NHS Patient Survey Programme

2016 Children and young people's inpatient and day case survey

Quality and methodology report

Published November 2017

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Introduction

The 2016 Children and young people's inpatient and day case survey (CYP16) is the second iteration in a series of surveys focusing on experiences of paediatric services, conducted as part of the NHS Patient Survey Programme. The Survey Coordination Centre, based at Picker, manages and coordinates the programme on behalf of the Care Quality Commission (CQC). A survey of children and young people was run for the first time in ten years in 2014 as part of the NHS Patient Survey Programme.

The 2016 iteration of the survey involved 132 acute and specialist NHS trusts. Responses were received from 34,708 children and young people under the age of 16. This included responses from 11,116 young patients aged 8-15, who told us about their experiences through questionnaires designed especially for them. We also received feedback from the parents and carers about their experiences.

This report details the quality and methodological issues relating to CYP16. There is a particular focus here on the development, implementation, data quality, analysis, and the outputs of the project. Additional information on the development of the 2016 survey and errors made during the sampling process can also be found on the NHS surveys site.

An overview of the approaches taken to ensure quality within the NHS Patient Survey Programme is available in the 'NHS Patient Survey Programme: Quality Statement'.

Survey development

Survey design and implementation

The NHS Patient Survey Programme implements general principles of good survey practice. The programme has implemented a number of measures to help maximise response rates:

- The development of survey questions that are relevant to all, or most, people in the sample
- Questionnaires are produced using clear and simple language
- Questions and response options are rigorously tested, by way of cognitive interviews with people who have recently used services, to ensure that they are easily understood and relevant
- Reassurances of anonymity and confidentiality are made
- Up to two reminders are sent to non-responders
- There is a long fieldwork period to encourage less frequently heard demographic groups, such as minority ethnic groups, to respond
- The implementation of a Freephone line that provides translation services
- MENCAP support for people with learning difficulties
- The use of a Quality Assurance Framework, which ensures that all survey materials and results are reliable and accurate.

Like most surveys in the NHS Patient Survey Programme, the Children and young people's survey uses a postal survey approach: with a questionnaire being sent to the home addresses of potential participants. This reduces the effects of social desirability bias, which may occur when people give feedback either directly to staff or whilst on trust premises.

A number of steps are taken to ensure the robustness of the survey design and implementation. As with all surveys in the NHS Patient Survey Programme, an external advisory group was formed to ensure a range of stakeholders were given the opportunity to provide input during survey development. Membership included representatives from CQC, the Department of Health, NHS England, NHS Youth Forum, specialist and non-specialist NHS acute trusts, and charities.

Questionnaires are 'cognitively tested' before the surveys commence in order to ensure that questions and response options are understood as intended. This involves a researcher working through the questionnaire with participants, to understand how the questions are interpreted and what they are thinking about when they answer.

The use of a systematic stratified sampling method and the re-development of the questionnaire will be discussed in detail later in this document, but a number of other minor changes were also made.

The sampling period was changed from July and August in 2014 to November and December in 2016. Due to this change, historical comparisons between CYP16 and the previous iteration of the survey are not possible, because any changes could not be confidently attributed to the performance of the trust.

In line with other surveys in the NHS Patient Survey Programme, the maximum sample size has been increased from 850 patients per trust in the 2014 iteration to 1,250 patients in 2016. This is intended to protect data reliability and allow more useful granular analysis.

Questionnaire development

There have been amendments to a significant number of questions in each of the questionnaires used for this survey. The changes have been made to ensure the survey continues to provide the most useful and relevant feedback possible, addressing both the issues of importance to patients and generating information of significance for policy evaluation and regulation of NHS Trusts. These changes, and the reasons for them, are detailed in the survey development report, available on the NHS Surveys website.

The re-development of all questionnaires in the NHS Patient Survey Programme follows best practice. As such, all of these question changes, regardless of their extent, were cognitively tested with children, young people and their parents or carers, who had recent experience of hospital services. Cognitive testing is a process which tests that the content within the questionnaires is interpreted as intended by participants, and that they are able to answer them appropriately with the response options provided.

Recruitment was challenging and required the use of a number of different approaches. Volunteers were recruited with the help of Great Ormond Street Hospital and Oxford University Hospitals NHS Foundation Trust or by responding to adverts placed on DailyInfo.com.

A total of 24 people were cognitively interviewed to test the questionnaires for this survey:

Age group	CYP	Parents
0-7	N/A	4
8-11	6	3
12-15	7	4

Table 1: Cognitive testing volunteer breakdown for the Children and Young People's Survey 2016

- Seven of the children and two of the parents were male, six of the children and nine of the parents were female

- Interviewees were from a mix of ethnic backgrounds
- Children had been admitted to hospital within the last six months.

These interviews were conducted in three rounds, with alterations made to certain questions between rounds in accordance with feedback from participants and stakeholders. Again, further details of this process can be found in the survey development report.

Sampling and fieldwork

Sampling

People were eligible for participation in this survey if they were aged between 15 days and 15 years at the time of their discharge, had been admitted to hospital as an inpatient or day case, and if they had been discharged between 1st November 2016 and 31st December 2016[1].

As stated previously, trusts were required to draw a sample of 1,250 eligible patients.

Trusts were instructed that their sample should exclude:

- patients who were not admitted to hospital (for example, those who attended a ward or who attended an outpatient appointment, but were not admitted).
- patients who had died
- patients aged 16 years or older at the time of their discharge
- babies aged between 0 and 14 days at the time of their discharge
- newborn babies whose mother was the primary patient (well babies, treatment function code 424)
- patients who were only admitted to a neonatal intensive care unit (NICU) or a special care baby unit (SCBU) (treatment function code 422)
- obstetrics/maternity patients, including spontaneous miscarriages
- patients admitted for planned termination of pregnancy
- psychiatry patients, including those receiving care from CAMHS
- private patients (non-NHS)
- NHS patients treated at private hospitals
- any patients who were known to be current inpatients
- patients without a UK postal address
- any patient, parents or carers who had requested that their details were not used for any purpose other than their clinical care.

No trusts were excluded as a consequence of sample checking or analysis of the final data. Fieldwork for the survey (the time during which questionnaires were sent out and returned) took place between February and June 2017.

Sampling methodology

The sampling methodology used for CYP16 was different from that used in 2014, and included a number of steps.

[1]Five trusts sampled back to 1 October 2016 in order to achieve the minimum sample size

Firstly, a list of all eligible patients discharged during November and December 2016 was compiled; in cases where a patient had been admitted more than once during the sampling period, the most recent attendance was retained. Secondly, this list was sorted sequentially, first by gender, then year of birth, and finally by month of birth.

The third step involved drawing the sample from the ordered list of patients. In doing this, CYP16 adopted a systematic multi-stage stratified selection approach. Basic multi-stage sampling is a more complicated version of cluster sampling, where the total population is divided into clusters, or groups, and individuals are selected at random from these clusters. However, the multi-stage stratified sampling method used here differs from this, in that after dividing the population by the first-level clusters, the resulting sub-clusters are further sub-divided in accordance with some selection criteria. The key point of the approach adopted for CYP16 is that, at every consecutive sub-division, the sample size becomes smaller and more precise.

For CYP16, this involved each trust dividing its total eligible population into clusters in accordance with the three distinct survey groups, each of which targeted a specific age group. The first was concerned with people between the ages of 0-7 years, A_1, the second looked at people between 8-11 years of age, A_2, and the third looked at those that were between 12-15 years of age, A_3. The decision was made to proportionately oversample A_1 as this group had a lower response rate in 2014. As a result of this, each trust attempted to submit a total sample of 1,250 patients, broken down into the three age groups as follows:

A_1 = 450 patients

A_2 = 400 patients

A_3 = 400 patients

As stated above, the sampling methodology for CYP16 then required three additional levels of clusters; the first of which was gender. The clusters at this second level, as with all subsequent cluster levels, was calculated proportionally in accordance with the sampling interval for this level.

The sampling interval is the crucial component of the CYP16 methodology, and is what constitutes the stratified component of the approach. The sampling interval refers to the way in which one in every k records is sampled as they become available; where k is the rounded quotient of dividing the total population size, p, by the total sample size, s:

$$k = \left\lfloor \frac{p}{s} \right\rceil$$

As an example, assume that a hypothetical trust sorts its population into the three survey groups above, and that once sorted by gender, A_1 contains 269 males and 181 females. The sampling interval for the male and female clusters at this second cluster level would then be calculated as follows:

Male cluster sample interval:

$$k = \frac{450}{269}$$

$$k = [1.67]$$

$$k = 2$$

Female cluster sample interval:

$$k = \frac{450}{181}$$

$$k = [2.49]$$

$$k = 2$$

This means that the male sample cluster would be selected from the total 269 males by selecting every second male patient in the A_1 cluster, while the female cluster would be compiled by selecting every second patient from the female cluster. Both of these second level clusters would then be further sub-divided by year of birth. For reasons of simplicity, let's say that all of the males in our hypothetical trust's male cluster fall into one of three years of birth; 65 patients born in 2016, 97 in 2015, and 107 in 2014. The following calculations would then be performed:

2016 cluster sample interval:

$$k = \frac{269}{65}$$

$$k = [4.14]$$

$$k = 4$$

2015 cluster sample interval:

$$k = \frac{269}{97}$$

$$k = [2.77]$$

$$k = 3$$

2014 cluster sample interval:

$$k = \frac{269}{107}$$

$$k = [2.51]$$

$$k = 3$$

Combined, these three clusters make up the third level, and are then sampled from the male cluster in level two by selecting every fourth patient in the male cluster who was born in 2016, every third patient in the male cluster that was born in 2015, and so on.

The fourth and final level then involves dividing each of the year of birth clusters in the third level by the patient's month of birth. If we assume that the hypothetical trust has 37 patients from the 2016 year of birth cluster born in January and 28 born in August, the sampling intervals for these two clusters would be calculated as follows:

January cluster sample interval:

$$k = \frac{65}{37}$$

$$k = [1.76]$$

$$k = 2$$

August cluster sample interval:

$$k = \frac{65}{28}$$

$$k = [2.32]$$

$$k = 2$$

Thus, as before, we include in the final sample every second patient in the 2016 year of birth cluster with a January month of birth and every second patient born in August.

After the required number of patients have been drawn from each of the clusters in this fourth and final level, they are combined into a single sample file to produce a trust's sample data. A diagrammatic representation of this example can be seen in figure 1.

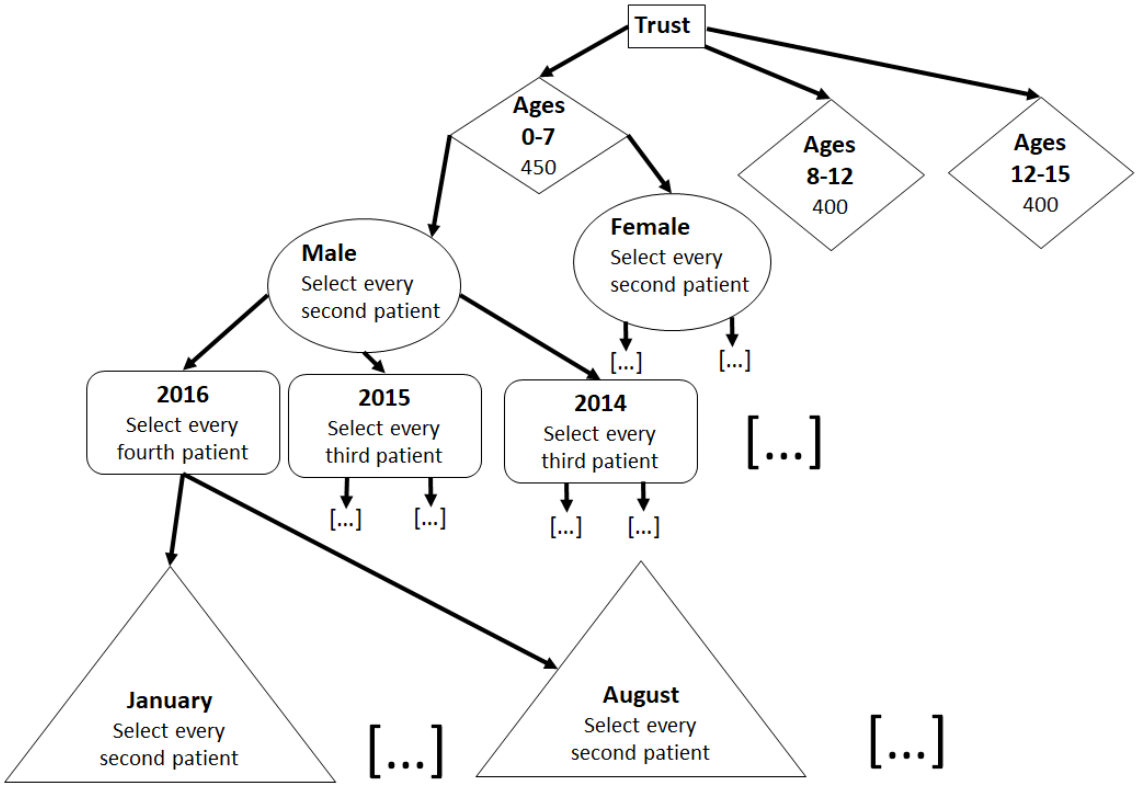


Figure 1: Diagrammatic representation of the CYP16 sample drawing methodology. Please note, [...] indicates where a procedure performed for an example branch above is also performed for the other branches which run parallel to it.

Sampling error

As the survey does not use a random sample, sampling error calculations were not applicable when determining the minimum sample size. The sample size for CYP16 was 1,250 participants per trust; of which there are 132.

This sample size was large enough to minimise sampling error, while a much smaller sample size could have resulted in a trust sampling a subset of patients who could have had a significantly more positive or negative experience than their population as a whole. Assuming the sample period is not atypical, then given the large sample size and number of responses, the 2016 sample can be considered representative of the target population.

The final data had a total of 34,708 responses, resulting in a response rate of 26%. The size of the final data sample was large enough when data from all age groups were aggregated that its sampling error was very small. This patient data can therefore be insightful when looked at for England as a whole (i.e. the data for all trusts pooled) with a focus on the questions that were answered by all participants.

Errors in drawing samples

The chance of mistakes being made by trusts when drawing their sample are minimised by multi-stage sample checks. In the first instance, trusts are provided with a checklist to review their drawn sample. Those trusts that appoint an 'approved contractor'[2] to undertake the survey on their behalf will have their sample reviewed by this company.

All anonymised samples are then checked by the Survey Coordination Centre at Picker, who look for errors that are more noticeable when pooling data together; unusual or skewed age distributions, for example. Items are also checked against the trust's data submissions for previous surveys, so as to ascertain whether or not the trust has followed the sampling instructions correctly. These checks include comparisons of population size, demographics, etc. Should there be any discrepancies that merit investigation, queries will be raised with the trust or contractor responsible for the data sample. Although samples were not directly comparable with 2014, there was still value in making comparisons for sample checking purposes, since the exclusion of eligible patient groups could still be uncovered.

Any errors identified during this process are categorised as either minor or major in nature. The former is defined as a mistake that will not affect the usage or quality of the survey response data. An example of this is if the patient record numbers (URNs) are applied in an incorrect format. This is an error that could be rectified by the trust, contractor or the Coordination Centre by amending the sample's URNs, which would not undermine the quality of the sample.

A major error is defined as a mistake that would affect the usage or quality of the survey response data. An example of this is an error in extract coding which leads to a biased sample, such as a disproportionate number of males to females. This error would result in a trust having to re-draw the sample in line with the guidance.

A sampling errors report, which details the errors identified by the Survey Coordination Centre, is produced after each iteration of the survey.

The 'Statement of Administrative Sources' outlines the chances of errors occurring at the stage where trusts input patient data into administrative systems; data from which samples are drawn. It was concluded that, although the potential does exist for inaccurate addresses or coding of cases at this stage, this is unlikely to occur due to the data quality requirements placed upon NHS trusts. As a result, the chances of such errors occurring at this stage are small enough that any impact upon trust

[2]These are companies approved by the Care Quality Commission during a competitive tendering process to carry out surveys in the NHS Patient Survey Programme on behalf of trusts. For more information please see: www.nhssurveys.org/approvedcontractors

results are likely to be minimal, and in turn, would have an even smaller effect upon the aggregated results for England.

Additionally, a sample declaration form is used to help further reduce sampling errors. This form not only outlines a number of checks that have to be completed, but also ensures adherence to the sampling methodology on the part of both the sampler and the trust's Caldicott Guardian. Crucially, this form also ensures that trusts have maintained confidentiality of patients by taking the steps laid out in the instruction manual, such as only passing on specific variables. Approval of this form prior to data submission thus fulfils the trust's own requirements under the Data Protection Act, as well as reducing the potential for breaches to the support received under Section 251 of the NHS Act 2006[3].

Historical sampling errors and excluded trusts

The sample checking process carried out by the Survey Coordination Centre involves comparing trust sample data to that from previous iterations of the survey, so as to help ensure that the sample has been drawn correctly. For CYP16, sample data was compared to that submitted for 2014 survey. On occasion, these checks can unearth errors made during previous survey iterations. These are important to note as, if any of these errors are deemed to be major ones, then historical comparisons may not be an option for the trust in question.

Due to changes made for CYP16, it was deemed inappropriate to conduct historical comparisons to the previous survey iteration. As such, it was not necessary to undertake an in-depth investigation into potential historical errors, beyond those required in order to validate the data for the current iteration.

[3] Section 251 of the NHS Act 2006 provides a legal basis for the transfer of data to a survey contractor.

Data analysis and reporting

Data cleaning and editing

Survey data from each participating trust are submitted to the Survey Coordination Centre for cleaning. During fieldwork, a data cleaning guidance manual covering the checks that the Survey Coordination Centre undertakes is made available, to allow participating trusts and contractors to understand the data cleaning processes and the types of common errors they will be looking for.

The data are submitted to the Survey Coordination Centre using an Excel spreadsheet. However, the final dataset for the survey, which is used by secondary data users and passed on to the UK Data Service (UKDS), is in SPSS data file format.

Each survey involves a number of standard checks that are undertaken on the data, including:

- Checks of the hard copies of questionnaires from contractors and trusts to verify that questions, response options, routing, and instructions are as they should be
- Check the number of rows of data is as expected, i.e. the correct number of patients are in the data file
- Variables, question, and response options wording checks; ensuring that the data matches the questionnaire
- Out of range checks for variables such as age, on both sample and response data
- Incorrect filtering, where respondents have answered a question that does not apply to them
- Coding errors whereby the answer given is outside the expected range of response options for a given question
- Data validation, whereby the response data is used to confirm whether the sample data submitted by the trust is valid for certain demographics
- Use of the response data to check that only eligible patients were included in the survey.

The data are also checked for a number of other errors. This includes looking at questionnaire item non response, to check whether there are high levels of missing data on suites of questions positioned next to each other on survey pages. This may indicate an issue with page turnover, as well as whether or not a question is being understood in the intended manner.

It is also worth noting that in instances where a trust has fewer than 30 responses for a question, their data are suppressed from inclusion in the benchmarking data and multi-level analysis of sub-groups. Where a trust has fewer than 20 responses for a question, their data are also suppressed from inclusion in the national results. This is

then cross-referenced against the raw data submitted by said trust so as to ensure that the suppression process was applied correctly.

In cases where errors are uncovered, trusts and contractors are required to re-submit their final data with corrections applied.

Statistical release

A statistical release is published, which provides full England-level results for the 2016 survey and multi-level analysis of sub-groups.

In order to control for the influence individual trusts' response rates have on the England-level average, data are standardised[4].

The multi-level analysis of subgroups highlights the experiences of different demographic populations. Results for each demographic subgroup are generated as adjusted means (also known as estimated marginal means or population marginal means) using a linear mixed effects model. These means are compared on patient-centred care themes, derived from composites of results from specific questions. Each question was centred by subtracting its overall mean score from the results before the questions were combined into composites. For CYP16 there were two models (parents 0-15; children 8-15); only questions that were common to all respondents in a model were used. The following themes, composite scores, and individual questions were analysed:

CYP 8-15

Information and communication

- Did hospital staff talk with you about how they were going to care for you?
- When the hospital staff spoke with you, did you understand what they said?
- Did the hospital staff answer your questions?

Transition and continuity

- When you left hospital, did you know what was going to happen next with your care?
- Did a member of staff give you advice on how to look after yourself after you went home?

Respect for patient centred values, preferences and expressed needs

- Were you involved in decisions about your care and treatment?
- Were you given enough privacy when you were receiving care and treatment?

Individual questions

- Did you like the hospital food?
- Were there enough things for you to do in the hospital?

[4] More information on the standardisation approach applied to the data can be found in the section titled 'addressing non response bias in the survey results'

- If you had any worries, did a member of staff talk with you about them?
- Overall, how well do you think you were looked after in hospital?

Parents 0-15

Welcoming the involvement of family and friends

- Did a member of staff agree a plan for your child's care with you?
- Did staff involve you in decisions about your child's care and treatment?
- Were you able to ask staff any questions you had about your child's care?

Respect for their child's individual needs and preferences

- Did you feel that staff looking after you and your child knew how to care for their individual or special needs?
- Did the ward where your child stayed have appropriate equipment or adaptations for your child's physical or medical needs?

Individual questions

- Did you have confidence and trust in the members of staff treating your child?
- Were members of staff available when your child needed attention?
- Were the different members of staff caring for and treating your child aware of their medical history?
- Do you feel that you (the parent/carer) were well looked after by hospital staff?
- Overall experience

This analysis takes into account trust clustering, as trusts are likely to have a big impact on reported patient experience at England level.

To assess whether experiences differ by demographic factors, F tests were performed on each factor (fixed effect) as a predictor of the target variable. P-values are also generated to show the likelihood of differences between groups observed in the results arising from a population where there were no actual differences. They relate to the demographic factor as a whole rather than to comparisons between specific categories within the factor. Variables are also checked for multicollinearity to ensure co-efficient estimates are not influenced by 'additional factors' (these would be chance associations in the sample that wouldn't be reproduced in another sample).

Differences of at least 0.1 standard deviations from the overall mean of the target variable are treated as being noteworthy, provided that the confidence interval does not overlap the mean line.

For CYP16, the following demographic factors were analysed:

- Gender

- Age group
- Ethnicity
- Disability or long-term condition
- Proxy response
- Length of stay
- Medical or surgical
- Type of ward stayed on
- Number of visits within last six months

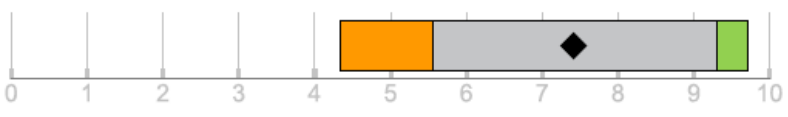
Trust results

Analysis is conducted on the data at trust level, so as to allow comparisons to be drawn between the performance of different trusts for individual questions in the survey. The method for this analysis is detailed in the technical document. The results of this analysis are published in benchmark reports and made available on the CQC's website. A report is produced for each individual trust, which illustrates how the trust performed on each question when compared to all other trusts.

For applicable questions, each response option is assigned a score (0-10). Demographic questions, non-specific responses, some routing questions and questions that do not evaluate a trust's performance are not scored. A trust's score for a specific question is calculated by taking the weighted average[5] of scores of all trusts for the current question.

A chart is then produced for every scored question, unless a question has fewer than 30 responses[6]. Each chart depicts the range of scores for all trusts for its corresponding question. An example of such a graph can be seen in figure 2. Here, the black diamond indicates the trust's score. If the diamond lies in the orange section, then the trust performed 'worse' than expected when compared to most other trusts. Similarly, if it lies in the green, then the trust performed 'better' than most others. If the diamond lies in the grey, as in the example, then the trust performed about the same as the other trusts on the question being considered.

Figure 2: Example question-specific graph comparing the results of one particular trust to all others in the survey.



[5] Weighting the averages adjusts for variation between trusts in age group, length of stay and route of admission.
[6] If a question has fewer than 30 responses for a given trust, the confidence interval around the trust's question score is considered too large to be meaningful and results are not reported.

The benchmark reports contain two batches of tables. The first details the range of scores and number of responses for each individual question. The second, details the number of respondents, response rate, and demographic information for the trust compared to those of all trusts featured in the survey as a whole[7].

[7] 'National' figures are calculated using survey data from all trusts - these figures refer to the sampled population, which may have different characteristics to the population of England.

Quality assurance

Approved contractor/in-house trust checks

Each contractor and in-house trust undertakes a series of checks at key stages of the survey, especially the sample preparation and data cleaning stages, where checks tend to focus on issues such as including ineligible patients. Due to contractors receiving mailing information, they also do validation checks to see if the address is complete enough for a survey to be sent out.

The progress of the survey is monitored at trust-level on a weekly basis during the fieldwork stage, with the Survey Coordination Centre investigating any issues that arise.

Survey Coordination Centre checks

The Survey Coordination Centre undertakes a number of quality assurance (QA) checks throughout the course of the survey project. The first of these is concerned with determining whether there are any errors in the sample file used for mailing, with the aim of minimising any exclusions of data at the analysis stage of the survey, due to eligibility issues.

The Survey Coordination Centre also checks hard copies of the covering letters and questionnaires used by each trust within the survey, with the aim of identifying where errors have been introduced when the survey documents are reproduced by either contractors or in-house trusts; errors tend to be typographical in nature. If an error is identified that would compromise the data collected, making the data unusable, one of two things happen. The first, and more favourable option, would be to rectify the mistakes in time to ensure the reliability of any data collected. Otherwise, the second option is to exclude the data for that particular question from the final dataset and output for the trust in question.

During the fieldwork stage, the Survey Coordination Centre monitors the progress of the mailings and response rates at both overall and trust level. While not technically a QA check, this monitoring does allow the Survey Coordination Centre to flag any concerns in regards to how the survey is progressing. This may highlight issues that could have an impact upon the data collected due to low response rates affecting the representativeness of the data, thereby limiting its usability. Furthermore, the survey is administered in a standardised manner, with a set number of mailings during fieldwork and a particular final mailing date, so as to allow groups that tend to respond late in surveys to have more time to respond.

The final set of QA checks undertaken by the Survey Coordination Centre focus on response data and analysis. In addition to the aforementioned checks undertaken on the survey data, each stage of the data cleaning process is second checked internally. Particularly complex sections of SPSS syntax are also subject to code review by the Chief Statistician and senior team members.

Finally, all analysis outputs, including the trust level results and England level reporting, go through a two stage quality assurance process; being checked by both the Survey Coordination Centre and CQC.

Data limitations

Context

As with any piece of social research, statistical analysis of the data collected as part of CYP16 is susceptible to various types of errors from different sources. As a result, potential sources of error are carefully controlled through rigorous development work in terms of questionnaire design and sampling strategy, which in turn is supported by extensive quality assurance at every stage.

Seasonal effects

Participating NHS Trusts selected patients aged between 15 days and 15 years at the time of their discharge, who had been admitted to hospital as in inpatient or day case and had subsequently been discharged between 1st November 2016 and 31st December 2016[8]. There were 68 trusts that were not able to get the full 1,250 participants required for the sample during this period. Sample sizes for these trusts ranged from 264 to 1,249.

It is possible that there may be some seasonal effects on responses, in the form of factors such as differing staffing levels and school holidays. However, given that the sampling period is the same for all trusts taking part in the survey, any such seasonal variation would not affect the comparability of the results or its use in assessing the performance of trusts.

Response rates

The response rate for the survey has dropped from 27% in 2014 to 26% for CYP16. This is consistent with both other surveys in the NHS Patient Survey Programme and social and market research more generally. The decline in response rate may have been somewhat slowed by the improved sampling used for CYP16.

Figure 3 illustrates response rate trends for the more established surveys in the NHS Patient Survey Programme. Although it should be noted that not all surveys are carried out on an annual basis, there is a clear downward trend across the entire programme. It can be seen here that the adult inpatient survey generally has the highest response rates, with the community mental health, emergency department[9] and children & young people's surveys having the lowest.

[8] Five trusts sampled back to 1 October 2016 in order to achieve the minimum sample size.
[9] Formerly known as the Accident and Emergency Survey

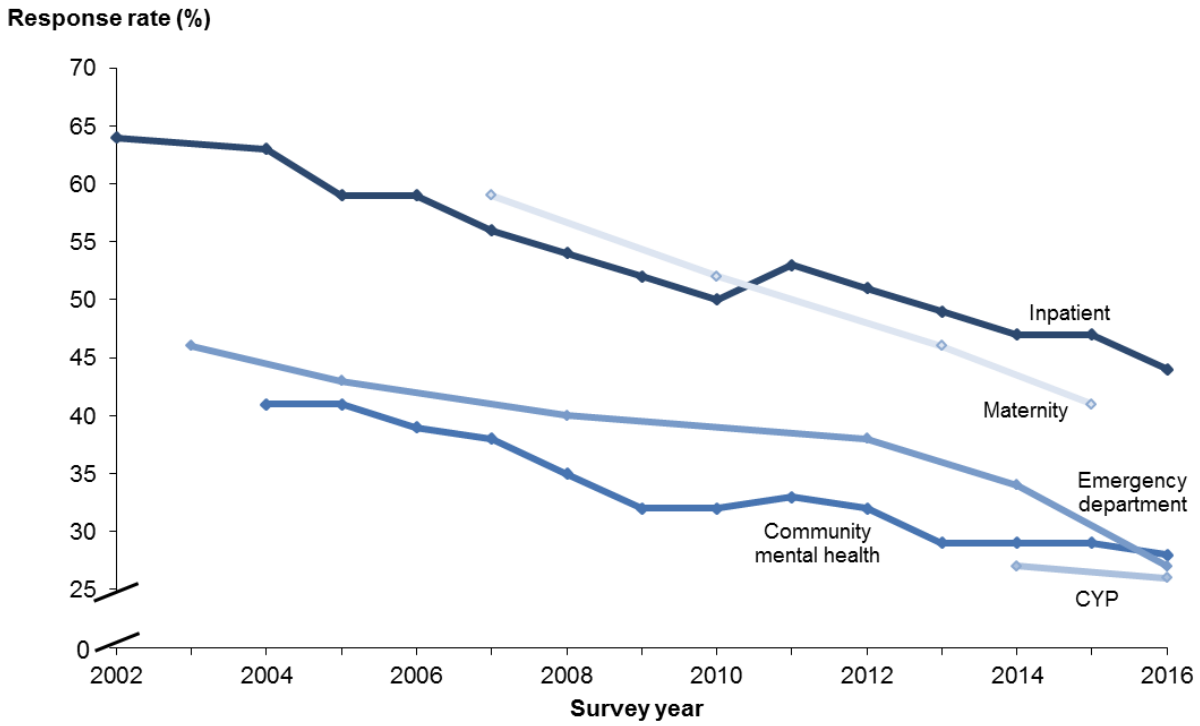


Figure 3: Response rates for established surveys in the NHS Patient Survey Programme. Note that not all surveys are conducted on an annual basis.

Non-response bias

Non-response, the result of certain individuals in the sample not responding to the survey, is one of the main issues that can affect survey results; and as response rates for surveys decline, the risk of this increases. Non-response bias describes the potential for those who did respond to the survey being different from those who did not; such as those people with more negative views of the service being more likely to respond, for example.

This issue is exacerbated by a number of factors. Firstly, the split between those who did not receive a questionnaire (and could not respond) versus those who chose not to respond cannot always be known. Although the number of questionnaires that were 'returned undelivered' was logged during the course of the survey, there may be another group of individuals who, for example, had changed address but not informed the trust, and therefore did not receive the questionnaire; it is not possible to know how large this group is.

Secondly, patient confidentiality prevents the Survey Coordination Centre from assessing the data quality of the samples that were drawn as they do not have access to the name and address details of those in the sample population.

Research carried out as part of the NHS Patient Survey Programme[10] [11] [12] has shown that certain groups are consistently less likely to respond. These include:

[10] http://www.nhssurveys.org/Filestore/documents/Increasing_response_rates_literature_review.pdf
[11] http://www.nhssurveys.org/Filestore/documents/Review_BMEcoverage_HCC_surveys.pdf
[12] http://www.nhssurveys.org/Filestore/documents/Increasing_response_rates_stakeholder_consultation_v6.pdf

- Young people
- Males
- Black and minority ethnic groups (BME)
- People from London
- People from deprived areas
- People with poor literacy
- People with a mental health condition.

Please note that tables 2 and 3 are based on information from trust sample files[13] only, and will therefore differ from response rates published elsewhere; which are a combination of responses to the demographic questions, or sample file information if the response is missing. Respondent-provided information cannot be used to calculate response rates, as the corresponding information is unavailable for non-responders. The response rate is based on the adjusted response, deceased patients and anyone for whom the questionnaire was undeliverable were removed from the base.

Demographics		Profile (%)	
		Sample	Respondent
Gender	Male	55	55
	Female	45	45
Ethnicity	White	71	71
	Mixed	4	3
	Asian or Asian British	9	8
	Black or Black British	4	3
	Chinese or other	3	3
	Not stated or missing	11	12
Age group	0-7	64	60
	8-11	17	19
	12-15	19	21
Length of stay	No overnight stay	60	59
	Overnight stay	40	41

Table 2: Sample and respondent profiles for the Children and young people's survey 2016

[13] Trust sample files contain all people selected to take part in the survey and includes information such as age, gender, ethnicity and length of stay.

Demographics		Responded (%)	
		Yes	No
Gender	Male	26	74
	Female	26	74
Ethnicity	White	26	74
	Mixed	23	77
	Asian or Asian British	23	77
	Black or Black British	22	78
	Chinese or other	28	72
	Not stated or missing	28	72
Age group	0-7	24	76
	8-11	29	71
	12-15	28	72
Length of stay	No overnight stay	25	75
	Overnight stay	26	74

Table 3: Respondents and non-responders for the Children and young people's survey 2016

Addressing non-response bias in the survey results

The application of non-response weighting to the survey results for both the England data and the trust-level result has been considered. However, in the consideration of whether to weight for non-response and whether this should be in accordance with either the sample or population data, we need to factor in the primary aim of why the survey data are being collected.

For the majority of social research studies, in particular those that are concerned with a cross sectional or general population, non-response is weighted for against the population demographics. This is normally achieved by weighting for key characteristics such as age, gender, marital status, socio-economic status, and if these variables exist either on the sampling frame or are collected at the time of interview. For example, in face-to-face interviewing, interviewers are able to collect observations about non-responding sample units by assessing the characteristics of the dwelling or neighbourhood[14]. Alternatively, if a national dataset exists for these key characteristics, such as the Census, then this can be used in deriving the weighting approach. The reason why weighting back to the population is key for these studies is that they are looking to make generalisations about a population as a whole rather than individual cases or sampling units within it.

[14] Lynn, P. (1996) 'Weighting for Non-response' in Banks, R., Fairgrieve, J., Gerrard, L., Orchard, T., Payne, C., & Westlake, A. (eds.) *Survey and Statistical Computing: Proceedings of the Second ASC International Conference*, pg. 205-214, Essex, UK: Association for Survey Computing.

Trust-level benchmark analysis

For the NHS Patient Survey Programme, the data collected are used for measuring and comparing the performance of individual NHS trusts. Therefore it is important that we are able to distinguish between the characteristics of different trusts (i.e. the variation between them) to identify those trusts that are doing better or worse than the 'average' trust. As demographic characteristics are known to be related to responses, we therefore standardise different organisations to a common average case-mix when calculating organisational results. This removes demographic differences as a source of variation and provides a 'level playing field' for comparing providers. Weighting for non-response to either a national population dataset or back to the sample data for a trust would not achieve this.

The potential non-response bias is partly addressed via statistical standardisation by age group in the trust level results[15]. Standardising by ethnicity would in theory help address this non-response, however the ability to do this is hindered by a number of limitations detailed below.

Where the response rates for different groups vary, we have considered whether we could additionally weight by groups that are less likely to respond. However, there are a number of drawbacks to this approach, which is why it has not been implemented:

- As more variables are included in the standardisation, the analysis not only becomes more complex, but it also greatly increases the risk of very small groups with large weights.
- In order to weight data by age, gender, and ethnicity, and include this in the trust data, information on each of these variables is required. If a respondent has not answered the corresponding questions that provide this information, then it is acquired from the sample file provided by the trust in a bid to maximise the amount of available data. However, while data for age and gender tends to be of very good quality, ethnicity is often quite poor. The survey analysis relies solely on respondent-provided information for ethnicity, and as a result, standardisation by ethnicity would often result in the removal of records from the analysis. This is not desirable, particularly in a survey with lower response rates.
- Due to some trusts having very low proportions of individuals from particular ethnic groups, weights would need to be capped so as to avoid heavy weighting; which should be avoided as far as possible when standardising data, as it limits the comparisons that can be made fairly.
- Standardisation based on ethnicity should also be avoided as it would remove any genuine differences in the experiences across the sub-groups.

Furthermore, it should be noted that direct assessment of non-response bias upon survey data is difficult to measure due to the obvious ethical implications of acquiring such data. This would require further contact with patients who do not wish to be contacted. Rather than further adjusting the data, this issue is managed by adopting

[15] For more information on the methodology for the trust level results, please see the technical document which is referenced in 'Further Information' at the end of this document.

best-practice methodologies so as to maximise response rates from all groups, as discussed in this report, previously.

Results for England

For the 2016 survey, a stratified sampling method was employed which over-sampled eligible patients aged 8-11 and 12-15 years old. Doing so increases the likelihood of generating usable data from these smaller population sub-groups within trust's overall eligible populations.

In aggregating trust-level data for national reporting, the oversampling of 8-11 and 12-15 year olds was corrected by having a trusts data 'population' weighted to reproduce the eligible population age profile at their trust. In addition, some trusts have a higher response rate than others and would therefore have a greater influence over the average if a simple mean was calculated across all respondents. To avoid this, additional 'trust' weights are also applied to the data. Doing so means each trust has an equal influence over the average, regardless of differences in response rates between trusts.

A z-test set to 99.996% significance was carried out on the data to determine whether there were any statistically significant differences between data from the 0-7, 8-11 and 12-15 versions of the questionnaire. A statistically significant difference means it is very unlikely we would have obtained this result by chance alone if there was no real difference. The alpha value of 0.0000386829346 was used as opposed to the 0.05 value used as standard across the programme, to account for the design effect incurred when applying population weights.

Data revisions

CQC publishes a Revisions and Corrections Policy relating to these statistics. The NHS Patient Survey Programme data are not subject to any scheduled revision due to the surveys capturing the views of patients about their experiences of care at a specific point in time. All new survey results are therefore published on the CQC's website and NHS Surveys website, as appropriate, and published results for previous iterations of the survey are not revised. The Revisions and Corrections Policy sets out how CQC will respond if an error is identified and it becomes necessary to correct published data and/or reports.

Further Information

The results for England and trust level benchmark results are available on CQC's website. You can also find a technical document here, which describes the methodology for analysing the trust level benchmark results:
www.cqc.org.uk/childrenssurvey

Full details of the methodology for the survey, including questionnaires, scored questionnaire, letters sent to patients, instructions on how to carry out the survey and the survey development report, are available at:
http://www.nhssurveys.org/surveys/953

More information on the patient survey programme, including results from other surveys and a programme of current and forthcoming surveys are at:
www.cqc.org.uk/surveys

More information about how CQC monitors hospitals is available at:
http://www.cqc.org.uk/what-we-do/how-we-use-information/monitoring-nhs-acute-hospitals

Feedback

We welcome all feedback on the findings of the survey and the way we have reported the results – particularly from people using services, their representatives, and those providing services. If you have any views, comments or suggestions on how we could improve this publication, please contact Paul Williamson, User Voice Development Manager, Patient.Survey@cqc.org.uk.

We will review your feedback and use it as appropriate to improve the statistics that we publish across the NHS Patient Survey Programme.

If you would like to be involved in consultations or receive updates on the NHS Patient Survey Programme, please subscribe here.