e. denominators) for each trust.

Using the example data for Trust B, we first calculated weighted mean scores for each of the three questions that contributed to the 'care in hospital after the birth' section of the questionnaire.

D2: $\frac{0.00 + 0.00 + 8.160}{1.059 + 0.926 + 0.816} = 2.913$

D3: $\frac{5.295 + 9.260 + 4.080}{1.059 + 0.926 + 0.816} = 6.653$

D4: $\frac{9.260 + 0.000}{0.926 + 0.816} = 5.316$

D5: $\frac{10.590 + 4.630 + 0.000}{1.059 + 0.926 + 0.816} = 5.434$

D6: $\frac{0.000 + 8.160}{1.059 + 0.816} = 4.352$

D7: $\frac{7.095 + 0.000 + 2.693}{1.059 + 0.926 + 0.816} = 3.495$

D8: $\frac{10.590 + 0.000 + 0.000}{1.059 + 0.926 + 0.816} = 3.781$

Calculating section scores

A simple arithmetic mean of each trust's question scores was then taken to give the score for each section. Continuing the example from above, then, Trust B's score for the 'Care in hospital after the birth' section of the 2015 Maternity survey Labour and birth report would be calculated as:

(2.913 + 6.653 + 5.316 + 5.434 + 4.352 + 3.495 + 3.781) / 7 = 4.563

Appendix C: Calculation of the expected ranges

Z statistics (or Z scores) are standardized scores derived from normally distributed data, where the value of the Z score translates directly to a p-value. That p-value then translates to what level of confidence you have in saying that a value is significantly different from the mean of your data (or your 'target' value).

A standard Z score for a given item is calculated as:

$$z_i = \frac{y_i - \theta_0}{s_i} \qquad (1)$$

where: s_i is the standard error of the trust score[1],
y_i is the trust score
θ_0 is the mean score for all trusts

Under this banding scheme, a trust with a Z score of < -1.96 is labeled as "Worse" (significantly below average; p<0.025 that the trust score is below the national average), -1.96 < Z < 1.96 as "About the same", and Z > 1.96 as "Better" (significantly above average; p<0.025 that the trust score is above the national average) than what would be expected based on the national distribution of trust scores.

However, for measures where there is a high level of precision in the estimate (the survey sample sizes average around 400 to 500 per trust) in the estimates, the standard Z score may give a disproportionately high number of trusts in the significantly above/ below average bands (because s_i is generally so small). This is compounded by the fact that all the factors that may affect a trust's score cannot be controlled. For example, if trust scores are closely related to economic deprivation then there may be significant variation between trusts due to this factor, not necessarily due to factors within the trusts' control. In this situation, the data are said to be 'over dispersed'. That problem can be partially overcome by the use of an 'additive random effects model' to calculate the Z score (we refer to this modified Z score as the Z_D score). Under that model, we accept that there is natural variation between trust scores, and this variation is then taken into account by adding this to the trust's local standard error in the denominator of (1). In effect, rather than comparing each trust simply to one national target value, we are comparing them to a national distribution.

The Z_D score for each question and section was calculated as the trust score minus the national mean score, divided by the standard error of the trust score plus the variance of the scores between trusts. This method of calculating a Z_D score differs from the standard method of calculating a Z score in that it recognizes that there is likely to be natural variation between trusts which one should expect, and accept. Rather than comparing each trust to one point only (i.e. the national mean score), it compares each trust to a distribution of acceptable scores. This is achieved by adding some of the variance of the scores between trusts to the denominator.

The steps taken to calculate Z_D scores are outlined below.

Winsorising Z-scores

[1] Calculated using the method in Appendix C.

The first step when calculating Z_D is to 'Winsorise' the standard Z scores (from (1)). Winsorising 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=0.2

3. Set the lowest 100q% of Z-scores to Z_q, and the highest 100q% of Z-scores to $_{(1-q)}$. These are the Winsorised statistics.

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

Estimation of over-dispersion

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

$$\hat{\phi} = \frac{1}{I}\sum_{i=1}^{I} \boldsymbol{Z}_i^{\,2} \quad (2)$$

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

An additive random effects model

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 θ_i (trust means) for trusts, which are on target, we give this value the symbol $\hat{\tau}$, which is estimated using the following formula:

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

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

$$\boldsymbol{Z}_i^{D} = \frac{\boldsymbol{y}_i - \theta_0}{\sqrt{\boldsymbol{S}_i^{\,2} + \hat{\tau}^2}} \quad (4)$$

Appendix D: Calculation of standard errors

In order to calculate statistical bandings from the data, it is necessary for CQC to have both trusts' scores for each question and section and the associated standard error. Since each section is based on an aggregation of question mean scores that are based on question responses, a standard error needs to be calculated using an appropriate methodology.

For the patient experience surveys, the z-scores are scores calculated for section and question scores, which combines relevant questions making up each section into one overall score, and uses the pooled variance of the question scores

Assumptions and notation

The following notation will be used in formulae:

X_{ijk}	is the score for respondent *j* in trust *i* to question *k*
Q	is the number of questions within section *d*
w_{ij}	is the standardization weight calculated for respondent *j* in trust *i*
Y_{ik}	is the overall trust *i* score for question *k*
Y_{id}	is the overall score for section *d* for trust *i*

Associated with the subject or respondent is a weight w_{ij} corresponding to how well the respondent's age/sex is represented in the survey compared with the population of interest.

Calculating mean scores

Given the notation described above, it follows that the overall score for trust *i* on question *k* is given as:

$$Y_{ik} = \frac{\sum_j w_{ij} X_{ijk}}{\sum_j w_{ij}}$$

The overall score for section *d* for trust *i* is then the average of the trust-level question means within section *d*. This is given as:

$$Y_{id} = \frac{\sum_{k=1}^{Q} Y_{ikd}}{Q}$$

Calculating standard errors

Standard errors are calculated for both sections and questions.

The variance within trust i on question k is given by:

$$\hat{\sigma}_{ik}^2 = \frac{\sum_j w_{ij}\left(X_{ijk} - Y_{ik}\right)^2}{\sum_j w_{ij}}$$

This assumes independence between respondents.

For ease of calculation, and as the sample size is large, we have used the biased estimate for variance.

The variance of the trust level average question score, is then given by:

$$V_{ik} = Var(Y_{ik}) = Var\left(\frac{\sum_j w_{ij} X_{ijk}}{\sum_j w_{ij}}\right)$$

$$= \frac{Var\left(\sum_j w_{ij} X_{ijk}\right)}{\left(\sum_j w_{ij}\right)^2}$$

$$= \frac{\hat{\sigma}_{ik}^2 \sum_j w_{ij}^2}{\left(\sum_j w_{ij}\right)^2}$$

Covariances between pairs of questions (here, *k* and *m*) can be calculated in a similar way:

$$COV_{ik.im}. = Cov(Y_{ik}, Y_{im}) = \frac{\hat{\sigma}_{ikm} \sum_j w_{ij}^2}{\left(\sum_j w_{ij}\right)^2}$$

Where $\hat{\sigma}_{ikm} = \frac{\sum_j w_{ij}(X_{ijk} - Y_{ik})(X_{ijm} - Y_{im})}{\sum_j w_{ij}}$

Note: w_{ij} is set to zero in cases where patient *j* in trust *i* did not answer both questions *k* and *m*.

The trust level variance for the section score *d* for trust *i* is given by:

$$V_{id} = Var(Y_{id}) = \frac{1}{Q^2}\left\{\sum_{k=1}^{Q} V_{ik} + 2\sum_{k=2}^{Q}\sum_{m=1}^{k-1} COV_{ik,im}\right\}$$

The standard error of the section score is then:

$$SE_{id} = \sqrt{V_{id}}$$

This simple case can be extended to cover sections of greater length.