Cervical Cancer Prevalence:

Basic Information	
1. What is being measured?	The prevalence of cervical cancer, ICD-10 C53
2. Why is it being measured?	Prevalence is an indicator of the burden of cancer and can help to inform health care service planning.
3. How is the indicator defined?	Cervical cancer, defined as C53, is coded according to the International Classification of Diseases, Edition 10 (ICD10) Prevalence data are provided via the regional Cancer Registries who collect data relating to each new diagnosis of cancer that occurs in their resident populations. This does not include secondary cancers or recurrences. Data are reported according to the calendar year in which the cancer was diagnosed. Cancer prevalence is a measure of the number or proportion of people who are alive and have previously received a diagnosis of the selected cancer within a specified timeframe. The one-year prevalence counts anyone who has ever had a previous diagnosis of cancer within the previous one year (since 31 December 2005) and is still alive on 31 December 2006. The five-year prevalence counts anyone who has ever had a previous diagnosis of cancer within the previous five years (since 31 December 2001) and is still alive on 31 December 2006. The ten-year prevalence counts anyone who has ever had a previous diagnosis of cancer within the previous ten years (since 31 December 1996) and is still alive on 31 December 2006. To ensure that patients, rather than tumours, were counted, only the first diagnosed tumour (excluding non-melanoma skin cancer) in each patient was included in the analysis.
4. Who does it measure?	Patients who had been diagnosed with cancer up to ten years before 31st December 2006, and who were still alive on 31st December 2006.
5. When does it measure it?	Females diagnosed from 1996 who are still alive on 31st December 2006.
6. Does it measure absolute numbers, proportions or rates?	Age-Standardised Proportion (ASP) - The ASP is used to eliminate the variation in the age structures of populations to allow comparisons between different areas to be made. The ASP is obtained by using a weighted average of age-specific proportions, i.e. the crude proportions within each five-year age group. Direct age-standardisation has been used, applied to the European Standard Population. ASPs are the figures which should be used when making comparisons between the different networks or countries, if one wishes to account for differences in age distribution.

7. Where does the data come from?	**One, Five and Ten-year Cancer Prevalence (June 2010)** report.
8. How accurate and complete are the data?	The eight National Cancer Registration Service regional offices collect, on a voluntary basis, data on cancers registered to residents of their areas. These data are loaded onto the database and validated. The extensive checks include the comparability of the cancer site and associated histology, consistency of dates, for example to check that the incidence date is not after the date of death. These checks are closely based on those promulgated by the International Agency for Research on Cancer (IARC). Once all the expected records for any one incidence year have been received and validated at Office of National Statistics (ONS), detailed tables are published on the numbers and rates of all types of cancer by age and sex, and by region of residence, as presented in the annual ONS publication MB1. Please visit http://www.ons.gov.uk to view MB1 reports for further details of the completion of registration each year.
9. Are there any caveats/ problems/ weaknesses?	See link in note 8, above A small number of patients had missing or incomplete postcodes, however 99.95% of patients in the dataset were successfully assigned a cancer network of residence.
10. What methods are used to test the meaning of the data and variation?	**Count:** The 'count' is the number of people who have or have had cancer in 2006 that were diagnosed in the previous one, five or ten years. **Lower and Upper Confidence Limits (LCL and UCL):** For the ASP, a 95% confidence interval is given. Confidence intervals are used as a measure of uncertainty in the estimated proportions. The upper and lower limits of the interval show how big a contribution chance may have made to a particular statistic. The 95% confidence intervals quoted give the range in which the proportion in question would fall 19 times out of 20, were it possible to repeat the analysis. When comparing the rates of different groups, the CIs can be compared to determine if the range of values overlap. If the CIs do not overlap then the difference between the rates is said to be statistically significant. Areas are said to have a statistically significantly higher or lower than expected prevalence of cervical cancer, given the age and size of the population. **Area Profile:** Spine Chart: The area profile presents a spine chart which allows a comparison of the local value (represented by a circle) against the national average (represented by a red line in the middle of the chart) and regional

	average (where available, represented by a diamond), but also where the local area lies in relation to the range of values for all the other local areas. The darker grey shading of the bar represents the 25th to 75th percentile of the range of values. Map: The map is coloured according to whether the rate is statistically significantly higher or lower than the England average, higher/lower than the national average but not significantly so and the same as the national average. The statistical significance tested by the CIs is different to the method described below for funnel plots and may present the same area differently in terms of statistical significance when compared to the national average. Example of interpretation: The symbol in the spine chart is green (better) when prevalence of cervical cancer is statistically significantly lower than the England average; or red (worse) when the prevalence is statistically significantly higher than the England average. Statistical significance is to the 95% confidence level. The symbol is orange when the prevalence of cervical cancer is not statistically significantly different to the national average. **Funnel Plot:** Funnel plots have become a preferred method of presenting comparisons between geographical areas or institutions in public health. This is opposed to the more conventional use of 'caterpillar' plots which visually imply a ranking of areas based on good or bad performance. In any process or system, variation is to be expected; the funnel plot approach makes it easier to identify which data points indicate areas that may be worthy of further investigation. Simple statistical methods are used to define limits of expected variation known as control limits. The group average is used as the estimate of expected 'performance' and the best estimate of expected variation around this average is both/either ± 2 standard deviations (SDs), equivalent to 95% confidence intervals, and/or ± 3 SDs, equivalent to 99.8% confidence intervals. Those areas that fall outside of these control limits are deemed to be statistically significantly different from the group average. More information on funnel plot methodology can be found in the following references: Spiegelhalter DJ, 2005. Funnel plots for comparing institutional performance. Statistics in Medicine, 24: 1185-1202. Association of Public Health Observatories (APHO), 2009. Statistical Process Control Methods in Public Health Intelligence, Technical Briefing no. 2, Available at http://www.apho.org.uk/resource/item.aspx?RID=39445 Map: The map is coloured according to where the areas fall relative to the 2 and 3 standard deviation funnels.

	Example of interpretation: Areas where cervical cancer prevalence rates are statistically significantly lower (better) than the England average fall below the horizontal green line (national average) and outside of the funnels. Those areas where cervical cancer prevalence is statistically significantly higher (worse) than the national average fall outside of the funnels above the horizontal line. Areas where the prevalence of cervical cancer is not statistically significant fall inside the inner funnel around the horizontal line. Those areas that fall outside of the funnels in the funnel plots may require further investigation into the reasons for the statistically significantly low or high prevalence rates. Particular attention should be paid to those areas falling outside both funnels. **Double map:** Scatter Plot: The double map option displays a scatter plot of the association between the two chosen rates e.g. cervical cancer prevalence and incidence. The correlation coefficient (r) statistic displayed at the top of the scatter plot is Pearson's correlation coefficient, often called the correlation. It measures the degree of 'straight-line' association between the two indicators and can take any value between -1 (perfect negative correlation) and 1 (perfect positive correlation). A value of zero indicates no correlation. Map: In the map, the range of values for mortality is split into five groups (quintiles), and not according to statistical significance. Interpretation: If all the points lie very close to the straight line on a slope indicating, that as one variable increases (or decreases) the other increases (or decreases), then it can be said that there is a strong association between the two indicators. If the points are more scattered, but still in a straight line, would indicate that there is a weaker relationship. Interpretation of the relationship between two indicators should be made carefully; it does not mean there is a 'causal' relationship between the two indicators.
11. Geography provided in this toolkit	Since April 2013 the NHS health boundaries for Primary Care Trusts, Cancer Networks and Strategic Health Authorities have been become non-operational and have been replaced by other organisational structures responsible for the commissioning and performance

	management of cancer services, namely Clinical Commissioning Groups, Local Area Teams and Strategic Clinical Networks. However, in the absence of established boundaries and available data for these new organisations we have only been able to present sub-national data for the old organisations. The old organisations still retain some currency and relevance to the commissioning and public health structures as redefined and this is explained below: PCTs Many PCTs are coterminous with the Clinical Commissioning Groups and therefore statistics at PCT level for these CCGs will still be largely relevant. Cancer Networks Cancer Networks were formed in order to oversee and organise the local implementation of the Cancer Plan and Cancer Reform Strategy for the areas within their jurisdiction. There were 28 Cancer Networks in England which have now been replaced by 12 Strategic Clinical Networks which will provide support to cancer networks 'nesting' within their boundary. In consultation with the Gynaecological Site Specific Reference Group (SSCRG) it was decided that cancer network levels figures would be carried forward in the absence of any other relevant boundary, particularly as this will provide data for on-going peer review and whether improvements are being made over time. NHS Strategic Health Authorities (SHA) Strategic Health Authority data is available for the mortality, mortality and survival data. However, these organisation no longer exist and the figures serve to provide a regional comparison in the absence of any other available data at present. The values for the SHAs can be seen by toggling the map and comparison button on each map. In the health profile, the regional value is shown as a grey diamond. Some cancer networks cross over more than one SHA boundary, the regional average is used for each cancer network and PCT where the majority of the area resides. However, when filtering in the, single, double and health profile map, the cancer networks that have a significant area falling within the boundary of the SHA are shown. The SHAs can be highlighted on the map by ticking the box in the legend. The borders will then be highlight in red.
12. Further data availability	Please see the One, Five and Ten-year Cancer Prevalence (June 2010) report.
13. Frequency/ timeliness of data updates	At present only the report referred to above is available
14. Disclosure control	No rates have been suppressed as the smallest geography at which cervical cancer prevalence rates are available is cancer network level.

15. Rationale for inclusion	The cancer prevalence figures supplement the generally available vital statistics about cancer occurrence (cancer incidence) and deaths from cancer (cancer mortality). The cancer prevalence measure falls somewhere between incidence and mortality, and measures the burden of cancer in terms of the number of people who have or have had cancer. One-year prevalence is highly correlated with incidence whereas five-year and ten-year prevalence are correlated with both incidence and survival. Thus, the most prevalent types of cancer are those with a relatively high incidence rate and a good prognosis.