	Appraisal of quality of indicator for provisional CCG OIS
Indicator ref.: BC30	**Indicator title:** Breast cancer mortality rates
Key considerations for the NICE Committee	• The source of this data is the Primary Care Mortality database, which is the ONS mortality database extended to include GP practice code. • Several similar indicators exist, with slight variations around who is included (age and sex constraints). • Data are currently available at national level a year in arrears, e.g. data for 2010 was available January 2012. • **Summary: the HSCIC view is that this indicator is feasible and recommends using an age-sex directly standardised rate (DSR).**
Rationale	Cancer is a major cause of death, accounting for around a quarter of deaths in England. Cancer outcomes in England are poor compared to the best in Europe. Breast cancer is the most common cancer in women in England and also affects a very small proportion of men. New cases diagnosed in women each year have increased from under 30,000 in 1993 to more than 41,000 in 2010. During the same period, deaths from breast cancer in women have fallen from 12,500 to just over 9,600. There is a trend of increasing incidence because of lifestyle factors and improved detection, and decreasing mortality because of earlier detection and improvements in the quality and availability of effective treatments. This indicator seeks to reduce premature mortality from breast cancer. It measures a health outcome and is based on NICE Quality Standard 12, linked to Clinical Guidelines 80 and 81.
Suitability of indicator for purpose	**Data Quality dimensions:** **Completeness** The normal convention is to use the date of registration for the analysis of mortality data; therefore, the data can be considered to be complete (even though it does not necessarily include all deaths that occurred in the year). Mortality data is usually presented for a calendar year. Not all deaths can be allocated a GP practice code (less than 1% in this data). Most of the remainder could be allocated to a CCG using the deceased's home postcode. For the 2009 to 2011 data, 28 deaths (around 0.1% of the total) could not be allocated to a CCG and are excluded from this analysis. One further death was excluded due to being an unlikely age at death. (See also Accuracy, below.) **Accuracy** There is no reason to suspect that any of the mortality data is not correctly coded. (One death was of a baby aged 4 months, which is clinically extremely unlikely. It is possible that the date of birth was incorrectly recorded. This record has not been included in the analyses.) The registered population has been used as the denominator for this indicator. Generally, registered population (i.e., the practice list) is larger than the LSOA-based resident population; it is 6.6% larger across England. Potential causes of this include people not

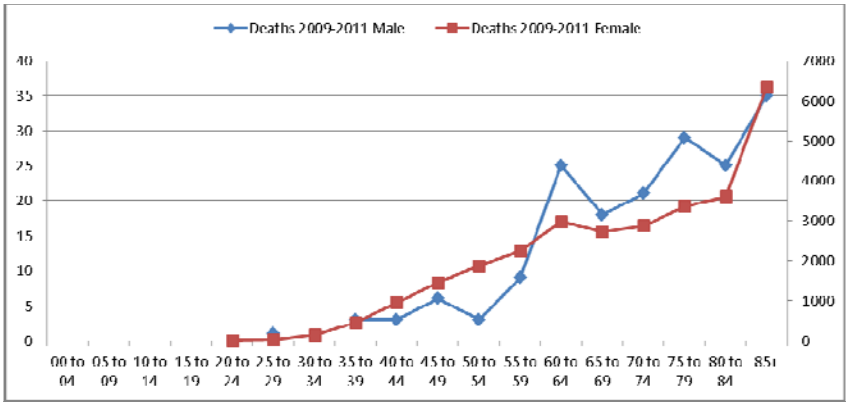
	deregistering when moving to another area or moving abroad and people not being removed from the practice list when they die. However, the point of defining the population by CCG is that people may live in one area but be registered with a practice (and CCG) in another area, so it is unlikely that the populations will match. In 31 out of 211 CCGs (14.7%), the registered population is smaller than the resident population. In 45 CCGs (21.3%), the registered population is at least 10% larger than the resident population. In two CCGs, this list inflation is more than 50%. **Timeliness** The mortality data is available monthly (available approximately 6 weeks after the month end), but it would be better to use the end of year update of all records (available around a year after the calendar year end, e.g., data for 2010 was available in January 2012). **Accessibility** Primary Care Mortality database is administered by HSCIC. Currently access is only granted to NHS employees who have signed the relevant ONS data confidentiality declarations. **Relevance** CCGs could impact on breast cancer mortality in a number of ways, including encouraging women to attend breast screening when invited, commissioning appropriate treatment services, etc. However, it could be several years before any effect is noticed, particularly given the existing general downward trend in breast cancer mortality.
What is measured	**Source of data** Primary Care Mortality database, National Health Application & Infrastructure Services (NHAIS, commonly known as the Exeter System) for registered population and ONS mid-year population estimates (for England 'standard' population). **Denominator** The CCG population, by age group and sex, based on the registered population (practice lists). **Numerator** The number of registered deaths from breast cancer (ICD-10: C50) during the respective year by CCG, by age group and sex for males and females, all ages. This indicator is derived from ONS data in the mortality database. Since this does not contain the GP practice code required to report these data at CCG level, it is proposed that the numerator is taken from the Primary Care Mortality Database which contains the ONS mortality data with the addition of the GP practice code. In the complete Primary Care Mortality Database, 98.2% of the ONS mortality records are successfully matched to GP practice and a further 0.7% are allocated geographically. This matching is better for breast cancer deaths.
How data are aggregated	Crude death rates per 100,000 population, a directly age-sex standardised rate (DSR) and an standardised mortality ratio (SMR) have been calculated. The most appropriate measure depends on the distribution of the deaths by age. Whilst it's usually better to standardise, the data may not always support it. The crude death rates per 100,000 population are calculated using both the registered population and the resident population as different denominators. In general, the effect of using the practice list population is to reduce the crude death rate, as the same number of

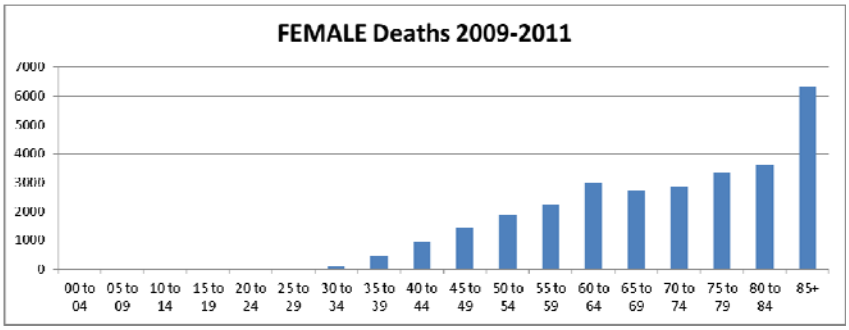
	deaths is being divided by a larger population (see also: Accuracy, above). The DSR uses the 2011 mid-year population estimate for England as the standard population. The calculation uses registered population for CCGs. This is the recommended construction method for the indicator, since DSRs allow comparisons, whereas this is more difficult with SMRs, The SMR uses indirect standardisation and the 2011 mid-year population estimate for England as the standard population. The calculation uses registered population for CCGs.
Risk adjustment	Standardisation for age and sex is used in calculating both the direct (DSR) and indirect (SMR) measures, as mentioned above, in order to facilitate comparisons between CCGs that have different population structures.
Scientific validity	When using a resident population rather than registered population, the risk is that deaths are allocated to a different CCG than the one the person was registered with. Hence the decision to use the registered population. However, it is acknowledged that the registered population may be an overestimate of the true population. Any changes to this indicator will be over a long term. CCGs may find it difficult to see improvements in the shorter term. Small numbers are likely to be a concern, particularly if the general trend of reducing mortality due to breast cancer continues.
Interpretation	A low rate is desirable. Outliers could be identified from a suitable graph of the data which shows appropriate confidence limits.
Equality assessment	Lifestyle and environmental issues mean that the prevalence of breast cancer is greater in higher socioeconomic groups. However, mortality is higher among lower socioeconomic groups, highlighting issues of later identification because of a lower uptake of screening and other factors, barriers to accessing treatment among these groups and the impact of comorbidities. Comparisons could be made with known geographical areas (e.g., where a CCG is coterminous with a local authority and/or a PCT) for the same time period. However, this is still likely to give different figures as the population used as the denominator and the deaths used as the numerator will both be allocated on a different basis (registered, not resident). Also, calculated rates are likely to be different due to using a different standard population.
Use, follow-up investigation and action	Mortality data available around a year after the collection period. It could be argued that there is a perverse incentive with this indicator, in that using registered population as the denominator may mean practices are not motivated to ensure there lists are accurate and up to date.
Feedback from HSCIC consultation	No comments were received from the consultation for this item.

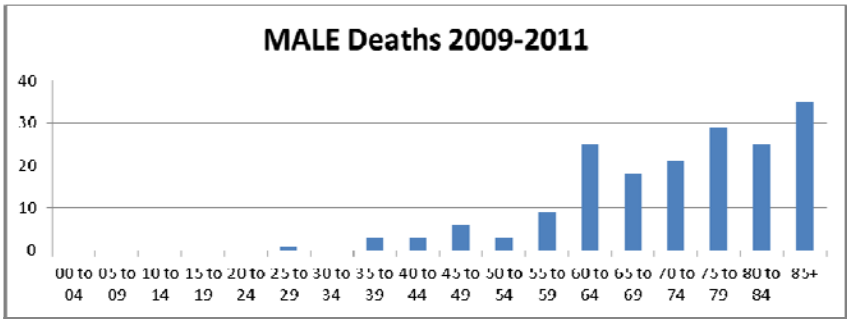
Sample data

Although female deaths hugely outnumber male deaths from breast cancer, it appears they follow a similar age distribution. However, standardisation by age and sex has been performed, given the dissimilarity in the totals.

Deaths 2009-2011, England Breast Cancer (ICD-10: C50)		
Age Group	**Male**	**Female**
00 to 04		
05 to 09		
10 to 14		
15 to 19		
20 to 24		4
25 to 29	1	23
30 to 34		139
35 to 39	3	445
40 to 44	3	960
45 to 49	6	1446
50 to 54	3	1869
55 to 59	9	2238
60 to 64	25	2973
65 to 69	18	2717
70 to 74	21	2868
75 to 79	29	3358
80 to 84	25	3598
85+	35	6339







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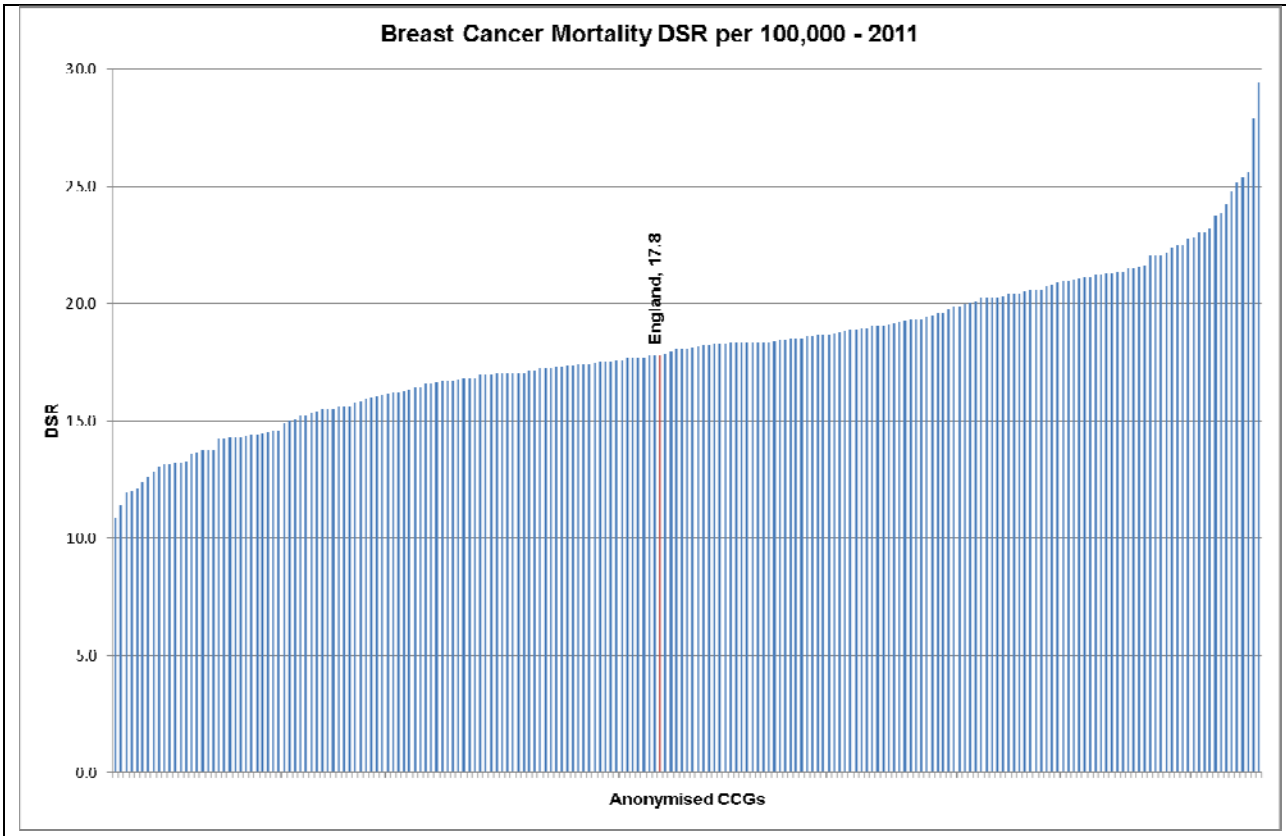
Breast cancer mortality rates, 2011 – sample data

CCG Name	Deaths	Crude rate 1	Crude rate 2	DSR per 100,000	SMR
CCG A	23	22.8	21.7	20.3	111
CCG B	28	14.6	13.6	13.3	71
CCG C	40	24.5	23.0	22.8	122
CCG D	35	15.9	14.5	16.8	90
CCG E	56	15.1	15.1	15.5	84
CCG F	39	18.6	19.2	20.4	110
CCG G	11	14.4	9.3	23.0	127
CCG H	65	20.5	21.6	18.3	96
CCG I	38	25.7	26.2	23.9	130
CCG J	31	25.9	23.9	21.0	115
CCG K	75	14.8	14.1	14.3	78
CCG L	74	25.2	24.8	20.6	109
CCG M	61	29.6	25.8	23.2	126
CCG N	98	17.6	16.2	16.7	91
CCG O	29	14.6	13.5	19.6	105
CCG P	55	19.2	18.7	18.4	99
CCG Q	48	28.8	29.0	22.5	121
CCG R	21	8.9	8.5	13.8	76
CCG S	19	8.2	6.5	15.0	71
CCG T	48	13.9	12.6	15.6	84
CCG U	42	29.9	29.7	20.9	118
CCG V	105	15.2	14.3	16.4	90
Lowest figure	7	6.3	5.3	10.7	57
Highest figure	172	31.5	29.7	29.4	154

Crude rate 1 = deaths / resident population x 100,000
Crude rate 2 = deaths / registered population x 100,000


Breast Cancer Mortality DSR per 100,000 - 2011
30.0
25.0
20.0
15.0
10.0
5.0
0.0
DSR
England, 17.8
Anonymised CCGs