# Mortality from all circulatory diseases

## Purpose:

To reduce deaths from circulatory diseases.

## Definition of indicator and its variants:

Mortality from all circulatory diseases (ICD-10 I00-I99 equivalent to ICD-9 390-459).

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Sex</th>
<th>Age group</th>
<th>Organisation (see glossary)</th>
<th>Current data</th>
<th>Trend data</th>
<th>File-worksheet code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of deaths</td>
<td>MFP</td>
<td>1+, 1-4, 5-14,</td>
<td>E&amp;W, E, Region, LA, CTY</td>
<td>Current year</td>
<td></td>
<td>06A_076NO</td>
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<tr>
<td></td>
<td></td>
<td>15-34, 35-64,</td>
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<td></td>
<td>65-74, 75+</td>
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<tr>
<td>Average age-specific death rate per 100,000 resident population</td>
<td>MFP</td>
<td>1+, 1-4, 5-14,</td>
<td>E&amp;W, E, Region, LA, CTY</td>
<td>three years</td>
<td></td>
<td>06A_076CR</td>
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<tr>
<td></td>
<td></td>
<td>15-34, 35-64,</td>
<td></td>
<td>pooled</td>
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<td></td>
<td></td>
<td>65-74, 75+</td>
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<tr>
<td>Indirectly age-standardised mortality ratio (SMR) and number of deaths</td>
<td>MFP</td>
<td>All ages &lt;65</td>
<td>E&amp;W, E, Region, LA, CTY</td>
<td>three years</td>
<td></td>
<td>06A_076SM00++</td>
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<tr>
<td></td>
<td></td>
<td>&lt;75</td>
<td></td>
<td>pooled</td>
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<td>06A_076SM0064</td>
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<td>65-74</td>
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<td>06A_076SM0074</td>
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<td>three years</td>
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<td>06A_076SM0074</td>
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<tr>
<td>Directly age-standardised mortality rate (DSR) per 100,000 and number of deaths</td>
<td>MFP</td>
<td>All ages, &lt;65,</td>
<td>E&amp;W, E, Region, LA, CTY</td>
<td>three years</td>
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</tr>
</tbody>
</table>

## Numerator:

**Numerator data:**

Deaths from all circulatory diseases, classified by underlying cause of death (ICD-10 I00-I99, ICD-9 390-459 adjusted), registered in the respective calendar year(s).

**Source of numerator data:**

Office for National Statistics (ONS), original cause of death data.

**Comments on numerator data:**

Mortality data for years 1995-2006 were extracted by ONS in June 2007 with organisational codes assigned using the postcode of usual residence and the November 2006 edition of the National Statistics Postcode Directory (NSPD). Data for subsequent years were extracted in June of the following year using the respective year’s November edition of the NSPD.

**ICD-9 to ICD-10 bridging exercise:**

In January 2001, ONS implemented a change from ICD-9 to ICD-10 for coding causes of death in England and Wales. As part of an exercise to investigate the effects of this change, ONS also re-coded all deaths registered in 1999. Deaths for years prior to 1999 and for year 2000 have not been re-coded.
For current analysis, therefore, all data are based on ICD-10.

For trend analysis, the numbers of deaths observed in the years 1995-98 and 2000 must be adjusted to give “expected” numbers of deaths which would have been coded to this cause in ICD-10. This is done by multiplying the ICD-9 based death counts by the appropriate ICD-10/9 comparability ratio published by ONS.

For this indicator the following ICD-10/9 comparability ratios were used:

<table>
<thead>
<tr>
<th></th>
<th>0-74 years</th>
<th>75-84 years</th>
<th>85+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1.012</td>
<td>1.039</td>
<td>1.069</td>
</tr>
<tr>
<td>Female</td>
<td>1.015</td>
<td>1.042</td>
<td>1.057</td>
</tr>
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</table>

Adjusted person counts are the sum of the adjusted male and female counts. Once adjusted, the counts are used to calculate rates in the usual way.

From the 2003 Compendium onwards, data are based on the original causes of death rather than the final causes used in earlier Compendia.


**ICD-10 v2001.2 to ICD-10 v2010 bridging exercise:**

In 2011, ONS implemented a change from ICD-10 version 2001.2 to ICD-10 version 2010 for coding causes of death in England and Wales.

For analysis of data in the years 1995-2010, the numbers of deaths observed must be adjusted to give “expected” numbers of deaths which would have been coded to this cause in ICD-10 v2010. This is done by multiplying the ICD10 v2001.2-based death counts by the appropriate ICD-10 v2001.2 / ICD-10 v2010 comparability ratio. The ratios have been calculated by Public Health England and are based on initial work carried out by ONS. Ratios are applied per sex and per age group, under 65 and 65 & over.

For this indicator, the following ICD-10 v2001.2 / ICD-10 v2010 comparability ratios were used:

Males <65: 0.98
Males 65+: 0.94
Females <65: 0.97
Females 65+: 0.92

Adjusted person counts are the sum of the adjusted male and female counts. Once adjusted, the counts are used to calculate rates in the usual way.


**ICD-10 v2010 NCHS software to ICD-10 v2013 IRIS software bridging exercise**

In 2014, ONS changed the software used to code cause of death. Previously the ICD-10 v2010 software and rules provided by the National Center for Health Statistics (NCHS) was used, however from 1 January 2014 ONS have used the ICD-10 v2013 IRIS rules.

Further details are available from: http://www.ons.gov.uk/dcp171778_373602.pdf

For analysis of data in the years 1995-2013 (inclusive), the number of deaths observed has been adjusted to give “expected” numbers of deaths which would have been coded to this cause using ICD-10 v2013 IRIS software. This is done by multiplying the ICD-10 v2010 NCHS based death counts by the appropriate comparability ratio. These ratios are based on initial work carried out by ONS.

Ratios are applied per sex and age group (under 75 and 75 years and over).

Adjusted person counts are the sum of the adjusted male and female counts. Once adjusted, the counts are used to calculate rates in the usual way.

**Denominator:**

**Denominator data:**
- 2011 Census rebased mid-year population estimates for the calendar years 2002-2010.
- 2011 Census based mid-year population estimates for calendar years 2011 onwards.

**Source of denominator data:**
ONS

**Comments on denominator data:**
Data are based on the latest revisions of ONS mid-year population estimates for the respective years.

**Statistical methods:**

Annex 2: Changes to Office for National Statistics Mortality Data
Annex 3: Explanations of statistical methods used in the Compendium
Annex 5: European Standard Population
Annex 6: Goals of Our Healthier Nation


Directly standardised indicators produced from August 2014 onwards have been calculated using the 2013 European Standard Population. This affects data for single years 2012 onwards, three-year pooled data for 2010-12 onwards and trend data from 1995-2012 onwards.

Data on the Compendium of Population Health Indicators website have had any required suppression applied: data that may potentially identify an individual have been removed (in cells marked by X). Full details of the disclosure control applied is available in the “Statistical methods” and “Disclosure control” sections of the website: https://digital.nhs.uk/data-and-information/publications/ci-hub/compendium-indicators

**Interpretation of indicators:**

_Evaluating the quality of Clinical and Health Indicators_ - Annex 11 describes the criteria that should be used to judge the quality of this indicator. The application of the criteria is dependent on the context (e.g. describing a single organisation, comparing several organisations) and the level (e.g. national / regional with large numbers of events, local with small numbers of events) at which the data are to be used.

**Further reading:**


*Updated: March 2019*