

Coding the causes of death

For deaths registered from 1 January 2000, the causes of death have been coded in accordance with the International Statistical Classification of Diseases and Related Health Problems (Tenth Revision), which may be referred to as 'ICD-10'. Deaths which were registered in 1999 were coded using both ICD-9 and ICD-10, in order to obtain an indication of the effect on the figures of the change in the classification. The definitive figures for 1999 are those produced using ICD-9.

The classification of the underlying cause of death is based on the information collected on the death certificate together with any additional information provided by other official sources - more information can be found on the [sources of information for coding the causes of death](#) page.

Given the way in which the medical certificate of the cause of death should be completed, one might expect that the underlying cause of death would be whatever appears as the final entry in Part 1. However, the application of the ICD10 rules can lead to the selection of an underlying cause which differs from that. For example:

- if the final entry in Part 1 is something which is 'ill-defined' for ICD purposes (e.g. 'organ failure'), in which case a more specific cause of death is coded, if one is available;
- if it is an obvious consequence of one or more of the other conditions which were reported (either in Part 1 or Part 2) - e.g. 'any disease described as secondary should be assumed to be a consequence of the most probably primary cause entered on the certificate';
- if it is 'linked by a provision in the classification or in the notes for underlying cause mortality coding with one or more of the other conditions on the certificate', in which case the appropriate combination is coded.

The complexity of the ICD-10 rules can result, in some cases, in the underlying cause of death coded by National Records of Scotland (NRS), formerly General Register Office for Scotland (GROS), differing from that which would be chosen by someone else who is less familiar with the rules and the accompanying explanatory notes. One potential reason for such differences is ICD-10 Rule 3. This states that 'if the condition selected ... is obviously a direct consequence of another reported condition, whether in Part 1 or Part 2, select this primary condition'. There are a number of accompanying explanatory notes, the most significant of which states that pneumonia and bronchopneumonia 'should be considered an obvious consequence of wasting diseases (such as malignant neoplasm and malnutrition) and diseases causing paralysis (such as cerebral haemorrhage or thrombosis), as well as serious respiratory conditions, communicable diseases and serious injuries'. The ICD-10 instruction manual includes the following example (number 26):

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I (a) Bronchopneumonia

II Secondary anaemia and chronic lymphatic leukaemia

Select chronic lymphatic leukaemia [because] bronchopneumonia and secondary anaemia can both be considered direct sequels of chronic lymphatic leukaemia.

When Rule 3 is applied in this example, the underlying cause of death is something that was mentioned in Part 2, rather than the bronchopneumonia that was mentioned in Part 1. The underlying cause of death coded by NRS may therefore differ greatly from what would be expected by someone who was less familiar with the ICD rules and their explanatory notes.

The explanatory notes widened substantially the scope of Rule 3 in ICD-10 compared with ICD-9. This led to an increase in the number of deaths classified to strokes, neurological diseases and a wide range of chronic conditions, and a reduction in the number counted as due to pneumonia or bronchopneumonia.

In January 1996, NRS introduced an automated method of coding the causes of death, using software provided by the United States National Centre for Health Statistics. While this handles 'straightforward' cases correctly, experienced coding staff are still needed to check the results and to code the more complicated cases. Further information about the Mortality Medical Data System (MMDS) software is available at <http://www.cdc.gov/nchs/nvss/mmds.htm>. New versions are produced from time to time in order (e.g.) to take account of updates that the World Health Organisation (WHO) has made to the ICD-10 coding system. As WHO updates may change significantly the way that some causes of death are coded, implementing a new version of MMDS may mean that more recent statistics are not comparable with older ones. There is also a considerable amount of work required to test a new release, incorporate it into the data processing system and change what staff do. For these reasons National Records of Scotland implements a new version every few years rather than installing every release that is produced. A similar approach is taken by our counterparts in England & Wales and Northern Ireland. So, for example, the 2006 version of MMDS was used for deaths registered up to the end of 2010, and the 2010 version for deaths registered from the start of 2011. Changes to the coding of causes of death between 2010 and 2011 describes the main effects on the statistics of upgrading from the 2006 version to the 2010 version of MMDS.

Some further information about coding and classifying causes of death is available in the Annex to Chapter 2 of "[Scotland's Population 2005](#)". More details are given in Appendix 2 of the [Registrar General's Annual Report for 2000](#) - this includes a section on the effects of the changes in the application of Rule 3, and a comparison of the results of coding the data for 1999 using ICD-9 and ICD-10. However, the definitive source of information about the International Statistical Classification of Diseases and Related Health

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Problems is the WHO Web site. The ICD 'home page' is <http://www.who.int/classifications/icd/en/> , and this gives access to (e.g.):

- an on-line version of ICD-10 , which one can use to 'drill down' from each Chapter to each blocks of codes for a particular type of disease or external cause, and from there to the individual codes for specific diseases or external causes
<http://apps.who.int/classifications/apps/icd/icd10online/>
- a PDF version of the Instruction Manual (Volume 2 - 131 pages)
http://www.who.int/entity/classifications/icd/ICD-10_2nd_ed_volume2.pdf
- details of all the updates to ICD-10, including cumulative lists of all updates
<http://www.who.int/classifications/icd/icd10updates/en/index.html>
- an ICD 'training tool', which provides 'interactive self training that will allow you to understand and use ICD-10. User specific paths include a fast track for e.g. managers, and an in depth training for coders'. This is available via
<http://www.who.int/classifications/icd/implementation/en/index.html>.