CRVS RESOURCES AND TOOLS

Assessing the quality of death certificates: Guidance for the rapid tool

February 2019
Resources available from the University of Melbourne, Bloomberg Philanthropies Data for Health Initiative

**CRVS development series**

Concise and easily accessible, the CRVS development series forms a lasting archive of synthesised evidence and knowledge on strengthening CRVS systems as generated through the Initiative. The content of this series is based on a combination of technical knowledge, country experiences, and the scientific literature. The series is intended to stimulate debate and ideas for in-country CRVS policy, planning and capacity building, and promote the adoption of best practice to strengthen CRVS systems world-wide.

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This series focuses on filling a range of scientific knowledge gaps by offering new tools, methods, findings and approaches for CRVS systems and data improvement. The series has a strong empirical focus, reporting on works in progress, particularly for large or complex technical initiatives, and on specific components of projects that may be of more immediate relevance to stakeholders.

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Capacity-building resources and tools are designed to assist countries improve their systems and to influence and align CRVS processes with established international or best-practice standards. These resources, which are used extensively in the Initiative’s training courses, aim to both change practice and ensure countries benefit from such changes, by developing critical CRVS capacity among technical officers and ministries.

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CRVS country perspectives describe the capacity-building experiences and successes of strengthening CRVS systems in partner countries, including fellowship reports. The series describes the state of CRVS systems improvement in partner countries, outlines lessons learnt, and provides a baseline for comparison over time and between countries.

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Many papers from the development and technical outcome series have accompanying action guides or summaries, which provide a succinct overview of key points and, in the case of action guides, a suggested way forward for countries.

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**Suggested citation**

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Preface: The importance of assessing the quality of death certificates

Evaluation studies have shown that medical certificates of cause of death (referred to as ‘death certificates’) are often of poor quality, even when the cause of death has been certified by a doctor.\(^1\) In many countries, doctors do not get adequate opportunities to learn about death certification as part of their medical training.\(^2\) In addition, some hospitals lack the basic diagnostic facilities that are needed to determine accurately the cause of death. In general, healthcare institutions cannot achieve accurate and complete death certification if the medical records department is not functioning well. Doctors will not be able to locate supporting information, which will lead to low-quality certification.

The best way to obtain high-quality mortality statistics is to have deaths certified by a qualified medical doctor. Death certification by doctors is the gold standard for producing cause of death data. How well a doctor diagnoses the diseases or conditions that led to a person’s death depends on several factors, such as the doctor’s training and experience in death certification, support from the hospital (for clinical records and diagnostic equipment), and whether the medical certificate is correctly filled-in.

As such, assessing completed death certificates is important to identify how well doctors are filling in the certificates, and to highlight gaps in hospital support or training programs.

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Box 1. Important concepts

The causes of death recorded in the International Form of Medical Certificate of Cause of Death are:

- all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such injuries

**Twentieth World Health Assembly, 1967**

The underlying cause of death is:

- 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

**World Health Organization, 1994**

---


The International Form of Medical Certificate of Cause of Death

The World Health Organization (WHO) recommends using the International Form of Medical Certificate of Cause of Death for the certification of death in all countries. Health departments or ministries of health can use the certificate as a framework that will help to organise clinical diagnoses in such a way that they can be used to improve public health. Figure 1 shows Frame A of the death certificate, which was introduced with the adoption of the International classification of diseases, version 10 (ICD-10). An example of the full, updated death certificate introduced by WHO in 2016, which includes demographic and other medical data, is in Annex 1.

Figure 1. Frame A of the International Form of Medical Certificate of Cause of Death

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Report disease or condition directly leading to death on line a</td>
</tr>
<tr>
<td>Cause of death</td>
</tr>
<tr>
<td>a</td>
</tr>
<tr>
<td>Due to:</td>
</tr>
<tr>
<td>b</td>
</tr>
<tr>
<td>c</td>
</tr>
<tr>
<td>d</td>
</tr>
<tr>
<td>2. Other significant conditions contributing to death (time intervals can be included in brackets after the condition)</td>
</tr>
</tbody>
</table>

The death certificate is divided into three sections:

1. Part 1—diseases or conditions directly leading to death and antecedent causes
2. Part 2—other significant conditions
3. A column to record the approximate interval between the onset of the condition and death.

Before reviewing the sections in detail, it is essential to understand the following concepts:

- the sequence/chain of events leading to death
- the contributory cause(s) of death.

To fill in the medical certificate of cause of death (‘death certificate’) correctly, the doctor must first identify the disease leading directly to death, then trace the sequence of events back to the underlying cause of death. Other diseases contributing to death are entered in a second part of the form (Figure 2). This is different from the logic that the doctor uses to make the clinical diagnosis, which forms the basis for patient management. Reviews of the accuracy of death certificates in hospitals from around the world have shown that the underlying cause of death is often misclassified, because many doctors have not been trained in death certification.

**Frame A: Medical data: Part 1 and 2**

<table>
<thead>
<tr>
<th></th>
<th>Cause of death</th>
<th>Time interval from onset to death</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Renal failure</td>
<td>1 year</td>
</tr>
<tr>
<td>b</td>
<td>Nephritic syndrome</td>
<td>3 years</td>
</tr>
<tr>
<td>c</td>
<td>Diabetes mellitus</td>
<td>20 years</td>
</tr>
<tr>
<td>d</td>
<td>Due to:</td>
<td></td>
</tr>
</tbody>
</table>

**Frame B: Other medical data**

- Was surgery performed within the last 4 weeks? [Yes/No/Unknown]
- If yes please specify date of surgery D M M Y Y Y Y
- If yes please specify reason for surgery (disease or condition)
- Was an autopsy requested? [Yes/No/Unknown]
- If yes were the findings used in the certification? [Yes/No/Unknown]

**Manner of death:**
- Disease
- Accident
- Legal intervention
- Pending investigation
- Intentional self harm
- War
- Unknown

If external cause or poisoning:
- Date of injury D M M Y Y Y Y
- Please describe how external cause occurred (If poisoning please specify poisoning agent)
- Place of occurrence of the external cause:
  - At home
  - Residential institution
  - School, other institution, public administrative area
  - Sports and athletics area
  - Street and highway
  - Trade and service area
  - Industrial and construction area
  - Farm
  - Other place (please specify): Unknown

**Fetal or infant Death**
- Multiple pregnancy [Yes/No/Unknown]
- Stillborn? [Yes/No/Unknown]
- If death within 24h specify number of hours survived
- Birth weight (in grams)
- Number of completed weeks of pregnancy
- Age of mother (years)
- If death was perinatal, please state conditions of mother that affected the fetus and newborn
- For women, was the deceased pregnant? [Yes/No/Unknown]
- At time of death: [Within 42 days before the death/ Between 43 days up to 1 year before death/Unknown]
- Did the pregnancy contribute to the death? [Yes/No/Unknown]

**Renal failure**
- 1 year
- 3 years
- 20 years
  - (3 months)
About the rapid assessment tool

The tool is designed to assess quickly the quality of death certification practices, by looking for common errors on filled-in death certificates. The tool can be used to:

- assess the quality of death certification as part of a routine assessment
- assess the training needs of doctors in designing cause of death certification training
- evaluate the effectiveness of death certification training.

The rapid tool is a checklist of the most common errors seen on death certificates, presented as a table. The errors are based on real examples taken from a collection of death certificates reviewed between 2010 and 2013 in several countries.

Who should use the tool?

This document provides guidance on how to use the rapid assessment tool. Information generated from the assessment would be helpful for ministry of health staff, hospital administrators, health information officers or medical record officers to determine the quality of death certificates.

The tool can be used by a doctor who is trained in death certification practices and understands the ICD-10 death certification rules. This tool can also be used by a well-trained coder. However, in the absence of properly trained mortality coders in many countries, coders may need to refer to the Mortality Medical Data System tables or consult a doctor to confirm the correct cause of death sequence.

How many certificates should be assessed?

The number of death certificates that should be assessed using this tool will depend on the objectives of the assessment and availability of the resources to carry out the study. If a large sample (ie more than 500) of death certificates can be assessed, the results would be quite robust. However, if resources are limited, for a periodic assessment in one hospital, even 100 death certificates would be enough to generate evidence on current death certification practices.

Associated documents

To help use the tool, it is recommended you also download the print version of the assessment tool and the excel spreadsheet for analysis (available at www.crvsgateway.info/library).

Items on the death certificate assessment tool

The death certificate assessment tool looks at seven components of a death certificate that are often incorrectly filled out, and classifies them into major or minor errors based on the potential impact the error can have on the final selection of the underlying cause of death:

**Major errors**
1. documenting multiple causes of death per line
2. missing time interval from disease onset to death
3. incorrect or clinically improbable sequence of events leading to death
4. ill-defined or poorly specified conditions entered as the underlying cause of death

**Minor errors**
5. abbreviations used when certifying the death
6. illegible handwriting
7. additional errors.
1. Documenting multiple causes of death per line

The WHO ICD guidelines state that only one cause should be recorded per line in a death certificate. When more than one cause is reported on a single line, it makes it difficult for coders to establish the sequence of events leading to death, thus selecting the correct underlying cause of death would be more difficult (see Figure 3).

However, if there are multiple causes in the sequence leading to death, and not enough blank lines to record them on, then it may be acceptable to write multiple causes per line. If this is the case, it is important that the certifier clearly demonstrates the sequence, by writing 'due to' in between conditions written on the same line (see Figure 4).

Instructions for completing the assessment table

Mark with a tick or cross in the ‘Yes’ column if there is more than one cause reported on one line (this is an error). If there is one cause per line, mark the ‘No’ column.

If there is more than one cause reported on one line, and the certifier has clearly demonstrated the sequence by writing ‘due to’ in between causes, mark with a tick or cross in the ‘Yes’ column.

If there is more than one cause reported on one line and the certifier has not used ‘due to’ in between causes and the sequence is unclear, mark with a tick or cross in the ‘Yes’ column (this is an error).

Figure 3. Example of an incorrectly filled-out death certificate with multiple causes of death per line

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>Report disease or condition directly leading to death on line a</td>
</tr>
<tr>
<td>Report chain of events in ‘due to’ order (if applicable)</td>
</tr>
<tr>
<td>State the underlying cause on the lowest used line</td>
</tr>
<tr>
<td>Cause of death</td>
</tr>
<tr>
<td>a</td>
</tr>
<tr>
<td>b</td>
</tr>
<tr>
<td>c</td>
</tr>
<tr>
<td>d</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

Figure 4. Example of a correctly filled-out death certificate with multiple causes of death per line

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>Report disease or condition directly leading to death on line a</td>
</tr>
<tr>
<td>Report chain of events in ‘due to’ order (if applicable)</td>
</tr>
<tr>
<td>State the underlying cause on the lowest used line</td>
</tr>
<tr>
<td>Cause of death</td>
</tr>
<tr>
<td>a</td>
</tr>
<tr>
<td>b</td>
</tr>
<tr>
<td>c</td>
</tr>
<tr>
<td>d</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>
2. Missing time interval from disease onset to death

The column on the right-hand side of Part 1 of the death certificate is for recording the approximate time interval between the onset of the condition and the time of death. The time interval should be entered for all conditions reported on the death certificate, especially for the conditions reported in Part 1. For conditions listed in Part 2, the time interval can be written in brackets after the condition, for example, 'obesity (15 years)'. These intervals are usually established by the doctor based on available information in the clinical records. In some cases, the time interval will have to be estimated. Time periods such as minutes, hours, days, weeks, months or years can be used.

If the time of onset is unknown or cannot be determined because of a lack of information, it can be written as 'unknown'. Time intervals are very important for correctly coding certain diseases and provide a check on the accuracy of the reported sequence of conditions. Therefore, doctors should complete the time intervals.

Instructions for completing the assessment table

Mark with a tick or cross in the 'Yes' column if the time interval between onset and death has been left blank (i.e. not completed) (this is an error; see Figures 5 & 6). If the time interval has been filled out, mark the 'No' column.

Figure 5. Example of an incorrectly filled-out death certificate with no time interval from onset to death in Part 1

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Report disease or condition directly leading to death on line a</td>
</tr>
<tr>
<td>a Pulmonary haemorrhage</td>
</tr>
<tr>
<td>b Due to: Advanced pulmonary tuberculosis</td>
</tr>
<tr>
<td>c Due to:</td>
</tr>
<tr>
<td>d Due to:</td>
</tr>
</tbody>
</table>

Figure 6. Example of an incorrectly filled-out death certificate with no time interval from onset to death in Part 1 and 2

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Report disease or condition directly leading to death on line a</td>
</tr>
<tr>
<td>a Acute myocardial infarction</td>
</tr>
<tr>
<td>b Due to: Chronic ischemic heart disease</td>
</tr>
<tr>
<td>c Due to:</td>
</tr>
<tr>
<td>d Due to:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity, non-insulin-dependant, diabetes mellitus hypertension</td>
</tr>
</tbody>
</table>
3. Incorrect or clinically improbable sequence of events leading to death

Mortality statistics are based on the underlying cause of death, which is the condition or injury that initiated the sequence of events that led directly to death. For example, when a person dies of a cerebral haemorrhage following a motor vehicle accident, cerebral haemorrhage is the direct cause of death – the motor vehicle accident is the underlying cause of death. Reporting the direct cause of death as the underlying cause is one of the most common errors seen on death certificates.

The guidelines state that the certifying doctor should identify a sequence of events leading to death, and document these in the death certificate. When a clinically improbable sequence of events is recorded, it is impossible to select the correct underlying cause of death.

**Instructions for completing the assessment table**

Mark with a tick or cross in the ‘Yes’ column if the sequence of events recorded are not clinically correct or are clinically improbable (this is an error; see Figure 7).

If the sequence is correct, mark the ‘No’ column.

**Figure 7. Examples of incorrectly filled-out death certificates with clinically improbable sequence of events**

This shows a clinically improbable sequence of events leading to death, because chronic bronchitis does not cause gangrene or diabetes. It is likely that the diabetes caused the gangrene, which led to death, and that chronic bronchitis was a significant condition. This certificate also does not state if it was type I or type II diabetes.

### Frame A: Medical data: Part 1 and 2

<table>
<thead>
<tr>
<th>1</th>
<th>Report disease or condition directly leading to death on line a</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Diabetes</td>
</tr>
<tr>
<td>b</td>
<td>Gangrene foot</td>
</tr>
<tr>
<td>c</td>
<td>Chronic bronchitis</td>
</tr>
<tr>
<td>d</td>
<td>Due to:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Other significant conditions contributing to death (time intervals can be included in brackets after the condition)</th>
</tr>
</thead>
</table>

Due to the overall poor quality of death certification practices, we often do not see the time interval recorded on death certificates with clinically improbable sequences. This makes it harder for coders to correctly identify the underlying cause of death.

### Frame A: Medical data: Part 1 and 2

<table>
<thead>
<tr>
<th>1</th>
<th>Report disease or condition directly leading to death on line a</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Uraemia</td>
</tr>
<tr>
<td>b</td>
<td>Due to: Cataract</td>
</tr>
<tr>
<td>c</td>
<td>Due to: Ischaemic heart disease</td>
</tr>
<tr>
<td>d</td>
<td>Due to:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Other significant conditions contributing to death (time intervals can be included in brackets after the condition)</th>
</tr>
</thead>
</table>
4. Ill-defined or poorly-specified conditions entered as underlying cause of death

Entering ill-defined or vague conditions on death certificates are of no value for public health officials, and do not provide any information for decision-makers to help them design preventive health programs.

**Organ failure** (e.g., heart or liver failure) is not acceptable as an underlying cause of death. The disease or condition causing the organ failure should be entered as the underlying cause, if possible.

Similarly, **septicaemia** should not be used as an underlying cause. This is known as an ill-defined condition and should be avoided. Instead, the source of the infection (e.g., septic abortion, community-acquired pneumonia) should be identified whenever possible.

**Symptoms and signs** (e.g., chest pain, cough, fever) are not diseases or conditions, and should not be used on the death certificate. The disease or conditions that caused them should be reported.

Doctors should **not** report the **mode of dying** on the death certificate. This includes terms such as ‘cardiopulmonary arrest’ or ‘brain death’.

When reporting the death of an older person, **do not use** the terms ‘senility’ or ‘old age’. If possible, the doctor should enter a specific cause of death.

Ill-defined conditions are usually coded to unusable (previously referred to as ‘garbage’) codes, which belong to four main types:

- impossible underlying causes, including signs and symptoms (R codes)
- intermediate causes
- modes of dying (e.g., cardiac or respiratory arrest)
- unspecified causes within a larger death category (e.g., ill-defined site of cancer or injury, unspecified accident).

**Instructions for completing the assessment table**

Mark with a tick or cross in the ‘Yes’ column if ill-defined conditions are entered as the underlying cause of death (this is an error; see **Figure 8**).

Also specify what type of ill-defined condition was listed. If the underlying cause of death is not ill-defined, mark the ‘No’ column.
Figure 8. Examples of incorrectly filled out death certificates with an ill-defined condition listed as the underlying cause of death

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
<th>Cause of death</th>
<th>Time interval from onset to death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Report disease or condition directly leading to death on line a</td>
<td><strong>Cardio-respiratory failure</strong></td>
<td><strong>30 mins</strong></td>
</tr>
<tr>
<td>b. Due to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Due to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Due to:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Other significant conditions contributing to death (time intervals can be included in brackets after the condition)

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
<th>Cause of death</th>
<th>Time interval from onset to death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Report disease or condition directly leading to death on line a</td>
<td><strong>Chest pain</strong></td>
<td><strong>10 hours</strong></td>
</tr>
<tr>
<td>b. Due to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Due to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Due to:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Other significant conditions contributing to death (time intervals can be included in brackets after the condition)
5. Abbreviations used in certifying the death

Doctors should not use abbreviations when certifying deaths, because abbreviations can mean different things to different people. Coders may misinterpret the abbreviation and code the death to a nonrelevant code.

Below are examples of common abbreviations that should not be used:

- MI
- HT
- HONK
- ESRD
- K/C/O
- HTN
- DM
- IHD
- AAA
- DEH
- BHP

Instructions for completing the assessment table

Mark with a tick or cross in the ‘Yes’ column if abbreviations are used in certifying the death (this is an error).

If abbreviations are not used, mark the ‘No’ column.
6. Illegible handwriting

Death certificates need to be completed clearly so that coders and other users can read the information provided in the death certificate. However, illegible handwriting makes it hard for coders to correctly identify the stated condition.

**Instructions for completing the assessment table**

Mark with a tick or cross in the ‘Yes’ column if the handwriting on the certificate is illegible (this is an error; see Figure 9). If the handwriting is legible, mark the ‘No’ column.

**Figure 9. Examples of illegible handwriting on filled out death certificates**
7. Additional errors

As well as the major errors previously identified and described, there may be other errors on the death certificate (described below).

**Leaving blank lines within the sequence of events**

When filling in a death certificate, the doctor should use consecutive lines in Part 1 of the death certificate starting at Line 1a. The underlying cause of death should be recorded in the bottom-most line that is filled-in in Part 1. There should not be any blank lines within the sequence/chain of events leading to death. The death certificate is a legal document, and it is important that it cannot be easily altered or changed.

**Instructions for completing the assessment table**

Mark with a tick or cross in the ‘Yes’ column if there are blank lines within the sequence of events (this is an error). If the sequence is recorded on consecutive lines, mark the ‘No’ column.

**External causes of death**

When certifying deaths from injuries, poisonings and other external causes, the circumstances of death should be reported as the underlying cause of death. The external cause should be described in as much detail as possible. For an example, ‘motor vehicle accident’ is too broad; instead, ‘pedestrian hit by motor car at night’ is providing important details for prevention.

In a case of suicide, simply entering ‘suicide’ is insufficient; the method of suicide should also be entered. For example, ‘suicidal death by hanging’ is a clear description.

For deaths as a result of injuries, the certifier should include details on (see Figures 10 & 11):

**Figure 10. Example of a correctly filled-in death certificate with adequate information for an external cause of death**

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
<th>Cause of death</th>
<th>Time interval from onset to death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>a:  <strong>Traumatic shock</strong></td>
<td>1 hour</td>
</tr>
<tr>
<td></td>
<td>b:  <strong>Multiple fractures</strong></td>
<td>5 hours</td>
</tr>
<tr>
<td></td>
<td>c:  <strong>Pedestrian hit by truck</strong></td>
<td>5 hours</td>
</tr>
<tr>
<td>2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Figure 11. Example of a correctly filled-in death certificate for an external cause of death due to poisoning**

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Report disease or condition directly leading to death on line a</td>
</tr>
<tr>
<td>a</td>
</tr>
<tr>
<td>b</td>
</tr>
<tr>
<td>c</td>
</tr>
<tr>
<td>d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2</strong> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

**Neoplasms**

When reporting deaths from neoplasms, provide detailed information about the tumour, including (see Figure 12):

- site of the neoplasm (where appropriate)
- whether benign or malignant
- whether primary or secondary (if known), even if the primary neoplasm had been removed long before death
- histological type (if known).

If the primary site of a secondary neoplasm is known, it must be stated – for example, primary carcinoma of the lung. If the primary site of a secondary neoplasm is unknown, 'primary unknown' must be stated on the death certificate.
Figure 12. Example of a correctly filled-in certificate for a cause of death due to a neoplasm

<table>
<thead>
<tr>
<th>Frame A: Medical data: Part 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)

Surgical procedures

If death was a result of a surgical procedure, the name of the procedure should include the condition for which it was performed – for example, appendectomy for acute appendicitis.

Pregnancy and maternal deaths

If the death certificate includes a pregnancy check box, it should be completed to indicate if the woman was pregnant or within 42 days of delivery when the death occurred, if that was the case.

Hypertension

It is important to state whether hypertension was essential or secondary to some other disease condition (eg chronic pyelonephritis).

Infectious and parasitic diseases

If the causative infectious agent is known, it should be noted on the certificate. It is also important to include the site of the infection, if known (eg urinary tract, respiratory tract).

General errors

Other general errors include making changes or alterations to the certificate by any other means other than drawing a line through the original text. Using correction fluid or otherwise erasing the original text are not best practice. This is because the certificate is a legal document, and changes should be clearly visible.

Another common error is not specifying units of the age (eg hours, days, months, years).

Instructions for completing the assessment table

Mark with a tick or a cross in the ‘Yes’ column if the certificate had any other errors.

If there are no additional errors, mark the 'No' column.
How to assess and apply the data

Assessing the data

Once you have reviewed the death certificates, they can be assessed in many ways. The following measures useful and easy to apply.

Calculate the percentage of death certificates correctly completed

\[
\text{Number of death certificates without any errors} \times 100
\]

\[
\text{Total Number of death certificates assessed}
\]

Calculate the percentage of death certificates with two or more errors

\[
\text{Number of death certificates with two or more errors} \times 100
\]

\[
\text{Total Number of death certificates assessed}
\]

Calculate the percentage of death certificates with a major error

\[
\frac{\text{Number of death certificates with one or more major errors}}{\text{Number of death certificates with one or more errors (major and minor)}} \times 100
\]

Calculate the percentage of errors in each category out of the total number of death certificates with errors

<table>
<thead>
<tr>
<th>Error category</th>
<th>Number of certificates with error</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major errors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Multiple causes of death per line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Missing time interval from onset to death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Incorrect or clinically improbable sequence of events leading to death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ill-defined or poorly-specific condition entered as the underlying cause of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total number of certificates with a major error</strong>*</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Minor errors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Abbreviations used in certifying the cause of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Illegible hand writing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Additional errors on the death certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total number of certificates with a minor error</strong>*</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total number of certificates with one or more errors</strong>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note that the total number of certificates with an error will likely be higher than the total number of certificates assessed, as each certificate can have more than one error.
Applying the assessment results

The assessment results can be used in several ways, such as:

- to inform the quality of cause-of-death reporting to convince hospital administrators to request improvement training and/or decide on training needs
- as a baseline and follow-up of medical certification of cause-of-death training
- to periodically audit the quality of the death certificates and to provide feedback to the certifiers.

The results can be included in hospital newsletters, presented at review meetings, and used in determining training needs and continuing quality improvement processes (Box 2).

### Box 2. Country example – Fiji

A training curriculum, handbook and a set of teaching aids to train doctors in correct death certification practice were developed in 2012. These were used in interactive workshops with 38 doctors in Fiji. The impact of the training was evaluated by pre-intervention and post-intervention tests using a vignette approach. It was also evaluated by assessing accuracy of death certification by these doctors five months after the workshops.

The findings suggested that the percentage of correctly entered death certificates increased from 33.3% (65 of 195) in pre-intervention to 66.7% (132 of 195) in post-intervention (P<0.0001). In certificates that had errors, clinically improbable sequences accounted for the highest proportion of errors both in pre-intervention and post-intervention tests.4

### Limitations of the assessment tool

The tool is designed to identify common errors in death certification practices. It is a good measure of death certification quality and overall quality of mortality statistics. However, this tool cannot assess whether the underlying cause of death was misclassified. For example, the tool cannot determine if the cause of death reported in the death certificate was the actual cause of death of the person.

However, when reviewing the death certificates, it may be possible to recognise errors that may exist in death certificates and add this information to the assessment report.

---

Annex 1: International Form of Medical Certificate of Cause of Death (WHO 2016)

**Administrative Data** (can be further specified by country)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Female</th>
<th>Male</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>D D M Y</td>
<td>D D M Y</td>
<td>Y Y Y Y</td>
</tr>
</tbody>
</table>

**Frame A: Medical data: Part 1 and 2**

1. Report disease or condition directly leading to death on line a
   - a Cause of death
     - Due to:
     - b Due to:
     - c Due to:
     - d Due to:
   - Time interval from onset to death

2. Other significant conditions contributing to death (time intervals can be included in brackets after the condition)

**Frame B: Other medical data**

- Was surgery performed within the last 4 weeks? Yes No Unknown
- If yes please specify date of surgery D D M Y Y Y
- If yes please specify reason for surgery (disease or condition) Yes No Unknown
- Was an autopsy requested? Yes No Unknown
- If yes were the findings used in the certification? Yes No Unknown

**Manner of death:**

- Disease
- Accident
- Intentional self harm
- Assault
- Legal intervention
- War
- Could not be determined
- Pending investigation
- Unknown

If external cause or poisoning: Date of injury D D M Y Y Y

Please describe how external cause occurred (If poisoning please specify poisoning agent)

**Place of occurrence of the external cause:**

- At home
- Residential institution
- School, other institution, public administrative area
- Sports and athletics area
- Street and highway
- Trade and service area
- Industrial and construction area
- Farm
- Other place (please specify): Unknown

**Fetal or infant Death**

- Multiple pregnancy Yes No Unknown
- Stillborn? Yes No Unknown
- If death within 24h specify number of hours survived
- Birth weight (in grams)
- Number of completed weeks of pregnancy Age of mother (years)
- If death was perinatal, please state conditions of mother that affected the fetus and newborn

**For women, was the deceased pregnant?**

- Yes No Unknown
- At time of death Within 42 days before the death
- Between 43 days up to 1 year before death Unknown
- Did the pregnancy contribute to the death? Yes No Unknown
Related resources and products

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Library

crvsgateway.info/library

Assessing the quality of death certificates: Rapid tool. CRVS resources and tools.

Intervention: Medical certification of cause of death. CRVS summaries.

Intervention: Mortality coding. CRVS summaries.

Reducing barriers to the accurate cause of death reporting by physicians. CRVS development series.

Training and education on medical certification of cause of death: Effective strategies and approaches. CRVS development series.

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Learning Centre

crvsgateway.info/learningcentre

Topic 4: Cause of death in CRVS systems.


University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Courses

crvsgateway.info/courses


ICD-10 coding.

Medical certification of cause of death.

Further reading


The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

Civil Registration and Vital Statistics partners:

For more information contact:
CRVS-info@unimelb.edu.au
crvsgateway.info

CRICOS Provider Code: 00116K
Version: 0717-02

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