

User guide to mortality statistics

July 2016

Office for National Statistics

A National Statistics publication

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The Government Statistical Service

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1 Introduction

This document provides information on the collection, production and quality of mortality statistics.

National Statistics are produced to high professional standards set out in the [Code of Practice for Official Statistics](#). They undergo regular quality assurance reviews to ensure they meet customer needs. They are produced free from any political influence.

The [Mortality statistics Quality and Methodology Information](#) document contains important information on:

- the strengths and limitations of the data
- the quality of the output: including the accuracy of the data and how it compares with related data
- uses and users
- how the output was created

1.1 Symbols and conventions

In the Office for National Statistics's (ONS's) mortality outputs published from July 2014, symbols used are:

: denotes not available

z denotes not applicable

0 denotes nil

c confidential

u low reliability

~ figure which is not a true zero but has been rounded to zero

Further [guidance on the use of symbols in tables](#) is available.

Rates are not calculated where there are fewer than 3 deaths in a cell, denoted by (u). It is ONS practice not to calculate rates where there are fewer than 3 deaths in a cell, as rates based on such low numbers are susceptible to inaccurate interpretation.

Rates which are based on between 3 and 19 deaths are displayed in tables but are denoted by (u) as a warning to the user that their reliability as a measure may be affected by the small number of events.

In ONS mortality outputs published prior to July 2014 symbols used were:

.. denotes not available

: denotes not appropriate or not applicable

- denotes nil

* suppressed to protect confidentiality

Also prior to July 2014, rates were not calculated where there were fewer than 3 deaths in a cell, denoted by (:). Rates in tables calculated from between 3 and 19 deaths were distinguished by italic type.

The [ONS policy on protecting confidentiality in birth and death statistics](#) is available on our website (currently under revision).

1.2 Information collected at death registration

The registration of life events (births, deaths, marriages and civil partnerships) is a service carried out by the Local Registration Service in partnership with the General Register Office (GRO) in Southport.

Mortality statistics are based on information recorded when deaths are certified and registered. Most deaths are certified by a medical practitioner, using the Medical Certificate of Cause of Death (MCCD) Annex A. This certificate is taken to a registrar by an informant – usually a near relative of the deceased.

Deaths should be registered within 5 days of the date of death, although there are a number of situations when the registration of a death will be delayed, as described in Section 2.6.

In certain cases deaths are referred to, and sometimes then investigated by, a coroner. The coroner sends information to the registrar, and this is used instead of that on the MCCD to register the death. In some cases additional information provided on Part B of the coroner's certificate (Annex C) is forwarded to ONS by the registrar. Accordingly, the information used in ONS mortality statistics normally comes from 1 of 4 sources:

- details supplied by the doctor when certifying a death, for example, whether the body was seen after death, cause of death, when the deceased was last seen alive, whether a post-mortem was carried out
- details supplied by the informant to the registrar, for example, occupation of deceased, sex, usual address, date and place of birth, marital status, date of death, place of death
- details supplied by a coroner to the registrar following investigation, for example, cause of death (following post-mortem), place of accident (following inquest). In the case of deaths certified after inquest, the coroner supplies the registrar with all the particulars that would have been supplied by the informant
- details derived from information supplied by one or other of the above, for example, age of deceased is derived from date of birth, and coded cause of death

Details are also supplied by the informant on the spouse of the deceased (only if the deceased is either married or civil partnered), for example, name, date of birth, occupation and employment status. If these details are supplied by the coroner rather than the informant then occupation and employment status will not be supplied.

1.3 Publications

Our website provides a comprehensive source of freely available statistics on [life events](#) and other ONS products.

England and Wales: to meet user needs, very timely but provisional counts of death registrations are published as follows:

- [Provisional counts of weekly death registrations](#) by sex and age group and regions (within England) and Wales (published 11 days after the week ends)
- [Provisional counts of monthly death registrations](#) by regions (within England), unitary authorities, counties, districts and London boroughs (published on the fourth Tuesday of the

following month); figures remain provisional until they are updated to final figures following the publication of final annual statistics.

Provisional figures have not been subject to the full quality assurance process.

Annual mortality statistics (based on deaths registered in a calendar year) are published in 3 separate packages to enable the timely release of statistics:

- [Death registration summary tables](#) provides summary death registration statistics for the reference year with numbers and rates for England and Wales. It also includes numbers and rates for regions (within England), unitary authorities, counties, districts, London Boroughs and Local Health Boards (within Wales)
- [Deaths registered in England and Wales \(Series DR\)](#) provides death registration statistics for the reference year by detailed underlying cause of death, age, sex, marital status, rates for England and Wales. It also include numbers for regions (within England) and local health boards (within Wales)
- [Mortality statistics: area of usual residence](#) provides death registration statistics in the United Kingdom and its constituent countries (numbers and rates) by regions (England), unitary authorities, counties, districts, London boroughs, health areas, council areas (Scotland) and local government districts (Northern Ireland)

ONS also publishes more detailed annual mortality statistics in the following releases:

- [20th Century mortality files](#) provides death registration statistics for England and Wales by sex, age group and underlying cause
- [21st Century mortality files](#) provides death registration statistics for England and Wales by sex, age group and underlying cause
- [Deaths involving Clostridium difficile](#) (Wales only from 2013 data year onwards) provides deaths (numbers and rates) broken down by sex, age group and place of occurrence for Wales
- [Deaths involving MRSA](#) (Wales only from 2013 data year onwards) provides deaths (numbers and rates) broken down by sex, age group and place of occurrence for Wales
- [Deaths related to drug poisoning](#) provides number of deaths by cause of death, sex, age, substance(s) involved in the death by country for England and Wales. It also includes rates for deaths related to drug misuse by regions (within England), unitary authorities, counties, districts, London Boroughs and average registration delay by Local authorities (England) and unitary authorities (Wales)
- [Alcohol-related deaths in the UK](#) provides numbers and rates of alcohol-related deaths by sex, age group and individual cause of death by UK and its constituent countries and regions (within England)
- [Suicides in the UK](#) provides suicide rates by sex for the UK and its constituent countries. There are numbers and rates of narrative conclusions by sex by regions (within England)

and Wales. It also includes numbers (registrations) and rates of suicides and median registration delay for Local authorities (England) and unitary authorities (Wales). There are numbers of occurrences and rates by age and sex by country for England and Wales.

- [Avoidable mortality](#) provides numbers and rates by sex and age by country for England and Wales
- [Excess winter mortality](#) provides selected provisional and final numbers and rates by age, sex and cause for England and Wales, regions and local authorities (within England) and unitary authorities (Wales)

We also publish more detailed annual mortality statistics as an [explorable dataset](#) for England and Wales.

From 1974 to 2005, mortality statistics were published in the annual reference volumes, [DH1](#), [DH2](#) and [DH4](#). From 1993 to 2006, figures were based on deaths occurring annually in England and Wales in the reference year. Prior to 1993, figures were based on deaths registered in England and Wales in the reference year. In 2006, these 3 volumes were replaced by a single publication, Mortality statistics: [Deaths registered in England and Wales \(Series DR\)](#) based on deaths registered in a reference year.

[Child mortality statistics](#) provides data on stillbirths, infant deaths and childhood deaths. This publication is based on infant deaths occurring in a calendar year. Our [User Guide to Child mortality](#) provides further information.

International, UK and constituent countries: [Vital statistics: population and health reference tables](#) provide annual mortality statistics for the UK and its constituent countries with some measures available back to 1838. This release also provides an international comparison of the crude death rate.

Scotland: in the [Vital Events Reference Tables for Scotland](#).

Northern Ireland: in the [Annual Report of the Registrar General for Northern Ireland](#).

A summary of mortality statistics also appear in the World Health Organization [World Health Statistics Annual](#) and [World Health Report](#).

2 Notes and definitions

2.1 Base populations

The population estimates used to calculate mortality rates are mid-year estimates of the resident population of England and Wales based on the Census of Population. Our mid-year population estimates are updated figures using the most recent census, allowing for births, deaths, net migration and ageing of the population.

The population estimates used are the most up-to-date when rates are produced. The specific population estimates used to calculate rates are detailed alongside published tables. Sometimes it is necessary to revise mortality rates following population estimate revisions. Any revisions to mortality rates are footnoted on tables. Further information on [population estimates](#), and their

methodology, can be found on our website.

2.2 Occurrences and registrations and the standard dataset

The majority of mortality publications are now based on registrations. ONS continue to take an annual extract of death occurrences in the autumn following the data year, which is used for seasonal analysis of mortality data and several infant mortality outputs.

Since 2006, Series DR has been based on the number of deaths registered in the calendar year. Between 1993 and 2005, the figures in annual reference volumes relate to the number of deaths that occurred in the reference period. Prior to 1993, publications gave numbers of deaths registered in the period. More details on these changes can be found in the publication [Mortality Statistics: Deaths Registered in 2006](#).

The numbers of registrations for a year which actually occurred in previous years are shown in Table 1.

**Table 1: Number of deaths that were registered and occurred in each calendar year
England and Wales, 2001 to 2015**

Annual dataset year for registrations	Number of registrations	Number registered which occurred in that year	Percentage of those registered that occurred in that year	Number registered which occurred in previous years	Percentage of those registered that occurred in previous years
2015	529,655	504,483	95.2	25,172	4.8
2014	501,424	477,752	95.3	23,672	4.7
2013	506,790	482,658	95.2	24,132	4.8
2012	499,331	478,733	95.9	20,598	4.1
2011	484,367	463,450	95.7	20,917	4.3
2010	493,242	473,661	96.0	19,581	4.0
2009	491,348	471,113	95.9	20,235	4.1
2008	509,090	488,764	96.0	20,326	4.0
2007	504,052	485,068	96.2	18,984	3.8
2006	502,599	485,202	96.5	17,397	3.5
2005	512,993	497,603	97.0	15,390	3.0
2004	514,250	499,081	97.1	15,169	2.9
2003	539,151	524,827	97.3	14,324	2.7
2002	535,356	520,849	97.3	14,507	2.7
2001	532,498	517,010	97.1	15,488	2.9

Source: Office for National Statistics

Of the 529,655 deaths registered in 2015, 504,483 occurred in 2015, 23,493 occurred in 2014, 1,216 occurred in 2013 and 463 occurred prior to 2013.

The numbers of late registrations not included in the death occurrence dataset are shown in Table 2.

Table 2: Number of late registrations not included in the annual death occurrence dataset England and Wales, 2001 to 2014

Year death occurred	Number of late registrations not included in occurrence dataset
2014	2,214
2013	2,826
2012	3,787
2011	3,113
2010	3,037
2009	3,311
2008	3,472
2007	3,479
2006	1,727
2005	2,431
2004	2,252
2003	2,035
2002	1,759
2001	1,375

This table is updated annually, figures last updated June 2016.

Source: Office for National Statistics

The number of late registrations by year of occurrence are subject to future revisions due to the likely addition of late registrations; revisions could extend back a number of years.

2.3 Area coverage

Published mortality statistics are based on deaths registered in England and Wales; no distinction is made between residents of England and Wales, residents of other UK countries or visitors. Deaths of those whose usual residence is outside England and Wales are included in total figures for England and Wales but excluded from any sub-division of England and Wales. Table 3 gives recent numbers of deaths to non-residents.

Until the 2010 data year for deaths, the Office for National Statistics (ONS) assigned “area of usual residence” using a look-up product (the National Statistics Postcode Directory). This product associated postcodes with a number of geographical levels (for example, local authority or region). The postcode was allocated to each level of geography using a point-in-polygon methodology. Although this method is spatially accurate, it does not provide the stable building blocks needed for comparing geographies at different levels.

From the 2011 data year for deaths, we have assigned “area of usual residence” by first linking each postcode to an output area using this same point-in-polygon methodology, and then linking to all higher geographies by using a population-weighted, best-fit look-up to output area. This means that postcodes are allocated to a higher geography based on where the output area population-weighted centroid lies. This is in line with the [Geography Policy for National Statistics](#).

Switching to the new area allocation method has negligible impact on mortality statistics down to local authority level. However, the new method improves comparability of mortality statistics for subnational areas over time.

For more information about these methods, see [National Statistics Postcode Products](#). A paper investigating the [impact of the new method on life events data](#) was published in March 2013.

Table 3: Number of deaths of non-residents registered in England and Wales 2010 to 2015

	Number, per cent				
	2011	2012	2013	2014	2015
Deaths from all causes	484,367	499,331	506,790	501,424	529,655
of which, deaths of residents outside England and Wales	1,079	1,050	1,100	1,110	1,148
Per cent of total	0.22	0.21	0.22	0.22	0.22

Source: Office for National Statistics

2.4 Usual residence of deceased

Details of the usual residence of the deceased are supplied by the informant to the registrar. Prior to 1993 there were rules determining the validity of one competing address over another for the purpose of registering the usual place of residence of the deceased. Previous annual reference volumes contain details of these rules. Since 1993, the informant can decide what address to give if more than one might be applicable.

2.5 Place of occurrence

Due to improvements in the classification and coding of communal establishments, the place of death definition used by us was revised in 2011. These changes were implemented for 2010 mortality statistics. In particular, the classification was changed to specifically identify local authority and non-local authority care homes and the categories for NHS and non-NHS psychiatric hospitals and other hospitals and communal establishments for the care of the sick have been replaced with a category for all hospitals. This reflects current user needs. Further improvements to how deaths are allocated to individual establishments and to how these are assigned to place of death categories is an ongoing exercise, which will improve the quality of this new classification.

The groups used for the place where death occurred are:

- Home
- Care Home
 - Local Authority
 - Non-Local Authority
- Hospitals and communal establishments for the care of the sick (excluding psychiatric hospitals and hospices)

- NHS
- other than NHS
- Hospices
 - NHS
 - other than NHS
- Other communal establishments: includes schools, convents and monasteries, nurses' homes, university and college halls of residence, young offender institutions, secure training centres, detention centres, prisons and remand homes
- Elsewhere: includes all places not covered above and people who are pronounced dead on arrival at hospital

2.6 Certification of cause of death

When a death occurs, the attending doctor completes a Medical Certificate of Cause of Death (MCCD) (Annex A). This is normally taken to the local registrar of births and deaths in the district in which the death occurred. Since April 1997, information may be provided to a registrar in a different district. This is known as the registration of deaths by declaration and is mostly used for the deaths of infants. Further details about deaths by declaration follows.

The certifying doctor must have seen the deceased during the last 2 weeks of life to complete a MCCD. This is normally delivered to the registrar by the informant (often a relative of the deceased), within 5 days of the date of death, as required by law. The majority of deaths are registered in this way. A specimen of the draft death entry completed by the registrar at the time of registration is reproduced at Annex B (old) and Annex I (new).

There are circumstances when a MCCD cannot be issued immediately, such as those deaths reported to a coroner, and the registration is consequently delayed. Some examples of these situations are given in the following sections.

2.7 Referral to the coroner

For some deaths the doctor may certify the cause and report the case to the coroner, or the registrar may report it. Deaths that should be referred to a coroner include those where:

- the cause is unknown
- the deceased was not seen by the certifying doctor either after death, or within the 14 days before death
- the death was violent, or unnatural, or suspicious
- the death may have been due to an accident (whenever it occurred)
- the death may have been due to self-neglect or neglect by others
- the death may have been due to an industrial disease, or related to the deceased's employment
- the death occurred during an operation or before recovery from the effects of an anaesthetic
- the death may have been a suicide
- the death occurred during or shortly after detention in police or prison custody
- there was no doctor available who was legally qualified to certify the death

Coroners have a number of possible courses of action once a death has been referred. If they are satisfied that the death was due to natural causes and the cause has been correctly certified by a

medical practitioner, the local registrar is notified (Form 100A – Annex D) and they can then register the death using the cause given on the MCCD. In rare cases where no medical certificate is available, the death will be registered as uncertified and the cause taken from Form 100A.

Alternatively, the coroner may order a post-mortem examination. This may happen if the death was sudden and the cause unknown, if there was no doctor in attendance, or if the death has been referred directly to the coroner by the police. If the post-mortem shows unequivocally that the death was due to natural causes, the coroner notifies the registrar that they do not intend to hold an inquest (Form 100B – Annex E). In such cases, the cause of death given by the coroner on Form 100B is based on the information from the post-mortem held by the pathologist.

2.8 Coroners' inquests

If an inquest is necessary, the death can usually be registered only after the inquest has taken place. In a small number of cases the coroner holds an inquest without a post-mortem. In most cases the inquest concludes the investigation and the death is then certified by the coroner (Form 99(REV) – Annex C). This provides the registrar with details of the deceased and the inquest findings as to cause of death.

If someone is to be charged with an offence in relation to the death, the coroner must adjourn the inquest until those legal proceedings are completed. Since 1978 (see Section 2.16) it has been possible to register these deaths at the time of adjournment, when the coroner issues Form 120 (Annex F). This form includes details of injuries that led to the death, but no conclusion. In the case of motor vehicle incidents, there is enough information to code the cause of death. Other deaths, such as possible homicides, are given a temporary code for underlying cause of death (U509) until final information becomes available. This is supplied by the coroner to the registrar on Form 121 (Annex G).

2.9 Legally uncertified deaths

A very small percentage of deaths remain legally uncertified ([An analysis of legally uncertified deaths in England and Wales, 1979-2002](#)). In recent years this figure has remained around 0.3% of all deaths registered in England and Wales. We receive copies of at least 1 certificate of cause of death for these cases, which are registered and coded as normal. This group includes deaths for which the doctor, who completed the medical certificate, did not fulfil all the legal requirements for doing so. For example, where the doctor was not in attendance with the deceased during the last illness, or did not see the body, and the coroner did not order a post-mortem but issued Form 100A. It also includes deaths of foreign military personnel in England and Wales where the certifying doctor was not a registered medical practitioner for the purpose of issuing medical certificates.

Table 4 gives relevant numbers of deaths by type of certification for 2012 to 2015.

**Table 4: Deaths by method of certification and registration
England and Wales, 2012 to 2015**

	Number, per cent							
	2012 number	%	2013 number	%	2014 number	%	2015 number	%
Total deaths	499,331	100	506,790	100	501,424	100	529,655	100
Certified by doctor:	402,537	80.6	407,914	80.5	404,813	80.7	425,033	80.2
With coroner not involved,	306,980	61.5	310,964	61.4	307,867	61.4	322,550	60.9
without post-mortem, or post-mortem information missing.	305,805	61.2	309,840	61.1	306,891	61.2	321,535	60.7
with post-mortem.	1,175	0.2	1,124	0.2	976	0.2	1,015	0.2
After referral to coroner,	95,557	19.1	96,950	19.1	96,946	19.3	102,483	19.3
registered with no post-mortem or inquest, or post-mortem information missing.	95,238	19.1	96,614	19.1	96,602	19.3	102,181	19.3
with post-mortem	319	0.1	336	0.1	344	0.1	302	0.1
Certified by coroner:	95,424	19.1	97,417	19.2	95,296	19.0	103,012	19.4
Coroner's post-mortem held, with no inquest	65,367	13.1	65,914	13.0	66,382	13.2	67,619	12.8
Coroner's inquest completed, with or without post-mortem, or post-mortem information missing	29,129	5.8	30,599	6.0	28,045	5.6	34,440	6.5
Coroner's inquest adjourned	928	0.2	904	0.2	869	0.2	952	0.2
Uncertified	1,370	0.3	1,459	0.3	1,315	0.3	1,610	0.3

Source: Office for National Statistics

2.10 Registration of deaths by declaration

Since April 1997, it has been possible for relatives to provide information about the deceased to a registrar in a different district from that in which the death occurred. This is known as registration of a death by declaration and is similar to the arrangement already in place for births. The registrar completes a Form 400 (Annex H), as well as the usual Form 310 (Annex B or Annex I), and sends them to a registrar in the district where the death took place; the second registrar then carries out the actual registration.

There had been a gradual increase in the use of registration by declaration until 2006. Since then there has been an overall decrease, with 0.9% of deaths registered by declaration in 2015.

These are most likely to be infant deaths, especially neonates: about 6% of all neonatal deaths are registered by declaration. Linked to this is the fact that the most common cause for deaths registered by declaration is a congenital anomaly, with around 2% of deaths from such a cause registered in this way in recent years. The greater frequency for infant deaths is explained by the practice of referring infants or pregnant women with serious or unusual health problems to regional care units where appropriate, which may often be some distance from the parents' home address.

2.11 Presumption of death

On 1 October 2014, the [Presumption of Death Act 2013](#) came into force in England and Wales. This means that an application can be made to the High Court for a declaration (Annex J) that a missing person is presumed to be dead where, the person who is missing is thought to have died or has not been known to be alive for a period of at least 7 years.

**Table 5: Number of presumed deaths
England and Wales, 2014 to 2015**

Annual dataset year for registrations	Total deaths	Number of presumed deaths
2015	529,655	16
2014	501,424	0

Source: Office for National Statistics

2.12 Coding the underlying cause of death

Automated cause coding

Since 1993 the majority (approximately 80%) of ONS mortality data have been coded by automatic cause coding software. Specific text terms from the death certificate are converted to ICD codes and then selection and modification rules (see below) are used to assign the underlying cause of death. Using computer algorithms to apply rules increases the consistency and improves the international and temporal comparability of mortality statistics. The cause coding of deaths certified after inquest was done manually by experienced coders as the software could not code the free text format used by coroners.

ICD-10 was introduced in England and Wales in January 2001. Since then various amendments have been authorised by the World Health Organization (WHO). Amendments may (for example) correct errors in the software supporting automatic coding, accommodate new codes in response to new conditions, such as the H1N1 virus (swine flu), or incorporate advances in medical knowledge of the relationship between conditions.

Between 2001 and 2010, ONS used the Mortality Medical Data System (MMDS) ICD-10 version 2001.2 software provided by the United States National Center for Health Statistics (NCHS) to code cause of death. In January 2011, this was updated to version 2010, which incorporated most of the WHO amendments authorised up to 2009. The main changes in ICD-10 v2010 were amendments to the modification tables and selection rules. Overall, the impact of these changes is small although some cause groups are affected more than others. For further information, see the [results of the bridge coding study](#) on our website. There is also another study looking at the impact on [stillbirths and neonatal deaths](#).

On 1 January 2014, ONS changed the software used to code cause of death to a package called [IRIS](#) (version 2013). The development of IRIS was supported by Eurostat, the statistical office of the European Union, and is now managed by the IRIS Institute hosted by the German Institute of Medical Documentation and Information in Cologne. IRIS software version 2013 incorporates all official updates to ICD-10 approved by WHO, which were timetabled for implementation before 2014. These updates include changes to the use of codes within the neoplasms (cancer) chapter (ICD-10 codes C00-D48). In addition a small number of changes were made to the coding of specific conditions, to bring previous coding practice in line with international coding rules and changes were made to the coding of neonatal deaths and stillbirths.

Further [information on IRIS](#) can be found on our website. There is also a study that looks into the [impact of the coding changes on stillbirths and neonatal deaths](#).

The death certificate (Annex A) used in England and Wales is compatible with that recommended by the World Health Organisation (WHO). It is set out in 2 parts. Part I gives the condition or sequence of conditions leading directly to death, while Part II gives details of any associated conditions that contributed to the death, but are not part of the causal sequence.

The selection of the underlying cause of death is based on ICD rules and is made from the condition or conditions reported by the certifier, as recorded on the certificate. The underlying cause of death is defined by WHO as:

- the disease or injury that initiated the train of events directly leading to death
- the circumstances of the accident or violence that produced the fatal injury

Deaths attributed to accidents, poisonings and violence are examined, firstly according to the underlying cause of death (external cause) and, secondly by the nature of injury, or main injury. External cause of injury codes are taken from Chapter XX of the ICD (prefixes U509 and V01 to Y89; where U509 is a temporary code and not included in Chapter XX) and nature of injury codes are from Chapter XIX (prefixes S00 to T98), or from a smaller number of other post procedural codes not within Chapter XIX.

Selection and modification rules

The selection of the underlying cause of death is generally made from the condition or conditions entered in the lowest completed line of Part I of the MCCD. If the death certificate has not been completed correctly – for example, if there is more than one cause on a single line with no indication of sequence, or the conditions entered are not an acceptable causal sequence – it becomes necessary to apply one or more of the selection rules in the ICD-10.

Even where the certificate has been completed properly, there are particular conditions, combinations or circumstances when modification rules have to be applied to select the correct underlying cause of death. On some death certificates, for example, when 2 or more causes are listed and then linked together, these may point to another cause (not mentioned directly on the certificate) as underlying. Cases of “inferred” underlying causes are few though, and are most commonly related to diseases of the circulatory system and late effects of cerebrovascular disease. In other cases the underlying cause of death can be selected from Part II of the MCCD.

In summary, the purpose behind the selection and modification rules is to derive the most useful information from the death certificate and to do it uniformly so that:

- data will be comparable between places and times
- each death certificate produces one, and only one, underlying cause of death

Routine ONS mortality tables analyse the underlying cause of death. Coding rules ensure that each recorded item on the certificate is coded independently of all others on the same certificate. All mentioned causes have been coded routinely since 1993.

ICD-10 implementation

ICD-10 was implemented in England and Wales in 2001. The main differences between ICD-9 and ICD-10 are outlined in “Results of the ICD-10 bridge coding study, England and Wales, 1999”:

- a change in the format of the code and expansion in the number of codes used
- a movement of some diseases and conditions between broad groups/ICD chapters
- changes to the rules governing the selection of the underlying cause of death, especially Rule 3, which had a large effect

The vast majority of deaths in ICD-9 remained in comparable chapters in ICD-10. However, there were some discontinuities in the data due to the application of new rules for assigning underlying cause in ICD-10, most notably for deaths due to pneumonia. Section 3.4 provides further details about sources of information on the changes to ICD-10.

Historically, the rule that changed cause of death statistics most was the introduction of Rule 3 (see Section 3.3 for further details). In ICD-10 the list of conditions affected by Rule 3 is more clearly defined than in ICD-9 and is also broader in scope.

Deaths from 1979 to 2000, which appear in tables containing historical data, are coded to ICD-9 and have been grouped to reflect ICD-10 categories. To achieve this broad comparability, the ranges of ICD-9 codes used for some of the groupings differ from those published in annual volumes prior to 2001. Particular causes affected include leukaemia, diseases of the liver and land transport accidents.

Note on coding of acute rheumatic fever (ICD-9 390-392, ICD-10 I00-I02)

In 1999, ONS found that, in some circumstances, deaths from rheumatic and valvular heart diseases were wrongly coded to acute rheumatic fever by the automated cause coding system introduced in 1993. All deaths in 1998 and 1999 with any mention of acute rheumatic fever were checked and recoded manually if necessary. From 2000, routine checks were set in place to correct any deaths miscoded to acute rheumatic fever. Therefore, published data on deaths between 1993 and 1997 assigned to acute rheumatic fever should be regarded as highly unreliable.

Note on coding influenza due to identified avian or swine influenza virus (ICD-10 J09)

Following guidance from the World Health Organisation (WHO), the ICD-10 code J09 “Influenza due to identified avian influenza virus” has been used to record H1N1 swine influenza. For ease of use, J09 has been renamed to “Influenza due to identified avian or swine influenza virus” in the mortality tables since 2009.

The number of deaths with an underlying cause of “Influenza due to identified avian or swine influenza virus” (J09) differ from figures reported by [Public Health England](#) (PHE).

2.13 ONS short list of cause of death

The cause of death codes shown in detailed cause of death tables are those where at least one death was coded to that underlying cause during the relevant reference period.

The ONS short list for cause of death is based on a standard tabulation list developed by ONS, in consultation with the Department of Health. This list of over 100 conditions was based on the following:

- all conditions given in the WHO basic tabulation list; with the exception of a few conditions that are so rare as certified causes of death in England and Wales that they could safely be excluded from the list

- totals for each ICD-10 chapter
- conditions used in monitoring public health targets
- other conditions often cited by ONS

The aim was to provide a standard listing for tables of mortality statistics containing conditions frequently referred to by all users of the data. In this way, users could find the same conditions in different tables and in different annual publications

Many tables also contain statistics for conditions in the standard list as well as others of particular interest. The standard listing is given below. Note that from 1993 to 2000, conditions related to HIV infection were coded to ICD-9 042-044. This replaced the previously used ICD-9 code of 279.1 (deficiency of cell-mediated immunity) for these conditions. From 2001, conditions related to HIV infection have been coded to the ICD-10 codes B20–B24.

From 1 January 2007, a new ICD-10 code (U50.9) has been used by ONS for deaths involving adjourned inquests that would previously have been coded to Y33.9. This has made the tabulation of deaths from undetermined intent, and estimates of suicide, easier to produce.

ONS short list of cause of death codes, using ICD-10

A00–R99, All causes
U00–Y89

A00–B99 I Certain infectious and parasitic diseases

A00–A09	Intestinal infectious diseases
A15–A16	Respiratory tuberculosis
A17–A19	Other tuberculosis
A39	Meningococcal infection
A40–A41	Sepsis
B15–B19	Viral hepatitis
B20–B24	Human immunodeficiency virus [HIV] disease
B90	Sequelae of tuberculosis

C00–D48 II Neoplasms

C00–C97	Malignant neoplasms
C00–C14	Malignant neoplasms of lip, oral cavity and pharynx
C15	Malignant neoplasm of oesophagus
C16	Malignant neoplasm of stomach
C18	Malignant neoplasm of colon
C19–C21	Malignant neoplasm of rectosigmoid junction, rectum and anus
C22	Malignant neoplasm of liver and intrahepatic bile ducts
C23–C24	Malignant neoplasm of gallbladder and biliary tract
C25	Malignant neoplasm of pancreas
C32	Malignant neoplasm of larynx
C33–C34	Malignant neoplasm of trachea, bronchus and lung
C43	Malignant melanoma of skin
C44	Other malignant neoplasms of skin
C45	Mesothelioma
C46	Kaposi sarcoma
C50	Malignant neoplasm of breast

C53	Malignant neoplasm of cervix uteri
C54–C55	Malignant neoplasm of other and unspecified parts of uterus
C56	Malignant neoplasm of ovary
C61	Malignant neoplasm of prostate
C62	Malignant neoplasm of testis
C64	Malignant neoplasm of kidney, except renal pelvis
C67	Malignant neoplasm of bladder
C71	Malignant neoplasm of brain
C81	Hodgkin lymphoma
C82–C85	Non-Hodgkin lymphoma
C90	Multiple myeloma and malignant plasma cell neoplasms
C91–C95	Leukaemia
C97	Malignant neoplasms of independent (primary) multiple sites
D00–D48	In situ and benign neoplasms, and neoplasms of uncertain or unknown behaviour
D50–D89	III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
D50–D64	Anaemias
E00–E90	IV Endocrine, nutritional and metabolic diseases
E10–E14	Diabetes mellitus
F00–F99	V Mental and behavioural disorders
F01, F03	Vascular and unspecified dementia
F10–F19	Mental and behavioural disorders due to psychoactive substance use
G00–G99	VI Diseases of the nervous system
G00, G03	Meningitis (excluding meningococcal)
G12.2	Motor neuron disease
G20	Parkinson disease
G30	Alzheimer disease
G35	Multiple sclerosis
G40	Epilepsy
H00–H59	VII Diseases of the eye and adnexa
H60–H95	VIII Diseases of the ear and mastoid process
I00–I99	IX Diseases of the circulatory system
I05–I09	Chronic rheumatic heart diseases
I10–I15	Hypertensive diseases
I20–I25	Ischaemic heart diseases
I21–I22	Acute myocardial infarction
I26–I51	Other heart diseases
I60–I69	Cerebrovascular diseases

I60–I62	Intracranial haemorrhage
I63	Cerebral infarction
I64	Stroke, not specified as haemorrhage or infarction
I70	Atherosclerosis
I71	Aortic aneurysm and dissection
J00–J99	X Diseases of the respiratory system
J09	Influenza due to certain identified influenza virus
J10–J11	Influenza
J12–J18	Pneumonia
J40–J44	Bronchitis, emphysema and other chronic obstructive pulmonary disease
J45–J46	Asthma
K00–K93	XI Diseases of the digestive system
K25–K27	Gastric and duodenal ulcer
K40–K46	Hernia
K57	Diverticular disease of intestine
K70–K77	Diseases of the liver
L00–L99	XII Diseases of the skin and subcutaneous tissue
M00–M99	XIII Diseases of the musculoskeletal system and connective tissue
M05–M06, M08	Rheumatoid arthritis and juvenile arthritis
M80–M81	Osteoporosis
N00–N99	XIV Diseases of the genitourinary system
N00–N15	Glomerular and renal tubulo-interstitial diseases
N17–N19	Renal failure
N40	Hyperplasia of prostate
O00–O99	XV Pregnancy, childbirth and the puerperium
P00–P96	XVI Certain conditions originating in the perinatal period
Q00–Q99	XVII Congenital malformations, deformations and chromosomal abnormalities
Q20–Q28	Congenital malformations of the circulatory system
R00–R99	XVIII Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
R54	Senility
R95	Sudden infant death syndrome

R99 Other ill-defined and unspecified causes of mortality

S00–T98 XIX Injury, poisoning and certain other consequences of external causes

S00–S19 Injuries to the head and the neck
 S20–S29 Injuries to the thorax
 S30–S39 Injuries to the abdomen, lower back, lumbar spine and pelvis
 S72 Fracture of femur
 T20–T32 Burns and corrosions
 T39.1 Poisoning by 4-Aminophenol derivatives
 T40 Poisoning by narcotics and psychodysleptics [hallucinogens]
 T42 Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs
 T43 Poisoning by psychotropic drugs, not elsewhere classified
 T50.9 Poisoning by other and unspecified drugs, medicaments and biological substances
 T51–T65 Toxic effects of substances chiefly nonmedicinal as to source
 T58 Toxic effect of carbon monoxide
 T71 Asphyxiation
 T75.1 Drowning and nonfatal submersion

**V01–Y89 XX External causes of morbidity and mortality
 (inc U50.9)**

V01–X59 Accidents
 V01–V99, Transport accidents
 Y85
 V01–V89 Land transport accidents
 W00–W19 Falls
 W65–W74 Accidental drowning and submersion
 X00–X09 Exposure to smoke, fire and flames
 X40–X49 Accidental poisoning by and exposure to noxious substances
 X41 Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified
 X42 Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified
 X44 Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances
 X59 Accidental exposure to unspecified factor
 X60–X84 Intentional self-harm
 X85–Y09 Assault
 Y10–Y34 Event of undetermined intent

 X60–X84, Intentional self-harm; and event of undetermined intent
 Y10–Y34¹

U50.9, Assault; death from injury or poisoning, event awaiting determination of
 X85–Y09¹ intent (inquest adjourned)

¹ The production of statistics on numbers of assault and intentional self-harm deaths occurring in a particular year is complicated by matters of definition and delay resulting from legal proceedings. Further details can be found in Section 2.17.

2.14 Two codes for certain conditions

The “dagger and asterisk” system

ICD-10 has continued the system introduced in ICD-9 whereby there are 2 codes for diagnostic descriptions that contain information about both an underlying generalised disease and a local manifestation in a particular organ or site that is a clinical problem in its own right. In such cases the underlying disease is given a dagger (†) code and the manifestation an asterisk (*) code. Conditions with dagger codes are used in assigning underlying causes. Conditions with asterisk codes are never used in this way so will not appear in tables.

Secondary causes

Deaths where the underlying cause is assigned to an external cause (ICD-10 Chapter XX, U50.9 to Y89) are also assigned at least one nature of injury code (Chapter XIX, S00 to T98) or a post-procedural code not within Chapter XIX. This means it is possible to have more than one nature of injury code for a single death. For example, a car occupant injured in a transport accident (V40–V49) may have suffered a fracture to the skull (S02) and femur (S72), as well as injuries of the spleen (S36). However, it is necessary to select which one of the nature of injury codes is to be identified as the one causing death. This one cause code is referred to by ONS as the secondary cause. To do this, WHO provides guidelines or “rules” to ensure that the most useful information is derived from the death certificate and that it is done uniformly.

The move from ICD-9 to ICD-10 had an impact on the allocation of secondary causes. ONS published an [assessment of this impact](#). In ICD-10, when more than one body region is involved, coding is made to the relevant category of injuries involving multiple body regions (T00–T07). Therefore, in the above example of an occupant injured in a transport accident, under ICD-10 the secondary cause would be classified as “other specified injuries involving multiple body regions” (T06.8), whereas under ICD-9 the secondary cause would be more specifically classified as a fracture of the skull (ICD-9 800).

An update by WHO was implemented for 2014 data whereby, if more than one serious injury is reported on the relevant part of the certificate, the main injury must be selected from the [Priority Ranking of ICD-10 Nature-of-Injury Codes](#) list. The update indicates that when more than one of the serious injuries reported in the relevant part of the certificate have the same and highest rank, select the first mentioned of these injuries; however, prefer a specific injury over an injury from the block T00-T07 (injuries involving multiple body regions) with the same priority rank.

Information on injuries is derived from the coroners’ forms that are supplied to ONS, in particular the coroner’s certificate of cause of death after inquest (Form 99 (Rev) A – Annex C). This form was revised in May 1993 to bring it into line with the MCCD and with WHO recommendations. Because the revised form no longer includes specific questions about type of injury and parts of body injured, some coroners now often provide less detail than before. The result is that some deaths are assigned to residual codes for nature of injury. For example, in ICD-10 the statement “head injury” is coded to “unspecified injury of head” (S09.9), whereas with more detail it might be assigned to “fracture of skull and facial bones” (S02.n).

2.15 Final cause of death

The conditions mentioned on the death certificate are used to derive an underlying cause of death. In some cases, more information on cause of death may become available at a later stage after the death has been registered, such that the underlying cause may be subsequently amended. Around 0.1% of deaths have their underlying cause amended (Table 6). This amended or final cause is used in mortality statistics. Sometimes the later information becomes available only after

the annual extract has been taken. Users with access to individual records of deaths as shown in the public record (which is never amended) may consequently find some differences with published statistics.

**Table 6: Number of deaths where original cause was amended for final cause
England and Wales, 2014**

Deaths	Per cent	Analysis
16	0.00~	Original 'Diseases of the respiratory system' cause amended for final cause
24	0.00~	Original 'Neoplasm' cause amended for final cause
32	0.01	Original 'Diseases of the circulatory system' cause amended for final cause
36	0.01	Other original cause amended for final cause
60	0.01	3-digit ICD-10 codes for original and final cause match
206	0.04	4-digit ICD-10 codes for original and final cause match
317	0.06	'Pending conclusion' deaths resolved and final cause submitted
500,726	99.86	No final cause information submitted (includes neonatal deaths)

Source: Office for National Statistics

In summary, further details on the causes of death can be obtained in one or other of the following ways:

- Deaths certified by doctors may have their cause amended as a result of a post-mortem, or of tests initiated before death. The certifier sends this additional information directly to the cause coding team at ONS, where it is only used for statistical purposes and does not appear in the public record. Less than 1% of deaths certified by a doctor have a post-mortem, and in the majority of cases, the certified cause remains unchanged. In addition, ONS cause coders may contact the certifier for more information if the certificate is unclear or they cannot code the underlying cause; this is very rare
- When a death has been certified by a coroner after post-mortem (with no inquest), further information may be available once they have results of bacteriology or histopathology. This is also very rare
- Following an inquest, coroners may submit to ONS details of how a fatal accident occurred. This is rare, as coroners normally only certify the cause of death after their investigations are complete, so the first and only information ONS receives about these deaths is the final underlying cause
- Coroners may also provide a final underlying cause of death and conclusion much later for an accelerated registration following an adjourned inquest (see Section 2.16)

2.16 Accelerated registrations

On 1 January 1978, certain provisions of the [Criminal Law Act 1977](#), the [Coroners \(Amendment\) Rules 1977](#) and the [Registration of Births, Deaths and Marriages \(Amendment\) Regulations 1977](#) came into force. There were 2 principal changes arising from the legislation. Firstly, the duty of a coroner's jury to name a person it finds guilty of causing a death and of a coroner to commit that person for trial, was abolished. Secondly, in cases where there was an inquest adjournment, provision was made for the death to be registered at the time of adjournment instead of having to await the outcome of criminal proceedings, as previously. This provision is referred to as accelerated registration.

Accelerated registrations that are not transport incidents are assigned to code U50.9 (event awaiting determination of event) for events registered from 1 January 2007, or to code Y33.9 (other specified events, undetermined intent) for events registered up to the end of 2006. Most of these are eventually reassigned to assault (X85–Y09), but the delays before this happens can affect the published figures in the under-estimation of deaths from assault ([Death certification and the epidemiologist](#)).

Accelerated registrations related to deaths involving motor vehicle incidents are assigned to a code in the range V01–V89 (land transport accidents) if sufficient information is available on the coroner's certificate of adjournment.

2.17 Assault and intentional self-harm

Numbers of deaths from assault (homicide in ICD-9)

It is possible to make alternative assessments about the number of deaths that may be attributed to assault. The 2 estimates presented in standard tables are:

- the number coded to X85–Y09; this is the basic ICD classification to which all assaults should eventually be assigned
- the number coded to X85–Y09, plus those coded to U50.9 (event awaiting determination of intent); this takes account of accelerated registrations, most of which are eventually coded to an assault code (see Section 2.16)

Numbers of deaths from intentional self-harm (suicide in ICD-9)

As with assault, it is possible to make 2 separate estimates of the number of deaths annually from intentional self-harm:

- the number coded to X60–X84; this is the basic ICD classification to which all definite intentional self-harm conclusions are assigned
- the number coded to X60–X84, plus those coded to Y10–Y34 (event of undetermined intent); this takes account of most deaths where an open inquest conclusion was returned, but excludes all deaths that are pending investigation

For more information on the suicides definition please see the [Suicides in the United Kingdom](#) statistical bulletin.

2.18 Stillbirths

The [Stillbirth \(Definition\) Act 1992](#) defines a stillbirth as, “a child which has issued forth from its mother after the 24th week of pregnancy, and which did not at anytime after becoming completely expelled from its mother breathe or show other signs of life”.

This definition has been in use since 1 October 1992. Prior to this, the [Births and Deaths Registration Act 1953](#) defined a stillbirth as above, but at 28 or more weeks completed gestation. Figures for stillbirths from 1993 are, therefore, not comparable with those for previous years. From 28 May 2012, the restriction to register a stillbirth within 3 months from the date of occurrence has been removed and stillbirths can be registered at any time.

2.19 Infant deaths

Infant deaths (under 1 year) at various ages are defined as:

- early neonatal – deaths under 7 days
- perinatal – stillbirths and early neonatal deaths
- neonatal – deaths under 28 days
- postneonatal – deaths between 28 days and 1 year

Linked data refers to infant death records that have been successfully matched to their corresponding birth record; see the annual publications [Child mortality statistics](#), [pregnancy and ethnic factors influencing births and infant mortality](#) and [Unexplained deaths in infancy](#) for further details.

2.20 Death rates, ratios and standardisation

Death rates are derived from total deaths registered in England and Wales in the specific calendar year and corresponding mid-year population estimates.

Crude death rate is defined as total deaths per 1,000 population, or:

$$(\text{Total deaths} / \text{Total population}) \times 1,000$$

Age-specific death rates may be calculated for each age group. These are defined as the number of deaths in the age group per 1,000 population in the same age group, or:

$$M_k = (d_k/p_k) \times 1,000$$

where M_k = age-specific death rate for age group k

d_k = deaths in age group k

p_k = population in age group k (mid-year population estimates with the exception for the rate for those aged under 1 where the number of live births are used instead)

k = age

Age-specific rates may be calculated separately for males and females, or for both sexes combined.

Age-standardised mortality rates (ASMRs) allow for differences in the age structure of populations and therefore allow valid comparisons to be made between geographic areas, over time and between sexes. Using the direct method, the age-standardised rate for a particular condition is that which would have occurred if the observed age-specific rates for the condition had applied in a given standard population.

Thus: age-standardised rate = $\{\sum P_k m_k\} / \sum P_k$

where

P_k = standard population in sex/age group k

m_k = observed mortality rate (deaths per million persons) in sex/age group k (mid-year population estimates are used to calculate all age-specific rates prior to standardisation)

k = age/sex group 0, 1 to 4, 5 to 9, ..., 85 to 89, 90 years and over

(From the 2015 data year ASMRs will be calculated using population estimates for all age groups. Prior to the 2015 data year, the number of live births were used for the population at age under 1. This change has had no significant impact on the rates.)

The age-standardised rate for “all causes” includes deaths at all ages, while the same rates for specific causes exclude neonatal deaths (infants aged under 28 days). Classification by underlying cause is not possible for neonatal deaths (see Section 2.23).

The standard population used is the European Standard Population (ESP); it is the same for both males and females. The ESP is a hypothetical population used to weight ASMRs.

The ESP was originally published in 1976 and was updated by Eurostat in 2013. The 2013 ESP structure allocates a greater weight to older ages to better reflect the ageing population. This change has had a significant impact; consequently ASMRs based on the 1976 ESP are not comparable with those based on the 2013 ESP. Further [information about the change in methods](#) can be found on our website.

Distribution of the European Standard Population for 1976 and 2013

Age	1976 ESP ¹	2013 ESP ²
Under 1	1,600	1,000
01-04	6,400	4,000
05-09	7,000	5,500
10-14	7,000	5,500
15-19	7,000	5,500
20-24	7,000	6,000
25-29	7,000	6,000
30-34	7,000	6,500
35-39	7,000	7,000
40-44	7,000	7,000
45-49	7,000	7,000
50-54	7,000	7,000
55-59	6,000	6,500
60-64	5,000	6,000
65-69	4,000	5,500
70-74	3,000	5,000
75-79	2,000	4,000
80-84	1,000	2,500
85+	1,000	z
85-89	z	1,500
90-94	z	800
95+	z	200
Total	100,000	100,000

Source¹: <http://ec.europa.eu/eurostat/documents/3859598/5926869/KS-RA-13-028-EN.PDF/e713fa79-1add-44e8-b23d-5e8fa09b3f8f>

Source²: <http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/user-guidance/health-and-life-events/revised-european-standard-population-2013--2013-esp-/index.html>

For National Statistics publication of mortality and cancer incidence, ONS are currently using an abridged ESP with a 90 and over upper age band. National Statistics population estimates are only currently available for upper age limit of 90 years and over.

Perinatal mortality rate is the number of deaths at ages under 7 days (early neonatal deaths) plus stillbirths per 1,000 live births and stillbirths in the same period.

Infant mortality rate is the number of deaths at ages under 1 year per 1,000 live births.

Standardised mortality ratios (SMRs) compare mortality in one population with mortality in a “standard” population, while allowing for differences in age structure. Using the indirect method, the ratio is of “observed” to “expected” deaths. “Expected” deaths are the number that would have occurred if the sex and age-specific mortality rates of the standard year had applied to the population of interest. SMRs for males and females separately are calculated using the appropriate sex- and age-specific standard rates. For persons, the SMRs are based on age-specific standard rates for males and females combined.

Thus: $SMR = (\text{observed deaths} / \text{expected deaths}) \times 100$

where expected deaths = $\sum P_k M_k$

and P_k = population in age/sex group k in population of interest (for example, an area, or period of time)

M_k = age-specific death rate for age group k for the standard population

k = age group (various groupings – see below)

Unless otherwise stated, the standard mortality rates used are based on the most recent population estimates for England and Wales and the age groups used in the calculation are 0, 1 to 4, 5 to 9, 10 to 14, ..., 80 to 84, 85 and over.

2.21 Years of life lost

Analyses of the effects of premature death assume that everyone may live to a defined age and that death at a younger age means that some future years of life have been lost. Calculations of years of life lost are made for deaths from selected causes with the aim of illustrating the relative effects from different diseases. The “cut-off” ages used are 65, 75 and 85. These exclude deaths at high ages where the cause may be uncertain. This approach, but with a “cut-off” age of 65, is also used to calculate years of working life lost due to premature death. From 2012 data year onwards, the period of working life covers ages 16 to 64 for both males and females. Prior to 2012 data year, the period of working life covered ages 15 to 64. This change has a negligible impact on the comparability of statistics over time.

Total years of life lost = $\sum (A - a_i) d_i$

Years of working life lost = $[\sum (65 - a_j) d_j] + 49 \sum d_k$

where d_i, d_j, d_k = number of deaths in age group i/j/k

a_i, a_j, a_k = age i/j/k + 0.5

A = 65 or 75 or 85

i = 0 to 64 or 0 to 74 or 0 to 84

j = 16 to 64

k = 0 to 15

Since there is no information on underlying cause of death when the deceased was aged under 28 days, the only category including both neonatal and non-neonatal deaths is that for “all causes”.

The mean age at death may be included as a further indicator of the relative effects of premature death. It is based on the sum of ages at death for each person.

$$\text{Mean age at death} = \frac{\sum(a_i d_i)}{d}$$

where a_i = age + 0.5
 d_i = number of deaths at age i
 i = single years of age 0 to 119, 120 and over
 d = total number of deaths

2.22 Potential years of life lost

Potential years of life lost (PYLL) is a measure of the potential number of years lost when a person dies prematurely from any cause. The basic concept of PYLL is that deaths at younger ages are weighted more heavily than those at older ages. The advantage in doing this is that deaths at younger ages may be seen as less important if cause specific death rates were just used on their own in highlighting the burden of disease and injury, since conditions such as cancer and heart disease usually occur at older ages and have relatively high mortality rates.

To enable comparisons between areas and over time, age-standardised PYLL rates, also known as SYLL rates, are calculated. These rates represent the potential years of life lost if the population of England and Wales had the same population structure as the 2013 European Standard Population (ESP). SYLL rates are presented as years of life lost per 100,000 population.

PYLL is calculated as the sum of the mortality rate in each age group weighted by the potential number of years of life lost as indicated by remaining life expectancy for each age group. To calculate SYLL, this is then standardised to the 2013 ESP as shown below:

$$SYLL = \frac{\sum_i \left(w_i \cdot \frac{a_i d_i}{n_i} \right)}{\sum_i w_i} \times 100,000$$

Where:

i = age group (<1, 1-4, 5-9, 10-14....85-89, 90+)
 d_i = number of deaths in age group i
 a_i = weight, or average age-specific period life expectancy in age group i for a given year
 n_i = population in age group i

w_i = number of individuals in the standard population in age group i

2.23 Neonatal deaths

The tabulations of deaths by cause exclude neonatal deaths (deaths of infants aged under 28 days). In January 1986, a neonatal death certificate was introduced, from which it is not possible to assign an underlying cause of death. This certificate follows recommendations of the WHO in the ICD (WHO, 1992 to 1994), whereby causes of death are given separately in the following categories:

- main diseases or conditions in fetus or infant
- other diseases or conditions in fetus or infant
- main maternal diseases or conditions affecting fetus or infant
- other maternal diseases or conditions affecting fetus or infant
- other relevant causes

While conditions arising in the mother that affected the fetus or infant could be mentioned on certificates prior to 1986, no provision was made for those cases in which the certifier considered that both maternal and fetal conditions contributed to the death. The certificate introduced in 1986 overcame this problem. However, since equal weighting is now given to main conditions in the fetus and in the mother, it is no longer possible to identify a single underlying cause of death for neonatal deaths (and stillbirths). For this reason ONS, together with a team of experts in the field, developed a hierarchical classification for classifying causes of neonatal deaths and stillbirths in ICD-10. This classification is known as “ONS cause groups”. More details can be found in [Health Statistics Quarterly](#) and the latest [Child mortality statistics](#) publication.

2.24 Further information

Special extracts and tabulations of mortality data for England and Wales are available to order (subject to legal frameworks, disclosure control, resources and our [charging policy](#), where appropriate). Such enquiries should be made to Vital Statistics Outputs Branch (vsob@ons.gsi.gov.uk or telephone: +44 (0)1329 444 110). All [user requested data](#) will be published onto the website.

3 Background to mortality data

3.1 Redevelopment of mortality statistics

In the early 1990s, there was an extensive redevelopment of collection and processing systems for population, health and registration data – in particular, for births and deaths. For deaths this included: the progressive computerisation of registration in local offices, the move to a large deaths database to hold all deaths data from 1993; and the introduction of automated coding of cause of death. Further information about these changes follows, with more details in the annual volume in the [DH2](#) series for 1993 and 1994. Changes to the rules for selecting and coding cause of death brought England and Wales into line with international practice in 1993.

3.2 The deaths databases

In the deaths processing system that has been used within the Office for National Statistics (ONS) since the early 1990s, there are 2 deaths databases, one for register information and the other for statistical data. The registration database contains mainly textual information that appears on the death certificate. This corresponds to most of the details supplied by informants to a registrar, available to applicants requesting a copy of the death certificate. The deaths statistical database contains only coded details of each death. When outputs are required, the statistical database can supply information on individual deaths or provide datasets for tabulation. The statistical database is continually updated and amended as further information becomes available.

In 1999, ONS developed a database to facilitate research into deaths related to drug poisoning and to aid the identification of specific substances involved in these deaths. The database currently contains data on all deaths on the annual data files for England and Wales between 1993 and the latest available year, where the underlying cause of death is regarded as resulting from drug-related poisoning, according to the current [National Statistics definition](#). The database covers

accidents and suicides involving drug poisoning, as well as poisonings due to drug abuse and drug dependence, but not other adverse effects of drugs.

ONS have compiled 2 other databases for England and Wales. The first, which contains details of deaths where methicillin-resistant staphylococcus aureus (MRSA) was reported as a contributory factor, provides data from 1993 to the latest available year. The second comprises deaths involving *Clostridium difficile* (*C. difficile*) and contains data for 1999 to the latest available year. Following the outcomes of the [ONS consultation on statistical products 2013](#), ONS reporting on deaths associated with MRSA and *C. difficile* infection has been limited to Wales only.

3.3 Legislation

The existing provisions for the registration of deaths and the processing, reporting and analysis of mortality data appear in different legislation that reflects the distinct and separate roles of the Registrar General for England and Wales and the UK Statistics Authority.

The Registrar General is guided by the following:

- [Population \(Statistics\) Act 1938](#): deals with the statistical information collected at registration
- [Births and Deaths Registration Act 1953](#): covers all aspects of the registration of births, stillbirths and deaths
- [Population \(Statistics\) Act 1960](#): makes further provision for collecting statistical detail at registration
- [Registration of Births and Deaths Regulations 1987](#): cover further aspects of the registration of births and deaths
- [Coroners Act 1988](#): sets out the procedures to be followed by coroners in handling deaths
- [Stillbirth \(Definition\) Act 1992](#): which altered the definition of a stillbirth to 24 or more weeks completed gestation, instead of the previous definition of 28 or more weeks
- [Deregulation \(Stillbirth and Death Registration\) Order 1996](#): allows for the registration of deaths by declaration
- [National Health Service Act 2006](#) (amended 2013) and [National Health Service \(Wales\) Act 2006](#) consolidate legislation relating to the health service and separate provision of the health service in Wales from that in England; the Acts require notification of a birth or death to the local authority and the Clinical Commissioning Group (Local Health Board in Wales) where the birth or death occurred - both Acts include provision for the supply of information on individual deaths to the National Health Service by the Registrar General
- [Presumption of Death Act 2013](#): application can be made to the High Court for a declaration that a missing person is presumed to be dead where, the person who is missing is thought to have died or has not been known to be alive for a period of at least 7 years

The UK Statistics Authority is guided by the following:

- [Registration Service Act 1953](#) which in Section 19 required the Registrar General to produce annual abstracts of the number of live births, stillbirths and deaths

- [Statistics and Registration Service Act 2007](#) which transferred some of the statistical functions of the Registrar General, including the production of an annual abstract, to the Statistics Board, also known as the UK Statistics Authority, and the Office for National Statistics which became the executive office of the UK Statistics Authority; the 2007 Act also provides the Registrar General with a power to disclose any information about a birth, death or a stillbirth to the UK Statistics Authority for statistical purposes; it also enables the UK Statistics Authority to produce and publish statistics relating to any matter; the Act also includes a provision for the UK Statistics Authority to supply individual birth and death records to the Secretary of State for Health and certain NHS bodies

When the Statistics and Registration Service Act 2007 came into force on 1 April 2008, the arrangement where the National Statistician was also the Registrar General for England and Wales ended. At the same time, the General Register Office also stopped being part of the Office for National Statistics and was moved to the Identity and Passport Service. The National Health Service Central Register (NHSCR), formerly part of ONS, also transferred to the Health and Social Care Information Centre (HSCIC).

The responsibility for the production of mortality statistics is now a function of the UK Statistics Authority which is required to produce an annual abstract of mortality statistics in order that the Minister for the Cabinet Office can lay it before Parliament.

3.4 Historical changes in mortality data

Users should note certain changes to the collection and coding of deaths data over the years may affect their interpretation of trends in mortality. These changes include:

- | | |
|--------------|--|
| 1979 | Introduction of the Ninth Revision of the International Classification of Diseases. This replaced the Eighth Revision, used from 1968 to 1978. A 25% sample of death certificates for 1978 was selected, and coded to both the Eighth and Ninth Revisions to give a guide to the effect of these changes on specific categories. |
| 1981 to 1982 | Industrial action taken by registration officers affected the quality of information about deaths from injury and poisoning. Details normally supplied by coroners were not available; the statistics were significantly affected. Figures on injury and poisoning for 1981, with the exception of suicides, should be treated with caution. Categories such as “transport accidents” and “homicide” were significantly understated whereas “non-specific accidents” and “undetermined injuries” were overstated. Statistics relating to nature of injury, were less affected by the absence of the coroners’ information. Although industrial action extended into 1982 the coroners’ information was collected retrospectively for that year, enabling more accurate figures to be produced. However, complete details to help code the cause of death were still unavailable in 1982. This resulted in more deaths than usual being assigned to “unspecified” categories. |
| 1984 | Our interpretation of WHO Rule 3 was amended in the assignment of underlying cause of death. Series DR for 2006 has more detail. It resulted in a decrease in the numbers of deaths coded to pneumonia and a few other causes, and an increase in deaths from many other conditions – most of the latter being small increases. The background to this change is given in the annual volume DH2 no.11 for 1984, which |

includes a table assessing the numerical effects of changes, by underlying cause. Deaths from injury and poisoning were excluded from this exercise.

- 1986 Since January 1986, registrars have recorded the following information on the draft entry form:
- the date when the certifying doctor last saw the deceased alive
 - whether the deceased was seen after death by a medical practitioner
 - whether the death was reported to a coroner, and by whom
 - whether the certifying practitioner indicated that death might have been linked to the deceased's employment
- The first 3 items had been recorded on the medical certificate for many years for legal and administrative purposes. The fourth resulted from legislation passed in 1985.
- 1986 New stillbirth and neonatal death certificates were introduced in January 1986. The new neonatal certificate included both maternal and fetal conditions. This means that it is not possible to assign an underlying cause for deaths under 28 days. From 1986, therefore, tables of deaths by cause and age do not include neonates, although the all cause total for neonates is often given. Details of neonatal deaths by cause can be found in [Child mortality statistics](#).
- 1993 We reverted to the internationally accepted interpretation of Rule 3 operating in England and Wales before 1984 (see Section 3.2).
- 1993 Redevelopment of our collection and processing systems, which took effect on published mortality data from January 1993. Changes included:
- the computerisation of registration, with registrars in most local offices entering details on computers and supplying data to ONS on floppy disk
 - the automation of cause of death coding, so that procedures for assigning codes to underlying cause are now automatic for about 80% of all deaths but not used for deaths certified after inquest
 - the use of a dynamic database to hold all deaths data, for easy retrieval of up-to-date information. These and other changes are described in Section 4 and in more detail in [Death certification and the epidemiologist](#)
- 1993 A revised coroner's certificate of cause of death after inquest was introduced in May 1993, which resulted in less detail for many deaths from injury and poisoning (ICD-9 E800–E999) – both for the description of injury sustained and for the classification of some suicides.
- Following the introduction the revised certificate, problems were identified relating to the processing of deaths certified after inquest due to the non-receipt of some data that contained additional detail about some accidental deaths. This resulted in more deaths being assigned to residual categories such as “other and unspecified causes” (ICD-9 E928.9). For this reason, the number of deaths coded to suicide and self-inflicted poisoning by motor vehicle gas exhaust (ICD-9 E952.0) declined substantially, while those from suicide and self-inflicted poisoning by other carbon monoxide (ICD-9 E952.1) rose.

To resolve this problem, ONS amended its systems and manually coded all deaths that resulted in a coroner's inquest or adjourned inquest. Data were re-coded where necessary for 1993 and 1994. Changes were concentrated in the external causes of the ICD, while the effect on other causes was limited.

- | | |
|------|---|
| 1993 | Ending of medical enquiries to obtain more precise information on the underlying cause of death. |
| 1997 | Provision for registration of a death by declaration was introduced in April 1997, whereby details of a death could be supplied to a registrar in a district other than that where the death took place. Analysis shows that this provision is most likely to be used for deaths of infants and for neonatal deaths in particular. |
| 2001 | <p>Introduction of the Tenth Revision of the International Statistical Classification of Diseases for coding cause of death on 1 January 2001. This replaced the Ninth Revision used from 1979 to 2000. There are some significant differences between the ICD versions. The main differences are:</p> <ul style="list-style-type: none"> • a change in format of the code and an expansion in the number of codes used • a movement of some diseases and conditions between broad groups called ICD chapters • changes to the rules governing the selection and coding of the underlying cause of death, especially Rule 3, which has had a large effect <p>ONS coded the 1999 registration dataset to both the Ninth and Tenth Revisions to give a guide to the effect of changes on specific categories of cause of death. Results of the ICD-10 bridge coding study, England and Wales, 1999 were published in 2002. Research specifically examining the effect on injury and poisoning was published in The effect of the introduction of ICD-10 on trends in mortality from injury and poisoning in England and Wales.</p> <p>Further information about Understanding the changes to mortality statistics following the move to coding cause of death to ICD-10 is also available.</p> |
| 2002 | Introduction of the General Register Office Network (GRONET) to Register Offices began, allowing for births and deaths registration details to be sent directly to ONS via email. |
| 2006 | Introduction of Registration online (RON) pilot areas enabling registrars to record births, stillbirths, deaths and civil partnerships online instead of using Registration Service Software (RSS). |
| 2007 | RON was implemented and due to significant performance problems suspended. This resulted in around half the registrars reverting back to using the previous electronic system, RSS. |
| 2009 | RON was fully implemented on 1 July 2009. 83% of registrations in 2009 were recorded on RON. |
| 2010 | All deaths recorded using RON. |

- 2011 In January 2011, the software used for cause of death coding was updated from the International Classification of Diseases, Tenth Revision (ICD-10) v2001.2 to v2010. The main changes in ICD-10 v2010 are amendments to the modification tables and selection rules. Modification tables and selection rules are used to ascertain a causal sequence and consistently assign underlying cause of death from the conditions recorded on the death certificate. Overall, the impact of these changes is small although some cause groups are affected more than others. For further information, see the [results of the bridge coding study](#). There is also another study looking at the impact on [stillbirths and neonatal deaths](#).
- 2014 On 1 January 2014, the software used to code cause of death was changed. The new IRIS software version 2013 incorporates official updates to ICD-10 that are approved by WHO. Further information on IRIS can be found in Section 2.12. A [dual coding study](#) looked at the impact on mortality statistics; a further study looked into the [impact of the coding changes on stillbirths and neonatal deaths](#).
- 2014 On 1 October 2014, the [Presumption of Death Act 2013](#) came into force in England and Wales. This means that an application can be made to the High Court for a declaration that a missing person is presumed to be dead where, the person who is missing is thought to have died or has not been known to be alive for a period of at least 7 years.

4 Quality of mortality data

Mortality statistics in England and Wales are derived from the registration of deaths certified by a doctor or a coroner. The data pass through a number of processes (Annex K) before becoming usable for analysis. These processes are complex, and involve a wide range of people, organisations and computer systems.

To produce mortality outputs, annual extracts are taken from the deaths database. These extracts are then used to produce annual tables and files of individual death records for other government departments and health authorities, as provided for by relevant legislation.

4.1 Completing medical certificates of cause of death

For around three-quarters of deaths, one of the doctors involved in the patient's care for the illness from which they died completes a Medical Certificate of Cause of Death (MCCD). Many thousands of general practitioners (GPs), hospital consultants, junior doctors in training and doctors in other clinical posts all complete MCCDs. The nature and amount of training they have had in death certification vary greatly. Not all medical schools in the UK include questions on death certification in their exams. However, "issuing death certificates" is included as a competency that newly qualified doctors should be able to demonstrate during their training in Foundation Years 1 and 2. Doctors already in practice are required to keep their knowledge and skills up to date through continuous professional education. However, there are constant changes in clinical knowledge, practice and guidelines to keep abreast of, so death certification may not often be a priority.

Training materials on death certification developed by the Office for National Statistics (ONS) in the late 1990s with the help and oversight of a wide range of stakeholders through the ONS Death Certification Advisory Group (DCAG) in the 1990s are available from our Titchfield office (see Section 2.24 for contact details). These include a short video, "Death Counts", an associated training pack including test histories, and pocket cards for distribution to GPs and hospital doctors.

There have been several well-publicised proposals for reform of death certification since the Shipman case in 1998. Legislation implementing the reform of the process of death certification in England and Wales is included in the [Coroners and Justice Act 2009](#), which received Royal Assent on 12 November 2009. This will reform the process of death certification by introducing a single unified system for both burials and cremations and appointing medical examiners to provide an independent scrutiny of the cause of death.

Guidance to doctors completing MCCDs in England and Wales was updated by the ONS Death Certification Advisory Group in June 2005 and again in November 2007. The guidance explains best practice under current legislation and sets out numerous examples based on recent queries from certifiers and samples of good certification. In 2005, the Department of Health notified all registered doctors of the existence of the new guidance through Chief Medical Officer's (CMO) Update (CMO 2005). In 2007, the CMO again drew the attention of doctors and senior NHS managers to the guidance in a letter about deaths involving health care associated infections.

Guidance for completion of MCCDs is being reviewed and updated as part of the implementation of death certification reform.

Coroners certify about a quarter of all deaths. Coroners can only certify cause of death following a post-mortem by a pathologist, an inquest or both. Training for coroners is organised through the Ministry of Justice. The process of referral to a coroner and how referred deaths are dealt with varies between coroners' areas.

4.2 Registration of the death

Data items other than the cause of death depend largely on information supplied by the informant. For deaths certified after inquest, police officers or other witnesses may supply this information, which cannot later be checked by the registrar. For some items of information, for example occupation, there may be no absolute way of checking its accuracy. For others, validity (age and date of birth), or "reasonableness" (age and cause of death) may be checked. Some details may also be verified later, for example date of birth, with records held at health service data sources.

4.3 Entry of data

Registration Service Software (RSS)

RSS was rewritten in 1998 and issued to Register Offices in 1999. It was replaced by the RON system on 1 July 2009. The deaths statistical fields used in RSS were validated in 3 respects:

- range: checking that codes fall into an expected range of values
- data type: checking that text appears where it should, and numeric values appear where they should
- logic: cross-checking with values in one or more other fields

Cross-validations are carried out by checking logical consistency between various items recorded by the registrar. These include information collected on type of certification, referral to coroner, and whether a post-mortem was carried out.

Registration Online (RON)

In November 2006, a pilot for an online system of registering life events (RON) commenced in 5 registration districts. Following the success of this pilot, RON was implemented in most register offices on 26 March 2007. However, as a result of significant performance problems, the system

was suspended on 10 April 2007 resulting in around half of registrars reverting back to using the previous electronic system, RSS. From 8 May 2007, almost all register offices were submitting data electronically using either RON or RSS. Any remaining death registrations that were held only on paper at register offices were later entered onto the RON system by the General Register Office (GRO), or by the local registration service. RON was fully implemented in register offices on 1 July 2009.

4.4 Other checks made by the Registration Service

Checks are also made on death registration details at various times by registrars, superintendent registrars, and account managers from GRO.

At the time of registration

When someone attends to register a death, the registrar is instructed to make the following checks:

- a medical certificate (coroner's document) is presented
- the death is in their area
- the death occurred within the last 12 months
- the informant is qualified to give information
- the correct medical certificate has been used
- the certificate relates to the correct person
- the certificate has been filled in properly – that is, it is signed, not amended in any way, the doctor's qualifications filled in, the last date seen alive and whether or not the certifier saw the deceased after death is shown
- the death does not need to be referred to the coroner

The registrar then carries out the registration and reviews the recorded detail with the informant before the register page is signed by the informant and registrar. The signed register page is normally a computer-generated print, replicating the detail held on computer, but when the computerised system is unavailable it is a handwritten page.

By superintendent registrars and account managers

Superintendent registrars carry out the following quarterly checks:

- the Quarterly Certified Copy (QCC) entries agree with each register entry
- the entries appear to be in sequence
- there is a medical certificate or coroner's form to accompany each death entry, as appropriate
- each entry has been signed by an informant (if required) and by the registrar
- for any manual entries a general check on any apparent erasure, illegibility, etc

Account managers visit registration districts on a periodic basis and as part of the process will typically include the following inspection activity:

- sitting in on actual registrations to check questioning technique
- examining a sample of register entries and supporting documentation and draft entries
- examination of computerised records held

4.5 Receipt of death registration data at ONS Titchfield

Details of deaths are received from register offices electronically. Routine and automated checks are carried out on each file and the combined data are then loaded on to the deaths database.

Regular receipt and diagnostic reports are produced, resulting in weekly contacts with the identified registrars to resolve any problems.

Examples of checks include:

- identification of missing entries, so that death registration details are received in sequence
- checks for duplicate records
- checking for misplaced records, for example, verifying that each registrar is using the register allocated
- for paper records – that date of death and date of registration are in the correct range
- for paper records – records are checked for completeness prior to keying
- checks on registrars whose returns have not been received by the fourth working day after the end of each week

4.6 Validation processes

Once on the database, the data are passed through a series of validation processes which are carried out automatically with any inconsistencies highlighted. Simple validations include examination of dates or employment status to ensure that they are likely. More complicated validations include checks for consistency between dates of birth, death and registration, or between age and marital status.

4.7 Routine checks in Titchfield

All deaths accepted onto the database that need routine coding are identified and coded as required by the Survey and Life Events Processing Branch (SALEP). The detailed routine coding falls into 5 main areas:

- postcoding to give usual residence of deceased
- occupation, that is, the occupation of deceased/spouse/civil partner, where age of deceased is over 16 (last occupation if retired); the occupation of the mother and/or father, where age of deceased is under 16
- communal establishment coding for place of death of deceased
- place of birth of deceased
- cause of death (see below)

Routine automated and manual checks of cause of death data are carried out on all records on a monthly basis. These include:

- checking cause fields against inquest conclusion fields for compatibility
- the presence or absence of original and final cause of death fields
- codes for ONS cause groups are present for neonatal deaths and absent for non-neonatal (see Section 2.23)
- validity of suicides at very young ages
- mentioned conditions on death certificate are compatible with sex
- the derived underlying cause of death is mentioned in Part I or Part II of the death certificate

Once coding of the cause of death is complete, checks are carried out on variables such as date of death, sex, year of birth, marital status and communal establishments. These checks evolve continuously during exploratory surveillance of data quality and some of these are later incorporated as routine checks.

4.8 Automated cause coding

Automated cause coding (see Section 2.12) is used to derive codes for each medical condition on the certificate and to identify the underlying cause. The accuracy of automated coding is checked regularly within data quality check requirements. Periodical reports on persistent coding problems are referred to a medical epidemiologist and authors of the software to highlight areas of concern for the new releases.

4.9 Checks before and after extraction of data for analysis

The first of these are carried out as a final check of what is held on the deaths database before an annual extract of data is taken. These comprise frequency checks for a range of fields, covering age, sex, underlying cause, and area of residence. Also checked are possibly incorrect combinations of fields. Any apparent errors or inconsistencies result in checks of individual cases by coders who make amendments, as required. Some of these checks are also carried out routinely every month.

Further examinations are carried out once the data extract has been taken. They include checks similar to those done before extraction, to ensure that corrections made at that stage were properly carried out. After the annual extract used for mortality analyses has been produced, a further set of frequency counts and 2-way tables are prepared to ensure that no new errors have been introduced. These checks are to ensure that the frequency distributions are both valid and plausible and broadly similar to those for the previous year's data.

4.10 Checks on routine outputs

These include:

- systematic checks of totals (row, column, and other) against known correct figures
- checks of individual cells against correct figures
- checking figures are consistent and plausible, that is, that they are what would be expected compared with the previous year's tables

These checks are carried out by the Primary Mortality Outputs team in Vital Statistics Outputs Branch in consultation with a medical epidemiologist.

5 Glossary

Accelerated registrations

The process by which a death can be registered at the time of adjournment of an inquest instead of having to await the outcome of criminal proceedings.

Age-standardised rates

A statistical measure to allow more precise comparisons between 2 or more populations by eliminating the effects in age structure by using a “standard population”.

Annual extract

The dataset taken from the main deaths database from which tabulations are derived. Sometimes it is referred to as the “standard” extract.

Assault

The ICD-10 terminology referring to homicide and injuries inflicted by another person with intent to injure or kill, by any means (excluding deaths from legal intervention and operations of war).

Bridge coding

An exercise in which the same group of deaths are independently classified according to 2 different classifications or coding methods.

Comparability ratios

A measure, expressed as a ratio, ratios indicating the net effect of the change in classification (from ICD-9 to ICD-10) on a particular cause of death.

Coroner

Public official responsible for the investigation of violent, sudden or suspicious deaths.

DCAG

Death Certification Advisory Group.

Declaration

The method by which an informant can register a death in a different district from that in which the death occurred.

Dual coding

The coding of the same data twice, using different methods of coding in order to assess inconsistencies.

Early neonatal

Relating to infants aged under 7 days.

Epidemiologist

A person concerned with the incidence and distribution of diseases and other factors, including the environment, relating to health.

External cause

Death resulting from accident or violence. An alternative term for the underlying cause of

death. ICD codes from Chapter XX; see Secondary causes.

GRO

General Register Office, located in Southport, England.

Hierarchical classification

ONS's method for classifying the causes of neonatal deaths and stillbirths using groups of ICD codes referred to as "ONS cause groups".

ICD

International Classification of Diseases.

Informant

The person who provides the registrar with the information required to register a death.

Inquest

Inquiry into the cause of an unexplained, sudden or violent death held by a coroner.

MCCD

Medical Certificate of Cause of Death.

Modification rules

Rules used in ICD-10 applied rules to select the correct underlying cause of death.

MMDS

Medical Mortality Data Software developed by the NCHS in the USA.

NCHS

National Center for Health Statistics, USA.

Neonatal

Relating to infants aged under 28 days.

NHSCR

National Health Service Central Register.

ONS

Office for National Statistics.

Perinatal

Includes stillbirths and early neonatal deaths.

QCC

Quarterly Certified Copy. Copies made of each Register, sent to the GRO at Southport.

Registrar

Statutory officer responsible for the registration of births, deaths and marriages.

Registrar General

Statutory appointment with responsibility for the administration of the registration Acts in England and Wales, and other related functions as specified by the relevant legislation.

RON

Registration Online. A web-based system which enables registrars to record births, stillbirths, deaths, marriages and civil partnerships online.

RSS

Registration Service Software. System of collecting data electronically at the registration of a birth or death. Used prior to RON.

Rule 3

One of the rules used to select the correct underlying cause of death; its different use in ICD-10 results in significant differences from ICD-9 for some causes; see Selection rules.

SALEP

Survey and Life Events Processing Branch at ONS.

Secondary cause

The nature of injury, or main injury, that caused death (where the underlying cause is assigned to an external cause from Chapter XX in ICD-10, V01 to Y89). Nature of injury codes are taken mostly from Chapter XIX (prefixes S and T).

Selection rules

Rules used in the ICD to determine the correct selection of the underlying cause of death; see Rule 3.

Sequela (sequelae)

A condition (or conditions) reported as the result of a previous injury – a “late effect” (under ICD-9) or that occurs as a late effect one year or more after the originating event.

Standard population

Used in the calculation of the age-standardised death rates; an element of the population (such as age and sex) is “held constant” to control its effect, for example, the European Standard.

Stillbirth

Refer to the Stillbirth (Definition) Act 1992; a child born after 24 or more weeks completed gestation who did not show any signs of life at any time after being born.

Superintendent registrar

Statutory officer with responsibilities relating to births, deaths, marriage and other registration functions, as specified in the relevant legislation.

UK Statistics Authority

The UK Statistics Authority is an independent body operating at arms’ length from government as a non-ministerial department, directly accountable to Parliament. It was established on 1 April 2008 by the Statistics and Registration Service Act 2007.

Underlying cause of death

“The disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury” in accordance with the rules of the International Classification of Diseases.

VSOB

Vital Statistics Outputs Branch at ONS.

WHO

World Health Organisation.

Annex A Medical Certificate of Cause of Death

BIRTHS AND DEATHS REGISTRATION ACT 1953
(Form prescribed by Registration of Births and Deaths Regulations 1987)
MEDICAL CERTIFICATE OF CAUSE OF DEATH

For use only by a Registered Medical Practitioner WHO HAS BEEN IN ATTENDANCE during the deceased's last illness, and to be delivered by him forthwith to the Registrar of Births and Deaths.

Registrar to enter
No. of Death Entry

Name of deceased day of Age as stated to me

Date of death as stated to me day of Age as stated to me

Place of death

Last seen alive by me day of

1 The certified cause of death takes account of information obtained from post-mortem.

2 Information from post-mortem may be available later

3 Post mortem not being held.

4 I have reported this death to the Coroner for further action.
(See overleaf)

Please ring appropriate digit (and enter)

Seen after death by me.

Seen after death by another medical practitioner but not by me

Not seen after death by a medical practitioner.

CAUSE OF DEATH

The condition responsible for the Underlying Cause of Death should appear on the completed line of Part I.

I (a) Disease or condition directly leading to death?

(b) Other disease or condition, if any, leading to: I(a)

(c) Other disease or condition, if any, leading to: I(b)

II Other significant conditions CONTRIBUTING TO THE DEATH but not related to the disease or condition causing it

The death might have been due to or contributed to by the employment followed at some time by the deceased ☐ Please tick where applicable

† This does not mean the mode of dying, such as heart failure, asphyxia aetherica, etc.; it means the disease, injury, or complication which caused death.

I hereby certify that I was in medical attendance during the above named deceased's last illness, and that the particulars and cause of death above written are true to the best of my knowledge and belief.

Signature Qualifications as registered by General Medical Council

Residence Date

For deaths in hospital: Please give the name of the consultant responsible for the above named as a patient

These particulars not to be entered in death register

Approximate interval between onset and death

.....

.....

.....

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

DEATH		Register No.	Entry No.
Registration district		District & S. Dist. Nos.	Administrative area
Sub-district			
1. Date and place of death		(date)	
2. Name and surname		3. Sex 4. Maiden surname of woman who has married	
5. Date and place of birth			
(date)			
6. Occupation and usual address			
7. (a) Name and surname of Informant		(b) Qualification	
(c) Usual address			
8. Cause of death			
(a)			
(b)			
(c)			
II.			
Certified by 9. I certify that the particulars given by me above are true to the best of my knowledge and belief 10. Date of registration 11. Signature of registrar Signature of Informant			
O NHS No.		Q (age)	

FORM 3 (10 Rev)

The diagram shows a floor plan with the following features:

- Top Left:** A room with two small square tables and two chairs.
- Top Center:** A large room with a grid of desks and chairs. A dashed line runs vertically through this area.
- Top Right:** A room with two small square tables and two chairs.
- Middle Left:** A room with a grid of desks and chairs. A dashed line runs vertically through this area.
- Middle Center:** A room with a grid of desks and chairs. A dashed line runs vertically through this area.
- Middle Right:** A room with a grid of desks and chairs. A dashed line runs vertically through this area.
- Bottom Left:** A room with a grid of desks and chairs. A dashed line runs vertically through this area.
- Bottom Center:** A room with a grid of desks and chairs. A dashed line runs vertically through this area.
- Bottom Right:** A large room with a grid of desks and chairs. A dashed line runs vertically through this area.

Annex C Coroner's certificate after inquest (Form 99(REV) A & B - white)

CORONER'S CERTIFICATE AFTER INQUEST furnished under section 11(7) of the Coroner's Act 1988		To be completed by Registrar Register No. Entry No. 							
To the 		Registrar of Births and Deaths							
Inquest held on _____ at _____ Was a post-mortem held? 									
PART I PARTICULARS OF DECEASED (Not still born - see separate Form 99A)									
1 Date and place of death 									
2 Name and surname 		3 Sex 							
5 Date and place of birth 		4 Maiden surname of woman who has married 							
6 Occupation and usual address 									
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> Cause of death I(a) (b) (c) II Verdict </div> <div style="width: 60%; text-align: center; font-size: 4em; transform: rotate(-45deg); opacity: 0.5;"> SPECIMEN </div> </div>									
PART II VISITING FORCES { *under section 7 of the Visiting Forces Act 1952 *and has not been resumed The inquest was adjourned on 									
PART III BURIAL/CREMATION †Enter Order for Burial/Certificate E for Cremation I have issued† on _____ to _____ of _____									
PART IV MARITAL CONDITION etc. All persons aged 16 and over Insert appropriate number in box. 1 Single 2 Married 3 Widowed 4 Divorced 5 Not Known 									
If married enter date of birth of surviving spouse <table border="1" style="float: right; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">Day</td> <td style="padding: 2px 5px;">Month</td> <td style="padding: 2px 5px;">Year</td> </tr> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> </tr> </table>				Day	Month	Year			
Day	Month	Year							
I certify that the findings of the inquest were as above.									
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Date _____ Name _____ Appointment _____ Jurisdiction _____ </div> <div style="width: 45%; text-align: right;"> Signed _____ </div> </div>									

*Delete as necessary

Form 99(REV)A
SB17/2a 1/93

Please insert appropriate number in box Form 99 (REV) B
SB17/25 1/93

Annex D Notification to the registrar by the coroner that he does not consider it necessary to hold an inquest - no post-mortem held (Form 100A - salmon pink)

NOTIFICATION TO THE REGISTRAR BY THE CORONER that he does not consider it necessary to hold an inquest		To be completed by Registrar	
FORM A - NO POST-MORTEM HELD		Register No.	
		Entry No.	

To the Registrar of Births and Deaths

PARTICULARS OF THE DECEASED

Name and Surname Sex Age (or Date of Birth) Date of Death Place of Death Cause of Death	<div style="text-align: center; font-size: 4em; transform: rotate(-45deg); opacity: 0.5;">SPECIMEN</div> <div style="margin-top: 20px;"> I (a) (b) (c) II </div> <div style="margin-top: 20px; font-size: 0.8em;"> (Where this notification relates to a stillborn child, this should be stated) </div>
--	---

CORONER'S CERTIFICATE

Date Signed Name Appointment Jurisdiction	The circumstances connected with the death of the above person have been reported to me and I do not consider it necessary to hold an inquest
---	--

INSTRUCTIONS TO REGISTRAR OVERLEAF

Form 100A
SB30/4 1.92 R

Annex E Notification to the registrar by the coroner that he does not consider it necessary to hold an inquest - post-mortem held (Form 100B - pink)

NOTIFICATION TO THE REGISTRAR BY THE CORONER that he does not consider it necessary to hold an inquest FORM B - POST-MORTEM held under Section 19 of the Coroner's Act 1988		To be completed by Registrar <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">Register No.</td> <td style="width: 50%;"></td> </tr> <tr> <td style="padding: 2px;">Entry No.</td> <td></td> </tr> </table>		Register No.		Entry No.	
Register No.							
Entry No.							
To the		Registrar of Births and Deaths					
PARTICULARS OF THE DECEASED							
Name and Surname							
Sex							
Age (or Date of Birth)							
Date of Death							
Place of Death							
CORONER'S CERTIFICATE							
I certify that a post-mortem examination of the body of the above person was made by the pathologist named below, whose report disclosed that the cause of death was:							
Cause of Death	I (a) (b) (c) II and I am satisfied that an inquest is unnecessary (Where this notification relates to a stillborn child, this should be stated)						
Pathologist							
CERTIFICATE FOR CREMATION (Details to be entered if Certificate issued)							
Issued on							
To Address							
Is a histological or bacteriological examination to be made?							
Date							
Signed							
Name							
Appointment							
INSTRUCTIONS TO REGISTRAR OVERLEAF							

 Form 100B
 8825/5 190

CORONER'S CERTIFICATE AFTER INQUEST ADJOURNED furnished under section 16(4) of the Coroner's Act 1988	To be completed by Registrar Register No.
---	---

Annex F – continued

Name and surname of deceased	To be completed by Registrar	
	District & SD Nos.	
	Register No.	
	Entry No.	

PART V INCIDENT LEADING TO DEATH (Information for the statistical purposes of ONS only)

If motor vehicle incident, deceased was†

0. Driver of motor vehicle other than motor cycle	5. Rider of animal; occupant of animal-drawn vehicle
1. Passenger in motor vehicle other than motor cycle	6. Pedal cyclist
2. Motor cyclist	7. Pedestrian
3. Passenger on motor cycle	8. Other specified person
4. Occupant of tram car	9. Not known

†Please insert appropriate number in box

SPECIMEN

Annex G Coroner's certificate (reporting on action subsequent to an adjourned inquest) (Form 121 - blue)

Certificate sent to registrar on *by post/otherwise than by post

CORONERS' CERTIFICATE
furnished under section 16(5) or 16(7)(b) of the Coroners Act 1988

To be completed by Registrar	
trar	
Dist & Sub. Dist. Nos.	
Register No.	

To the registrar of births and deaths for the sub-district of
in respect of the inquest touching the death of
at (place of death)
which was adjourned under Section 16(1) of the Coroners Act 1988 on the
I hereby certify as follows:

*Part A

The inquest has not been resumed.

- *(1) No criminal proceedings were instituted in respect of this death.
*(But criminal proceedings were instituted in the case of the associated death on
of)
OR
- *(2) Criminal proceedings were instituted on a charge of
As a result of these proceedings the defendant was
OR
- *(3) Criminal proceedings were terminated by
.....

*Part B

The inquest was resumed on

- (1) The finding of the inquest as to the cause of death:
*(a) was as stated in my certificate furnished under Section 16(4) of the Coroners Act 1988, OR
*(b) was
.....
(please state cause of death as found at resumed inquest)
- *(2) No criminal proceedings were instituted in respect of this death.
*(But criminal proceedings were instituted in the case of the associated death on
of)
OR
- *(3) Criminal proceedings were instituted on a charge of
and the outcome was
.....

Date Signature

HM Coroner for

*Delete as necessary

Annex H Declaration of Particulars for the Registration of a Death

BIRTHS AND DEATHS REGISTRATION ACT 1953, Section 23A

DECLARATION of PARTICULARS for the REGISTRATION of a DEATH

I, _____, being a person qualified under the Births and Deaths Registration Act 1953 to give information for the registration of the death of the undermentioned, DO SOLEMNLY DECLARE that the particulars below are those which are required to be registered concerning such death, according to the best of my knowledge and belief.

1. Date and place of death	
2. Name and surname	3. Sex
	4. Maiden surname of woman who has married
5. Date and place of birth	
6. Occupation and usual address	
7. (a) Name and surname of informant	(b) Qualification
(c) Usual address	
8. Cause of death	

And I make this declaration solemnly and deliberately, in pursuance of Section 23A of the Births and Deaths Registration Act 1953,

Signature Date

Signed and declared by the above }
named declarant in the presence of } Registrar of Births and Deaths

..... Sub-district District

Death registered by me at Entry No. Registrar

..... Sub-district District

NOTICE: By Section 4 of the Perjury Act 1911 it is an offence wilfully to make any false declaration for the purposes of any Act relating to the registration of births and deaths.

403 499

FORM 400

Annex I Draft entry form used by registrars for registering deaths online (Registration online) (Form 310 (RON))

Draft Statistical Information - Death

District & Sub-district number		Registrar Number		Entry Number	
Age	Y	M	W	D	NHS Number
What number has been circled on the MCCD		1	2	3	4
Seen or not seen after death		A	B	C	none
Employment related		YES	NO	Last seen alive date	
Consultant's Name					
Referred to Coroner		YES	NO	Length of stay	REFERRED BY REGISTRAR
Additional medical details sought		YES	NO	NOT KNOWN	OVER 6 MONTHS
Coroner's post mortem held		YES	NO	NOT KNOWN	KNOW
Did the deceased live in a communal establishment		YES	NO		
Duration Cause 1a		Duration Cause 1b			
Duration Cause 1c		Duration Cause 2			
Deceased's country of birth		E	W	NON UK	Spanish National
Postcode - Space 1		Postcode - Space 6			
Postcode - Space 7c		Postcode -			
Confidential - Registrars					
The particulars below, required under the Population Registration Act 1958, must be entered into the register. This confidential information will be used only for the preparation and supply of statistical information by the Registrar General.					
At date of death deceased was		Single	Married	Widowed	Divorced
If married date of birth		Civil Partner			
If surviving spouse		Civil Partner			
Reason for non completion (if applicable)		NOT KNOWN			
If as a civil partner enter date of surviving civil partner		REFUSED			
Voluntary Statistics					
Deceased's or Mother's industry and employment		Spouse/Civil Partner's or Father's industry and employment			
Industry		Industry			
Reason for non completion (if applicable)		Reason for non completion (if applicable)			
Employment status		1	2	3	4
* If the deceased was under 15 years of age.		5	6	7	7
Other Comments					
Previously registered on GRO Reference number		Registrar No.		Entry No.	
		System No. of previous entry (if applicable)			


DEATH

Registration district	Administrative area	Entry No.
Sub-district		
1. Date and place of death		
2. Name and surname	3. Sex	
4. Maiden surname of women who have married		
5. Date and place of birth		
6. Occupation and usual address		
7. (a) Name and surname of informant		
(b) Qualification		
(c) Usual address		
8. I certify that the particulars given by me above are true to the best of my knowledge		
9. Cause of death		
10. Date of registration		
11. Signature of registrar		
System No.	Registrar No.	

RON 11/03

Annex J Presumption of death certificate

Application No. Specimen Certificate



PDX 005001

CERTIFIED COPY OF AN ENTRY

PRESUMED DEATH	
1. Date and place of presumed death _____	
2. Name and surname _____	3. Sex _____ <div style="margin-top: 5px;">4. Maiden surname of woman who has married _____</div>
5. Date and place of birth _____	
6. Occupation and usual or last known address _____	
7. Cause of presumed death _____	
8. Name of court issuing declaration _____	
9. Date of court declaration _____	
10. Date of registration _____	11. Signature of registering officer _____


CERTIFIED to be a true copy of an entry in the Register of Presumed Deaths maintained at the GENERAL REGISTER OFFICE. Given at the General Register Office, under the seal of the said office.

Date 7th January 2015

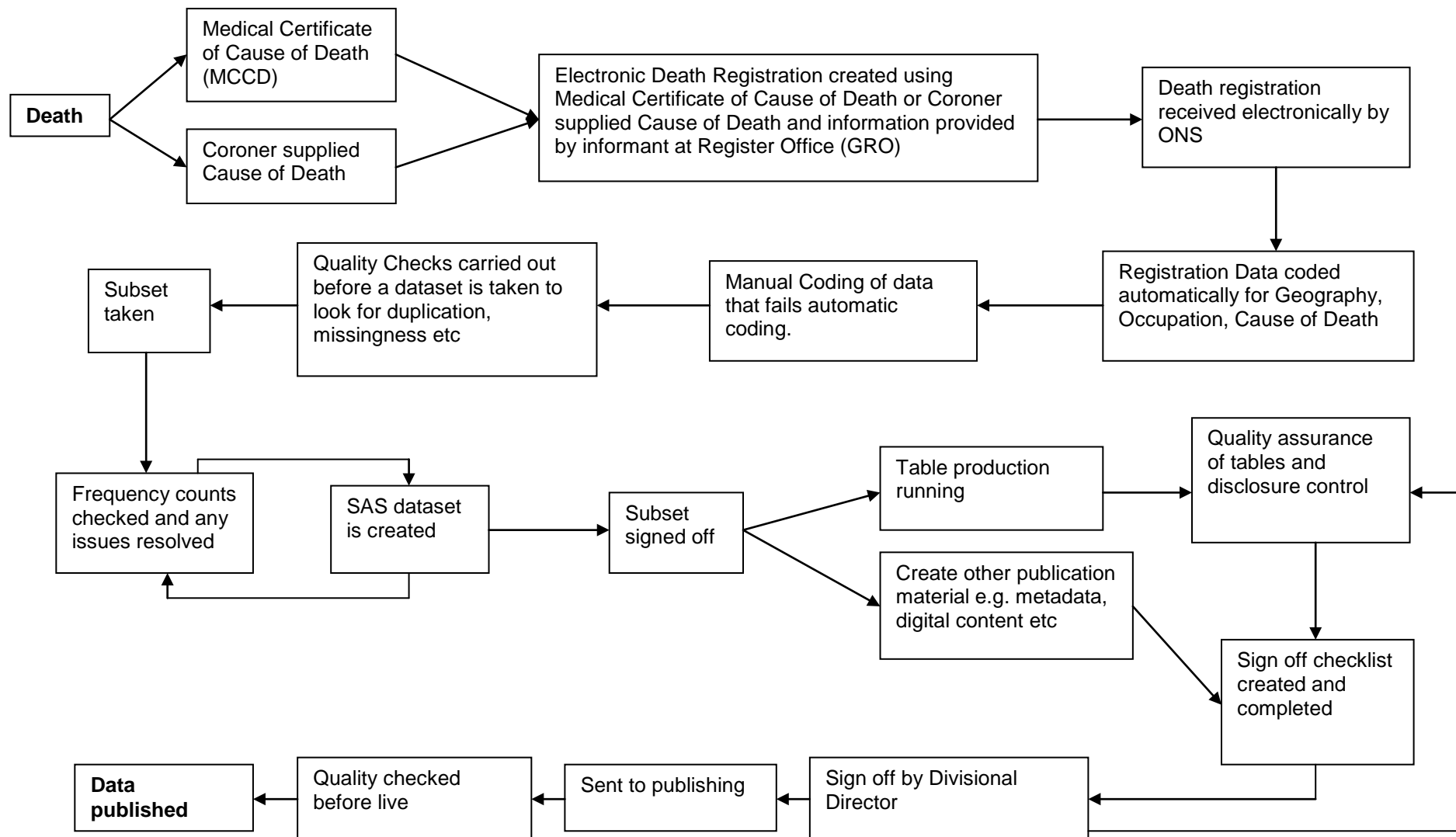
This certificate is issued pursuant to the Presumption of Death Act 2013.
By paragraph 4 of Schedule 1 to the Act, a certified copy of an entry in the Register of Presumed Deaths, if purporting to be sealed or stamped with the seal of the General Register Office, is to be received as evidence of the person's death, without further or other proof.

CAUTION: THERE ARE OFFENCES RELATING TO FALSIFYING OR ALTERING A CERTIFICATE AND USING OR POSSESSING A FALSE CERTIFICATE. ©CROWN COPYRIGHT

WARNING: A CERTIFICATE IS NOT EVIDENCE OF IDENTITY.



Annex K Flow chart of deaths process



March 2016