Appendices

Statistics on Women’s Smoking Status at Time of Delivery
October 2017 to December 2017

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This report may be of interest to members of the public, policy officials and other stakeholders to make local and national comparisons and to monitor the quality and effectiveness of stop smoking services.
Appendix A – Definitions

Smoking at time of delivery (SATOD) is a CCG based collection. A mother will be assigned to a CCG based on the postcode of their GP. This is because a large hospital might serve several CCG’s and also allows for home births to be allocated to a CCG.

The following data items are submitted for each quarter:

- Number of maternities
- Number of women known to be smokers at the time of delivery
- Number of women known to be non-smokers at the time of delivery
- Number of women whose smoking status was not known at the time of delivery

These are defined as follows:

- **The number of maternities** is defined as the number of pregnant women who give birth (during the quarter) to one or more live or stillborn babies of at least 24 weeks gestation, where the baby is delivered by either a midwife or doctor at home or in an NHS hospital (including GP units). This count should be the number of pregnant women, not the number of babies (deliveries), i.e. twins are counted as one maternity. It does not include maternities that occur in psychiatric hospitals or private beds / hospitals.

- **Women known to be smokers** at the time of delivery are defined as pregnant women who self-reported that they were smokers. This includes any cigarettes or tobacco at all, but excludes non-combustible nicotine products, such as e-cigarettes or other nicotine containing products. If a woman intends to give up smoking after the delivery, but was a smoker up until the delivery date they are included in this count.

- **Women known to be non-smokers** at the time of delivery are defined as pregnant women who self-reported that they were non-smokers (no cigarettes or tobacco at all). This count does not include women whose smoking status is not known (which is collected separately), or those who intend to give up smoking after delivery.

- **Women whose smoking status was not known** at the time of delivery are defined as those whose smoking status was not determined for whatever reason.
Appendix B – Validations

All data must be submitted as integers. The following validation is undertaken by the NHS Digital data collections system on each quarter’s submission:

\[
\text{Number of women known to be smokers at the time of delivery} + \\
\text{Number of women known to be non-smokers at the time of delivery} + \\
\text{Number of women whose smoking status was not known at the time of delivery} = \\
\text{Number of maternities}
\]

A submission that fails this validation is not accepted. In this situation the CCG is prompted to amend and re-submit their data until their submission passes this validation.

A second validation is undertaken to check if:

- the number of maternities is +/-15% of an average of the previous 4 quarters;
- the number of women known to be smokers at the time of delivery is +/-15% of an average of the previous 4 quarters;
- the number of women known to be non-smokers at the time of delivery is +/-15% of an average of the previous 4 quarters;
- the number of women whose smoking status was not known is above or equal to 5% of number of maternities

If any of the above are true then the CCG is required to either amend the data and resubmit, confirm if it is affected by data quality issues, or confirm the data as correct. Where data quality issues are identified, further explanation must be provided which is included within the published data tables (DQ table 1). If the reason provided is considered unsatisfactory then the CCG may be contacted for further details.
Appendices

Appendix C – Methodology

Percentage of women known to be smokers at time of delivery

The percentage calculation for women who were known to be smokers at time of delivery previously included women with an unknown smoking status in the denominator i.e. the total number of maternities. This meant that women with an unknown smoking status were being treated in the same way as non-smokers. Thus poor data quality (i.e. having a lot of unknowns) could have masked poor performance.

From April 2017, the methodology used to calculate the proportion of women smoking at the time of delivery changed to exclude women with an unknown smoking status from the denominator. Therefore, the percentage calculation for smokers / non-smokers excludes women with an unknown smoking status. The tables in this report showing a time series have been recalculated to use this new definition. More information is available in the methodological change note: http://content.digital.nhs.uk/media/25098/Statistics-on-Womens-Smoking-Status-at-Time-of-Delivery-England/pdf/MethChan201708_SATOD_17-18.pdf


To aid the transition to this new definition, the indicator was published under both definitions during 2016/17 to allow CCGs to be aware of the impact of the change and to give them time to improve the quality of their data. This also allowed time to co-ordinate the change with the publication of the new Government tobacco control plan for England which was published in July 2017 and can be found here here: https://www.gov.uk/government/publications/towards-a-smoke-free-generation-tobacco-control-plan-for-england

Confidence Intervals

A confidence interval gives an indication of the likely error around an estimate that has been calculated from measurements based on a sample of the population. It indicates the range within which the true value for the population as a whole can be expected to lie, taking natural random variation into account.

Throughout this report, 95 per cent confidence intervals are used. These are known as such because if it were possible to repeat the same programme under the same conditions a number of times, we would expect 95 per cent of the confidence intervals calculated in this way to contain the true population value for that estimate.

This approach is consistent with that used throughout the public health community.

The significance of the difference between two rates or proportions has been carried out throughout this report using the approach outlined below.
Calculate 95% confidence intervals using the method described by Wilson and Newcombe

1) Calculate the proportions of women with and without the feature of interest (e.g. percentage of maternities who smoke at the time of delivery).

\[ r = \text{recorded number of maternities that smoke at the time of delivery for the designated time period} \]
\[ n = \text{sample size} \]
\[ p = \frac{r}{n} \text{ proportion with feature of interest} \]
\[ q = \frac{1-p}{n} \text{ proportion without feature of interest} \]
\[ z = \text{appropriate value } z_{1-a/2} \text{ from the standard Normal distribution} \]

2) Calculate three values (A, B and C) as follows:

\[ A = 2r + z^2 \]
\[ B = z \sqrt{z^2 + 4rq} \]
\[ C = 2(n + z^2) \]

3) Then the confidence interval for the population proportion is given by

\[ \frac{A - B}{C} \text{ to } \frac{A + B}{C} \]

This method has advantages to other approaches as it can be used for any data. When there are no observed events, then \( r \) and hence \( p \) are both zero, and the recommended confidence interval simplifies to \( 0 \) to \( z^2 / (n + z^2) \). When \( r = n \) so that \( p = 1 \), the interval becomes \( n/(n + z^2) \) to \( 1 \).

Significance Testing

The steps for the approach outlined by Altman et al. are:

1) Calculate the absolute difference between the two proportions, \( \hat{D} = \hat{p}_2 - \hat{p}_1 \)

2) Then calculate the confidence limits around \( \hat{D} \) as:

\[ \hat{D} - \sqrt{(\hat{p}_2 - l_2)^2 + (u_1 - \hat{p}_1)^2} \text{ to } \hat{D} + \sqrt{(\hat{p}_1 - l_1)^2 + (u_2 - \hat{p}_2)^2} \]

where \( \hat{p}_i \) is the estimated prevalence for year \( i \), and \( l_i \) and \( u_i \) are the lower and upper confidence intervals for \( \hat{p}_i \) respectively.

3) A significance difference exists between proportions \( \hat{p}_1 \) and \( \hat{p}_2 \) if and only if zero is not included in the range covered by the confidence limits around the difference \( \hat{D} \).
Appendix D: How are the statistics used?

Users and uses of the report

Below is listed our current understanding of the known users and uses of these statistics. Also included are the methods we use to attempt to engage with the current unknown users.

**Department of Health (DH)** - frequently use these statistics to inform policy and planning. The smoking at the time of delivery data is used to monitor the national ambition to reduce smoking in pregnancy to 6% by the end of 2022, which is part of the tobacco control plan. The Public Health Outcomes Framework was updated in May 2016 which sets out the desired outcomes for public health and how these will be measured. The Department of Health publishes policies on smoking and these can be found via this link: [https://www.gov.uk/government/policies/smoking](https://www.gov.uk/government/policies/smoking)

The reports are also available to support responses to parliamentary questions.

**Public Health England** - frequently use these data for secondary analysis and convert the CCG level data to local authority level and use it within the Public Health Outcomes Framework as indicator 2.03. They also use these data within the Local Tobacco Control Profiles: [https://fingertips.phe.org.uk/profile/tobacco-control](https://fingertips.phe.org.uk/profile/tobacco-control)

**Media** - these data are used to underpin articles in newspapers, journals, etc. The 2016/17 Q4 report was published at the same time as Statistics on Smoking, 2017 which is also produced by NHS Digital. The following articles specifically mentioned the smoking at the time of delivery data:


**Public** - all information is accessible for general public use for any particular purpose.

**NHS** - Use the reports and tables for analyses, benchmarking and to inform decision making.

**Public Health Campaign Groups** - data are used to inform policy and decision making and to examine trends and behaviours.

Unknown Users

This publication is free to access via the NHS Digital website [http://content.digital.nhs.uk/lifestyles](http://content.digital.nhs.uk/lifestyles), and consequently the majority of users will access the report without being known to us. Therefore, it is important to put mechanisms in place to try to understand how these additional users are using the statistics and also to gain feedback on how we can make these data more useful to them. On the webpage where the publication appears there is a link on the right-hand side to a feedback form which NHS Digital uses to capture feedback for all its reports.

The specific questions asked on the form are:
• How useful did you find the content in this publication?
• How did you find out about this publication?
• What type of organisation do you work for?
• What did you use the report for?
• What information was the most useful?
• Were you happy with the data quality?
• To help us improve our publications, what changes would you like to see (for instance content or timing)?
• Would you like to take part in future consultations on our publications?

Any responses via this form are passed to the team responsible for the report to consider. We also capture information on the number of times the reports are downloaded, although we are unable to capture who the users are from this. The 2017/18 quarter 3 publication generated 339 unique downloads (for the report and/or associated files) in the 2 weeks after publication.
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