THE UNIVERSITY OF MELBOURNE

Bloomberg Philanthropies

DATA FOR HEALTH INITIATIVE

CRVS technical guide

Medical certification of cause of death: Facilitator's guide

October 2019

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

CRVS course prospectuses
These resources outline the context, training approach, course content and course objectives for the suite of CRVS trainings delivered through the Bloomberg Philanthropies Data for Health Initiative. Each course focuses on a specific CRVS intervention or concept, and is designed to support countries to strengthen their CRVS systems and data.

CRVS Fellowship reports and profiles
The CRVS Fellowship Program aims to build technical capacity in both individuals and institutions to enhance the quality, sustainability and health policy utility of CRVS systems in Fellows' home countries. *Fellowship reports* are written by Fellows as a component of the program, and document, in detail, the research outcomes of their Fellowship. *Fellowship profiles* provide a summary of Fellows' country context in relation to CRVS, an overview of the Fellowship experiences, the research topic and the projected impact of findings.

CRVS analyses and evaluations
These analytical and evaluative resources, generated through the Initiative, form a concise and accessible knowledge-base of outcomes and lessons learnt from CRVS initiatives and interventions. They report 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. These resources have a strong empirical focus, and are intended to provide evidence to assist planning and monitoring of in-country CRVS technical initiatives and other projects

CRVS best-practice and advocacy
Generated through the Initiative, CRVS best-practice and advocacy resources are based on a combination of technical knowledge, country experiences and scientific literature. These resources are 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 worldwide.

CRVS country reports
CRVS country reports describe the capacity-building experiences and successes of strengthening CRVS systems in partner countries. These resources describe the state of CRVS systems-improvement and lessons learnt, and provide a baseline for comparison over time and between countries.

CRVS technical guides
Specific, technical and instructive resources in the form of *quick reference guides, user guides* and *action guides*. These guides provide a succinct overview and/or instructions for the implementation or operation of a specific CRVS-related intervention or tool.

CRVS tools
Interactive and practical resources designed 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 change practice and ensure countries benefit from such changes by developing critical CRVS capacity among technical officers and ministries.

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Contents

Data for Health Initiative

Globally, about 65% of all deaths, or around 35 million each year, go unrecorded. And millions of deaths do not have a documented cause. Many records do not provide medically accurate or specific information. Without this information, government officials, public health leaders and donors cannot make informed decisions on priorities including how and where to direct public health resources.

The registration of births and deaths, including the accurate recording of cause of death (COD), are the foundation of any public health system. To help countries improve public health and save lives, the Data for Health (D4H) Initiative has helped countries build and strengthen their civil registration and vital statistics (CRVS) systems. Interventions included technical assistance to increase the registration of births and deaths, improve the quality of COD information at hospitals, apply verbal autopsy to better understand probable CODs in communities, and to produce high-quality datasets and data analysis skills for policy and program analysis.

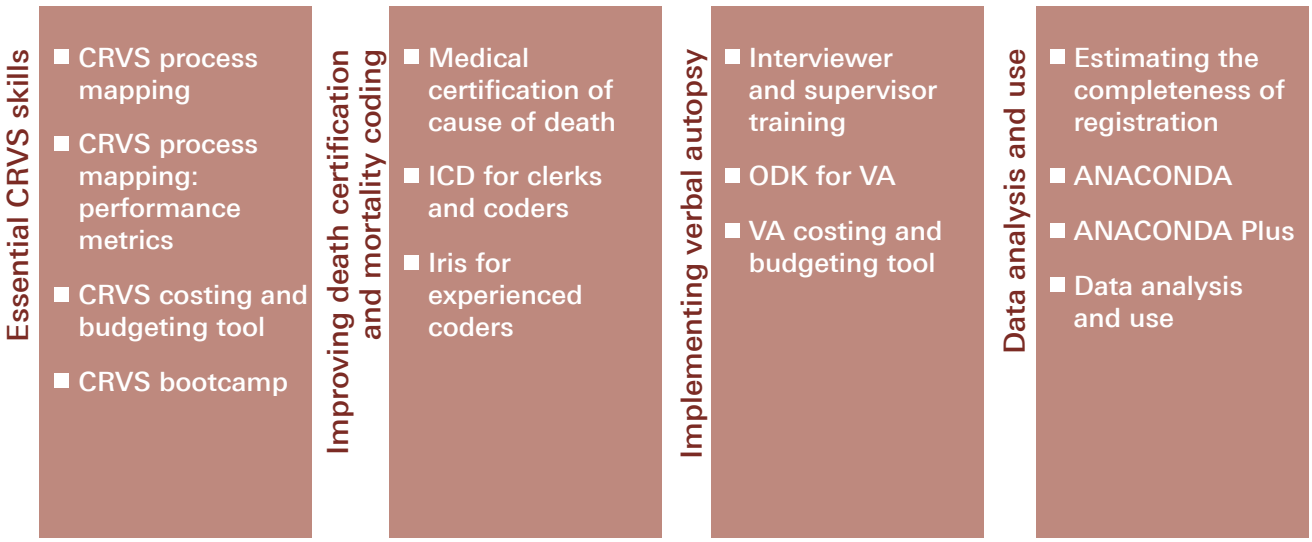
A major component of the CRVS arm of the Initiative was the development and delivery of capacity-building training materials and courses, led by the University of Melbourne.

Improving national capacity, skills and knowledge for CRVS

Improving national capacity, skills and knowledge is a critical component of any strategy to strengthen a CRVS system. Capacity development is needed to ensure high-quality registration of births and deaths, and to ascertain COD. Capacity is also needed to ensure that the data collected are properly and promptly compiled, checked, analysed and transformed into vital statistics that are used for policy and planning.

Each course has been developed with a specific training need in mind (**Figure 1**). The courses form part of a broader strategy to support CRVS systems development in countries, and should be given comparable importance as specific measures designed to improve data collection practices.

Figure 1 CRVS training courses developed



Training course: Medical certification of cause of death

Background

Measuring how many people die each year and why they died is one of the most important means for assessing the effectiveness of a country's health system. Ideally, analyses are based on the ***underlying cause of death (UCOD),*** which is recorded on the International Form of Medical Certificate of Cause of Death (often called simply the 'death certificate').

Medical certification of COD is an important part of a physician's duties because these certificates are the main source of mortality data for a country. The information recorded on a death certificate helps decision-makers to determine health priorities and allocate resources to help prevent deaths due to similar causes.

Correctly identifying the COD can be difficult, particularly for people who die outside hospitals, or had limited interaction with healthcare providers before death. Evidence also shows that physicians often do not have adequate opportunities to learn about certification as part of their medical training.[1] As a result, many countries have **very limited mortality data**, data available are often not nationally representative, and policymakers are unable to identify mortality trends in the population to make informed decisions.

Course summary

This course has been developed to help physicians and medical students to correctly certify COD using standard death certification practices that comply with the international statistical classification of diseases and related health problems. It forms part of a package of resources that includes case studies and references for self-directed learning, a number of practical resources (including guidance on how to assess the quality of death certificates), and this facilitator's manual for running workshops.

The course can be offered in two formats: the standard course for certifying physicians, or as a training of trainers' course, whereby participants are trained to become master trainers in their own country.

Course prerequisites

Standard course	Training of trainers' course
This course is for physicians and medical students with responsibility for certifying deaths. Before beginning, it is preferred that they are familiar with the World Health Organization (WHO) International Form of Medical Certificate of Cause of Death (**Annex 1**). Medical students should be at least in their fourth year of study and have an understanding of the pathophysiology of diseases processes.	This course is for physicians with responsibility for training other physicians and medical students on medical certification of COD. Participants should have: ■ familiarity with hospital/medical records *(preferred)*, and ■ capacity, willingness and time to function as master trainers for their colleagues. *It is also recommended* that some facilitators come from each region where the training course is being held.

1 Rampatige R, Riley I, Gamage S, Wijesekera N, Richards N. *Assessing the quality of death certificates: Guidance for the rapid tool.* Melbourne, Australia: Civil Registration and Vital Statistics Improvement, The University of Melbourne, Bloomberg Philanthropies Data for Health Initiative; 2018.

Target audiences

This course is designed for doctors and medical students with responsibility for certifying COD. The class size should be 15-20 doctors.

Facilitators

When running this course, it is helpful to involve officials from the ministry of health, local medical schools, professional colleges (eg medical associations) and relevant United Nations organisations (eg WHO) as guest speakers. This facilitates country ownership and engagement to ensure sustainability of the training.

Expected results

Standard course	Training of trainers' course
By the end of the course, participants should be able to:	By the end of the course, participants should be able to:
1. Explain the importance of correct certification of the COD and the role of certifying doctors in producing reliable COD statistics for a country	1. Explain the importance of correct certification of the COD and the role of certifying doctors in producing reliable COD statistics for a country
2. Distinguish between the main condition in the discharge notes and the underlying COD	2. Distinguish between the main condition in the discharge notes and the underlying COD
3. Apply the concept of UCOD	3. Apply the concept of UCOD
4. Correctly complete the International Form of Medical Certificate of Cause of Death with particular attention to Parts I and II as recommended by WHO	4. Correctly complete the International Form of Medical Certificate of Cause of Death with particular attention to Parts I and II as recommended by WHO
5. Discuss the most commonly reported errors in death certification in the hospital/country	5. Discuss the most commonly reported errors in death certification in the hospital/country
	6. Demonstrate the necessary skills to conduct workshops to train physicians and medical students on correct death certification practices.

Course content

Standard course	Training of trainers' course
Topic 1 ■ Importance of correct certification of COD and the role of certifying doctors in producing reliable CODs statistics for a country ■ Importance of correct death certification to produce accurate mortality statistics, and inform public health policy and planning and the allocation of resources ■ Current quality of death certification in the country and around the world ■ Role of doctors in improving the quality of death certification in the country ■ Different uses of death certificates ■ Legal, ethical and confidentiality issues related to death certification **Topic 2** ■ Concept and definition of UCOD ■ Public health utility in correctly identifying UCOD **Topic 3** ■ Introduction to the International Form of Medical Certificate of Cause of Death ■ Correctly completing identification data in the death certificate ■ Correctly completing the International Form of Medical Certificate of Cause of Death with particular attention to Parts I and II as recommended by WHO ■ Completing a death certificate, including explanation of the sequence of events leading from the UCOD and the relevance of contributing causes ■ Case-based examples on completing death certificates with explanations ■ Instructions for certifying commonly occurring, specific CODs	The **training of trainers' course** also covers two additional learning objectives: **Topic 4** ■ Introduction to the University of Melbourne death certification assessment tool ■ Discussion on common errors on death certificates: - multiple causes per line - approximate interval between onset and death - leaving blank lines within the sequence of events - abbreviations used when certifying the death - illegible handwriting - incorrect or clinically improbable sequence of events leading to death - ill-defined conditions entered as the underlying - cause of death **Topic 4** ■ Demonstrate the skills to conduct workshops to train physicians and medical students on correct death certification practices ■ Develop a plan of action for in-country, hospital, or regional training programs ■ Identify essentials in planning a training program ■ The application of adult training principles ■ Practice sessions in running a training programs for physicians

Duration

Ideally, the standard course occupies one day; however, it can be condensed into a one- or two-hour summary presentation for delivery as part of regular staff meetings or induction programs. The training of trainers' course requires at least one and a half days (two days if there is to be time for participants to actively demonstrate and practice their new training skills).

Course materials

- *Handbook for doctors on cause of death certification* (https://crvsgateway.info/file/4155/57)
- *Assessing the quality of death certificates: Guidance for the rapid tool* (https://crvsgateway.info/file/4153/62)
- *Assessing the quality of death certificates: Rapid tool* (https://crvsgateway.info/file/5134/63)
- *Medical certification of cause of death: Quick reference guide* (https://crvsgateway.info/file/5194/58)
- *Medical certificate of cause of death: Undergraduate curriculum*
- *Medical certification of cause of death: Facilitator's guide* (this document)
- WHO International Form of Medical Certificate of Cause of Death (**Annex 1**)
- Sample agenda (**Annex 2**)
- Logistics for certification training (**Annex 3**)
- Checklist for trainers (**Annex 4**)
- Participant bingo sheet (**Annex 5**)
- Perinatal death certificate (**Annex 6**)
- Feedback form (**Annex 7**)
- Planning template (**Annex 8**)
- Set of PowerPoint slides
- Case studies (provided in the PowerPoint slides).

Teaching and learning methods

Course delivery is based on adult learning principles. A range of teaching methods, such as presentations, discussions, case studies, exercises and group work, will be used to address the varying learning styles of course participants.

The course will use a participatory approach with a combination of lectures, practical seminars, group work and private study.

Throughout this manual, additional tips and activities are included to highlight teaching techniques or alternate participatory activities that can be incorporated into the training.

Monitoring and evaluation

The evaluation of the training course can be done in three ways:

1. using pre- and post-test using case scenarios (to measure the knowledge transfer)
2. using a participant questionnaire (to measure participant satisfaction with the course)
3. pre- and post-test death certification practices using D4H death certification assessment tool (to measure sustained change of certification practices).

Summary of course flow

Each day has a theme. This makes it easier to explain the flow and ensure that every session relates to the whole.

Standard course

Day	Theme	Sessions	Duration
-	Preparation for training by facilitators	Review of agenda Review and preparation of materials Assignment of roles Arrangement of resources, venue etc.	
Day 1	Certification of cause of death	*Session 1* Welcome and introduction	30 minutes
		Session 2 Pre-evaluation	30 minutes
		Session 3 Overview of death certification	20 minutes
		Session 4 Legal implications and confidentiality	20 minutes
		Session 5 General guidelines on completing death certificates	20 minutes
		Session 6 Understanding the International Form of Medical Certificate of Cause of Death	60 minutes
		Session 7 Guidelines for recording specific conditions	30 minutes
		Session 8 Group work	90 minutes
		Wrap-up and close	20 minutes

Training of trainers' course

Day	Theme	Sessions	Duration
-	Preparation for training by facilitators	Review of agenda Review and preparation of materials Assignment of roles Arrangement of resources, venue etc.	
Day 1	Certification of cause of death	*Session 1* Welcome and introduction	30 minutes
		Session 2 Pre-evaluation	30 minutes
		Session 3 Overview of death certification	20 minutes
		Session 4 Legal implications and confidentiality	20 minutes
		Session 5 General guidelines on completing death certificates	20 minutes
		Session 6 Understanding the International Form of Medical Certificate of Cause of Death	60 minutes
		Session 7 Guidelines for recording specific conditions	30 minutes
		Session 8 Group work	90 minutes
Day 2	Adult learning	*Session 1* Revision	30 minutes
		Session 2 Resources for training	30 minutes
		Session 3 Certification assessment tool	90 minutes
		Session 4 Steps for successful training	60 minutes
		Session 5 Developing a plan of action	90 minutes
		Session 6 Practice sessions	120 minutes
		Wrap-up and close	20 minutes

Day-by-day in detail

Day 1: Cause of death and certification

(8 sessions, total time required 5 hours)

Session 1: Welcome and introduction to the training

Duration	30 minutes
Prepared ahead of time	Arrange for appropriate space to conduct the training Have slides ready to present and printed copies to hand out: ■ '01_Welcome_introduction.pptx'
Additional materials needed	One printed copy per participant: ■ Course/training agenda (Annex 2) ■ Instructions for participant bingo (optional) (Annex 5)
Purpose and content	To welcome all participants to the training and provide an opportunity for them to get to know the trainers and one another. A brief overview of the training schedule should be provided and general housekeeping items addressed. Try to get a ministry of health official/hospital administrator/senior clinician to open the session.
Objectives **At the end of this session, participants will be …**	■ Familiar with the trainers ■ Familiar with the other participants ■ Familiar with the schedule
Getting started	Welcome the participants and introduce the trainers. Explain the course schedule, times for coffee and meal breaks, and any other housekeeping items. Slides will be presented during the training and provided at the beginning of each session, or end of the training, in hard or digital copy. **Purpose:** To introduce each participant and make participants comfortable in speaking during the training. **Procedure:** Ask each participant to find a partner (groups of two). If there is an odd number, one group can be of three. Go around the room and ask participants to introduce their partner to the rest of the group.

Optional activity: Participant bingo

Purpose

Activities like this one can be used as getting-to-know-you activities, as in-between activities to redirect participants' energy and attention, or to use up additional time. There are hundreds more of these kinds of engaging activities for people; find activities that will best suit your participants and the dynamics of your group.

ESSENTIAL QUESTIONS: How are we similar? How are we different?

OBJECTIVES: Participants get to know each other by asking each other questions, writing down each other's names, and identifying similarities and differences.

SUMMARY OF THE ISSUE: This exercise is a getting-to-know-you icebreaker that gets participants up and moving around and talking to each other.

MATERIALS: Bingo sheets, pens/pencils.

LENGTH OF SESSION: 15–20 minutes (*participants often want lots more extra time for this activity, you may need to draw it to an end before everyone has finished*).

Procedure

1. Prepare a bingo sheet for each participant (an example sheet is provided in Annex 5; you will need to change it to suit your participants).
2. Explain to participants that this is a way for them to learn about each other and find out what they have in common and how they differ.
3. Explain that for this game they will have 10 minutes to fill out their bingo sheets with the names of their peers. Explain that they will walk around asking each other questions from the bingo box and then write their friend's name down for that box. Give an example. You could give instructions like: 'If the bingo box says "brown eyes" you might ask your friend "do you have brown eyes?" or "what colour eyes do you have?" then you would write their name in the box.' The goal is to get all the bingo boxes filled in, but it is not a race or competition.
4. Pass out the bingo sheets and pens or pencils. Direct the participants to write their own name in one box and one box only!
5. Direct the participants to stand up and begin mingling and filling in their bingo sheets. Give participants 7–10 minutes for this activity.
6. Bring participants back to their seats. Remind them it is okay if they did not fill in the entire sheet.
7. Read out a box and ask participants to stand up if the text fits them. Read a few boxes, pausing after each one to give participants time to sit back down.

Session 2: Pre-evaluation

Duration	30 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '02_Pre_evaluation.pptx'
Additional materials needed	One printed copy per participant: ■ Local version of the medical certificate of cause of death ■ Case studies ■ Assessment papers
Purpose and content	To assess current death certification practices, and conduct a pre-evaluation assessment. This provides an indication of the baseline level of knowledge and skills among participants, which can be re-assessed after the course to assess the effectiveness of the training.
Objectives **At the end of this session, participants will be …**	Familiar with the local version of the medical certificate of cause of death Aware of their ability to accurately complete a death certificate
Getting started	**Purpose:** Hand out death certificates and case studies and ask participants to assign a COD within a specific period. Usual number for a pre-test would be 6–10 cases and time allocation should be around 30 minutes.

Session 3: Overview of death certification

Duration	20 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '03_Overview.pptx'
Additional materials needed	Flip chart or whiteboard and markers
Purpose and content	To give an overview of COD certification, covering the following topics: ■ The responsibilities of doctors around death certification ■ How the information recorded on death certificates helps decision-makers determine health priorities for the prevention of deaths ■ That clinical diagnosis is the basis for therapeutic decision-making ■ The importance of certifying deaths
Objectives **At the end of this session, participants will be …**	■ Define the purpose of COD certification ■ Describe the uses of good-quality mortality data, based on correct death certification practices
Getting started	**Procedure:** Group discussion. Questions for discussion: ■ How many deaths on average do you certify per month/year? ■ Can you remember what you wrote on the last death certificate you filled in? ■ How much training/instruction have you received in certifying CODs? *Note to facilitator: Ask participants to write their answers on Post-it notes. Get them to stick the notes on a wall or the whiteboard and use this to start the discussion.*

Topic 3.1: Death certification – what is the purpose?

Note to facilitator:

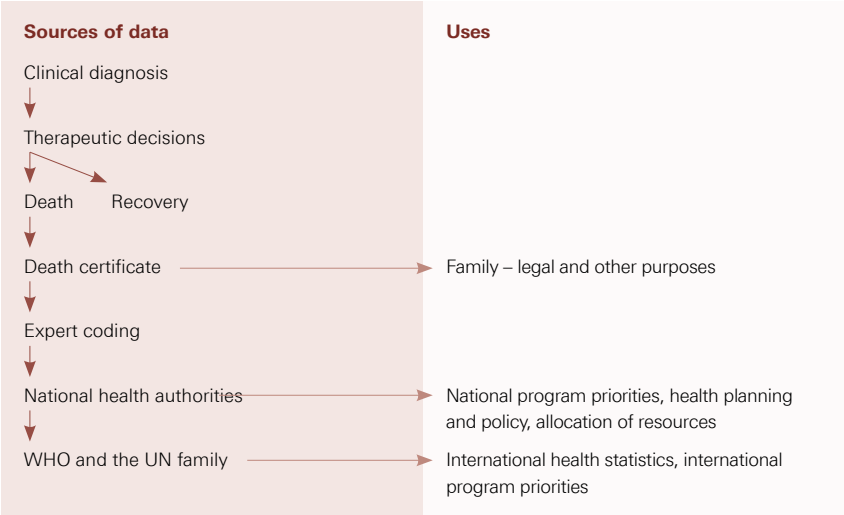
To stimulate participants to think about the current situation of death certification in their country, show the following video: https://www.youtube.com/watch?v=ZCCgEW5Bikg (approximate length is 5–7 minutes). It may be a good idea to download the video before the training begins and save a copy to your computer, otherwise you will need a reliable internet connection. Ensure the speakers on your computer are working, so participants can hear the audio.

- Clinical diagnosis is the basis for therapeutic decision-making.
- When a diagnosis is entered onto a death certificate, it establishes the COD for that person.
- This information is then used in new and quite different ways from its original use.
- This information is used primarily to inform policymakers about the leading CODs in their country or district, and how these are changing.

Note to facilitator:

Give an example of setting health priorities in a low- and middle-income country (preferably your own country/region) without reliable COD data and explain the difference made by good-quality, complete data

Figure 2 Uses of cause of death data at individual and aggregated levels



UN = United Nations; WHO = World Health Organization

Topic 3.2: Death certification and families

A death certificate is often important for families:

Evaluation

This curriculum contains assessments for learning areas as needed.

- to directly obtain permission for funeral arrangements
- for other legal purposes, including wills and testaments
- so they are aware of conditions that may occur or could be prevented in other family members (through knowing the UCOD of the deceased).

Note to facilitator:

Give an example of knowing the importance of breast cancer or heart disease as a COD and how families can use this knowledge to reduce the likelihood of the disease occurring among themselves and future generations.

Topic 3.3: What happens after a death is certified?

1. **Coding of death certificates**
   - The COD is coded by an expert who is trained in applying the international statistical classification of diseases and related health problems, currently in its 10th revision (ICD-10).
   - Mortality coding can be done locally at the hospital, at a regional centre or nationally.
   - The ICD-10 is managed by WHO and classifies thousands of diseases as individual items, and groups similar diseases together in a meaningful way.
2. **Tabulation of death certificates**
   - The coded certificates are then tabulated.
   - This tabulation forms the basis for national mortality statistics.
   - These are critical for establishing national health program priorities, for health planning and policy, and to inform debate about the allocation of health resources.
   - Good-quality mortality statistics are fundamental for the prevention of premature deaths.
3. **Reporting to other organisations**
   - National mortality statistics, in part based on coded death certificates, are used by regional and international health organisations to determine regional and global disease burden and trends of disease.
   - Disease burden data are the basis for decisions made for regional and global resource allocation to initiatives to promote good health, particularly at population level.

Session 4: Legal implications and confidentiality

Duration	20 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '04_Legal.pptx''
Additional materials needed	Flip chart, marker pens, WHO 2016 International Form of Medical Certificate of Cause of Death (Annex 1), local version of the medical certificate of cause of death
Purpose and content	To explain the legal and confidential nature of death certificates
Objectives **At the end of this session, participants will be …**	■ Discuss the legal aspects of death certification and its impact ■ Discuss issues related to confidentiality regarding death certification ■ Describe the importance of accurately documenting identification data in the death certificate
Getting started	**Discuss: Death certificate – a legal document** A death certificate is a legal document with implications and uses that vary from country to country. Hence, it is important that death certificates are completed accurately. A certificate could be needed to proceed with burial or cremation of the body. The family may need it to execute the deceased person's will. In countries with a coronial system in place, the physician may be required to report unnatural deaths to the coroner for inquest or postmortem to determine the cause and circumstance of the death. The process of notification differs between countries. Physicians need be aware of the correct process of reporting. *Note to facilitator: Discuss the reporting process in the country setting. If you are unfamiliar with the country, seek information from a credible source (such as the department of legal medicine or a forensic medicine expert). If you are asked any specific questions on the legal framework of the country, and do not know the answer, do not guess. Tell the participants you do not know, but will look into it and get back to them.*

Topic 4.1: Generating statistics from death certificates

The doctor or hospital will be required to report details of the death to national authorities such as the:

- health department
- civil registrar
- national statistics office.

In most countries details of the death and the circumstances of the deceased person are stored in a database. In some countries these data are de-identified.

Note to facilitator:

Refer to and use the national statistics for the country.

Topic 4.2: Confidentiality

- Within the above limits, the doctor has a duty to maintain confidentiality about the COD.
- This duty is to the family of the deceased person.
- Information on the death certificate can be used for research purposes, as long as the deceased is not identifiable by name or other means.
- The doctor should not reveal the details of a death certificate to a third party unless:
  - they are legally required to do so
  - they have obtained prior consent from the next of kin of the deceased.

Topic 4.3: Identification data

This information is of critical importance to correctly identify the deceased for both legal and statistical purposes. Details vary from country to country but are likely to include:

- date and place of death
- full name and place of residence
- sex and race/ethnicity
- age
- profession or occupation.

Note to facilitator:

Refer to the WHO International Standard Form of Medical Certificate of Cause of Death

3 World Health Organization. Twentieth World Health Assembly, 1967. Available at: apps.who.int/iris/bitstream/10665/85800/1/Official_record160_eng.pdf (accessed 8 November 2018).

4 World Health Organization. Mortality. Available at: who.int/topics/mortality/en/ (accessed 31 October 2018).

Session 5: General guidelines on completing death certificates

Duration	20 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '05_Guidelines.pptx'
Additional materials needed	Marker pens, death certificates, case studies
Purpose and content	To explain how death certificates are completed
Objectives **At the end of this session, participants will be …**	Understand the general instructions when completing death certificates
Getting started	**Discuss: General instructions for completing death certificates** ■ It is important that doctors pay attention to general guidelines for death certification because they will help coders correctly identify and code the death. ■ In most countries, coders are not medically trained, so even a small misinterpretation may result in confusion and the incorrect UCOD being selected. ■ Complete each item in order, following instructions specific to your country: - The entry must be legible. Use black ink (*check country specifications*). - Do not make alterations or erasures. If you want to delete an entry, draw a single line across it. Do not use correction fluid. - Verify the accuracy of identification data, including the correct spelling of the name of the deceased, with the family of the deceased. - Do not use abbreviations. - Enter only one disease condition or event per line *Note to facilitator: Discuss examples of death certificates that are incomplete/illegible and with abbreviations. If possible, use actual (de identified) examples from the country.*

Session 6: Understanding the International Form of Medical Certificate of Cause of Death

Duration	60 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '06_International_Form.pptx'
Additional materials needed	Marker pens, death certificates, case studies
Purpose and content	To introduce the International Form of Medical Certificate of Cause of Death
Objectives **At the end of this session, participants will be …**	Complete death certificates accurately
Getting started	**Discuss: Cause of death** *'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'.*[2] **Discuss: 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'.*[2] **Discuss: International Form of Medical Certificate of Cause of Death** ■ The International Form of Medical Certificate of Cause of Death (referred to hereafter as the death certificate) is recommended by WHO for certification of death in all countries. ■ One way of looking at the death certificate is that it provides a framework for the organisation of clinical diagnoses used for public health purposes. *Note to facilitator: Hand out death certificates to all the trainees and go through all the sections of the certificate. Have a discussion about the relevance of all the sections of the certificate.*

Topic 6.1: The death certificate

The death certificate is divided into three sections (**Figure 3**):

- Part 1 – including diseases or conditions directly leading to death and antecedent causes.
- Part 2 – documents other significant conditions.
- A column to record the approximate interval between onset and death. Before reviewing the sections in detail, it is essential to understand the following concepts.

In most countries details of the death and the circumstances of the deceased person are stored in a database. In some countries these data are de-identified.

2 World Health Organization. 1967. *Twentieth World Health Assembly. Part I: Resolutions and Decisions.* Geneva, World Health Organization. Available at http://apps.who.int/iris/bitstream/10665/85800/1/Official_record160_eng.pdf

Figure 3 International Form of Medical Certificate of Cause of Death (Frame A: Medical data)

Frame A: Medical data: Part 1 and 2				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a		
		b	Due to:	
		c	Due to:	
		d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)				

Part 1

Part 1 of the death certificate has four lines for reporting the sequence of events leading to death; these are labelled 1(a), 1(b), 1(c) and 1(d).

The direct COD is entered at 1(a). If the death was a consequence of another disease or condition, this underlying cause should be entered at 1(b).

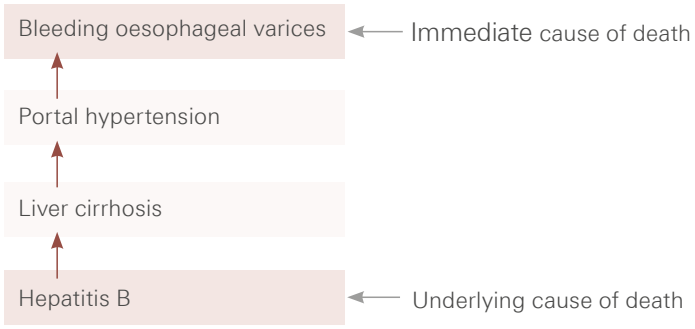
If there are more events leading to death, these are written in order at 1(c) and 1(d).

Note to facilitator:

Refer to case study 1. Ask the participants to write the COD and explain why they chose that cause. Repeat this process with the other case studies. In all cases ask for alternative sequences that the participating doctors may suggest.

Case study 1

A 50-year-old woman was admitted to the hospital vomiting blood and was diagnosed as having bleeding oesophageal varices. Investigation revealed portal hypertension. The woman had a history of hepatitis B. Three days later, she died.



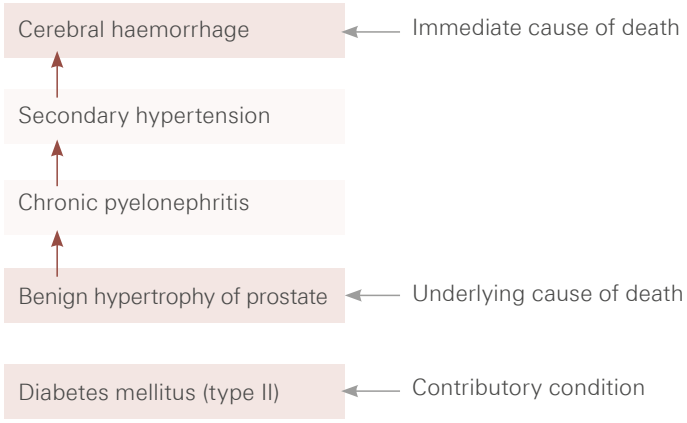
Explanation

It is extremely important that the underlying cause of each death is correctly determined and accurately recorded. In this case, bleeding oesophageal varices was the direct COD and hepatitis B was the UCOD. Knowing this, the public health response is to implement immunisation programs against the hepatitis B virus to prevent such deaths in future.

Note to facilitator: discuss why cirrhosis is not the UCOD in this scenario. Discuss different underlying causes that can cause liver cirrhosis (eg cancers, alcohol etc).

Case study 2

A man dies of cerebral haemorrhage due to secondary hypertension as a result of chronic pyelonephritis.



Explanation

The chronic pyelonephritis was due to outflow obstruction, which was due to benign prostatic hypertrophy. He also had a history of diabetes mellitus, which had been diagnosed five years before his death. Diabetes mellitus, which is not in the sequence of events leading to death, would have contributed to the death, and therefore should be entered in Part 2 of the death certificate.

Note to facilitator: discuss with students the other possible causal sequences leading to death:

- *Assuming that Diabetes is poorly controlled and outflow obstruction due to prostatic hypertrophy is minimal, Diabetes could be considered the cause for chronic pyelonephritis.*
- *Considering the long lag between onset of Diabetes mellitus and death, cerebral haemorrhage could be considered the underlying cause of death.*

Things to keep in mind while completing Part 1

- Always use consecutive lines starting at 1(a); never leave blank lines within the sequence of events.
- If there is only one COD, it is entered at 1(a).
- Each condition below 1(a) is a cause of the condition above it – that is, it is an antecedent cause.
- The initiating cause in the sequence is the underlying cause.
- The following examples are provided to highlight how a death certificate should be completed depending on the number of events there are in the sequence leading to death.

Note to facilitator:

Instruct students to complete a death certificate for case studies 3, 4, 5 and 6. After each case study, ask the students to write their answer for the UCOD on a Post-it note and then explain how they reached that particular answer.

Case study 3

A 56-year-old man dies from acute myocardial infarction within 3 hours of its onset. He did not have any other illnesses.

Frame A: Medical data: Part 1 and 2				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Acute myocardial infarction*	*3 hours*
		b	Due to:	
		c	Due to:	
		d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)				

Explanation

While it is rare to only have one event leading to death, it does occur.
In these cases, COD would be reported at 1(a) and it would also be the UCOD.
If more information is available in the sequence of events leading to death, these must be reported using the required number of lines provided at 1(b), 1(c) and 1(d).

Case study 4

A 56-year-old person dies from abscess of the lung after five days, which resulted from lobar pneumonia of the left lung (duration of two weeks).

Frame A: Medical data: Part 1 and 2				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Abscess of lung*	*5 days*
		b	Due to: *Lobar pneumonia left lung*	*2 weeks*
		c	Due to:	
		d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)				

Explanation

When there are two CODs reported, these are written in at 1(a) and 1(b).
In this case, the UCOD is recorded in line 1(b).

Case study 5

A 23-year-old man dies from traumatic shock one hour after sustaining multiple fractures when he was hit by a truck. The accident happened 5 hours ago.

Frame A: Medical data: Part 1 and 2				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Traumatic shock*	*1 hour*
		b	Due to: *Multiple fractures*	*5 hours*
		c	Due to: *Pedestrian hit by truck*	*5 hours*
		d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)				

Explanation

When there are three CODs reported, these are written on lines 1(a), 1(b) and 1(c).
In this case, the UCOD is recorded on line 1(c).

Note to facilitator: Discuss with students why, from a public health perspective, it is more important to know this death was caused by a road accident, rather than by traumatic shock.

Case study 6

A 36-year-old man with chronic alcoholism for 10 years and a previous history of duodenal ulcers (for three years) was admitted to the hospital with acute abdominal pain and high fever. Initial chest x-rays showed free air under both domes of his diaphragm. He was diagnosed with peritonitis from peptic ulcer perforation. Emergency exploratory laparotomy on his first day of admission showed a 2cm duodenal ulcer size on the anterior wall of the first part of the duodenum. Five days later, the patient had high fever with chills, and his abdominal ultrasound revealed sub-phrenic abscess under the right diaphragm. A revision exploratory laparotomy was planned. However the patient suddenly showed signs of septic shock that night, had a sudden cardiac arrest, and died within two hours of septic shock..

Frame A: Medical data: Part 1 and 2				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Septic shock*	*2 hours*
		b	Due to: *Right sub-phrenic abscess*	*1 day*
		c	Due to: *Perforated duodenal ulcer*	*5 days*
		d	Due to: *Duodenal ulcer*	*3 years*
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			*Chronic alcoholism (10 years)*	

Explanation

The figure above shows that four lines have been used on the death certificate.
The UCOD is reported in line 1(d).

Note to facilitator: Discuss the following points with the students:

- *Chronic alcoholism contributed, but did not directly cause the death, and is therefore recorded in Part II of the certificate.*
- *The term 'cardiac arrest' is a mode of dying and should not be written on the certificate.*

Reporting on more than four causes in Part 1 of the death certificate

- In rare situations, there could be more than four conditions leading to death (Figure 4).
- In this case, you can add a line 1(e) and record the UCOD in that line.
- If there is not enough space to add an extra line, 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.
- Do not record the UCOD in Part 2 of the death certificate.

Figure 4: A correctly completed death certificate with multiple causes per line

***Frame A*: Medical data: Part 1 and 2**				
1 Report disease or condition directly leading to death on line a Report chain of events in 'due to' order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Cerebral compression*	*30 mins*
		b	Due to: *Extradural haemorrhage*	*3 hours*
		c	Due to: *Fractured temporal bone*	*3 hours*
		d	Due to: *Blunt trauma to head DUE TO car collided with a pick-up truck on public highway*	*3 hours*
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)				

Note to facilitator:

Set some time aside to discuss each of these cases and discuss the potential errors in certifying these cases. Discuss how swapping the CODs would impact on the utility of the data.

Part 2 of the death certificate

This records all other significant or contributory diseases or conditions that were present at the time of death but did not directly lead to the UCOD listed in Part 1.

Note to facilitator:

Work with students to complete case study 7.

Case study 7

A 60-year-old hypertensive patient was admitted to the surgical casualty ward with severe abdominal pain and vomiting. She was diagnosed as having strangulated femoral hernia with a bowel perforation, which developed approximately seven days ago.

She underwent surgery to release the hernia and resect the intestine, with an end-to-end anastomosis. Two days after the surgery she developed signs of peritonitis and died.

***Frame A*: Medical data: Part 1 and 2**				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Peritonitis*	*2 days*
		b	Due to: *Bowel perforation*	*1 week*
		c	Due to: *Strangulated femoral hernia*	*1 week*
		d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			*Hypertension*	

Explanation

In this example, the UCOD is strangulated femoral hernia.

Hypertension, which is not in the sequence of events leading to death but would have contributed to the death, should be entered in Part 2 of the death certificate.

Approximate interval between onset and 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.
- A 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 next to the condition, for example, 'generalised arteriosclerosis (unknown)' or 'hypertension (five years)'.
- These intervals are usually established by the doctor on the basis of available information.
- In some cases, the 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, write 'unknown'. This is very important. Do not leave this column blank.
- This information is useful for coding certain diseases and provides a check on the accuracy of the reported sequence of conditions.
- Therefore, it is important to fill in these lines.

Note to facilitator:

Work with students to complete case study 8.

Case study 8

A 58-year-old man presented at a clinic with a long history of haemoptysis and weight loss. The diagnosis was advanced pulmonary tuberculosis, reactivation type with cavitations, perhaps of eight years' duration.

The patient also suffered from generalised arteriosclerosis, probably of long duration. Directly after the admission, the patient had an acute and massive pulmonary haemorrhage and died about 10 hours later.

***Frame A*: Medical data: Part 1 and 2**				
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	*Pulmonary haemorrhage*	*10 hours*
		b	Due to: *Advanced pulmonary tuberculosis*	*8 years*
		c	Due to:	
		d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			*Generalised arteriosclerosis (unknown)*	

Note to facilitator: Discuss with students the importance of completing the time intervals on a death certificate. Note that this is one aspect of certification that is done very poorly around the world, and that when time intervals are included, it provides coders with more complete information to ensure the accuracy of the clinical coding.

Session 7: Guidelines for recording specific conditions

Duration	30 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '07_Specific_Conditions.pptx'
Additional materials needed	Marker pens, death certificates, case studies
Purpose and content	To give an overview of the key guidelines for recording specific conditions on death certificates
Objectives **At the end of this session, participants will be …**	Articulate the key guidelines for recording specific conditions on a death certificate
Getting started	**Discuss: General instructions for completing death certificates** Doctors need to give as full a description of disease conditions as possible to help the classification and coding process for each death certificate.

Topic 7.1: Neoplasms

When reporting deaths due to neoplasm, try to provide detailed information about the tumour. This should include:

- site of the neoplasm
- behaviour (eg benign, malignant, carcinoma in situ etc.)
- 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.

Topic 7.2: Surgical procedures

If the death is a consequence of one or more surgical procedures, the names of the procedures should include the condition for which it was performed; for example, 'laparotomy due to intestinal obstruction'. If a death happens after surgery, the reason for which the surgery was performed will become the underlying cause of death. However, if there is any evidence of surgical misadventure, the complication due to surgery becomes the underlying cause.

Topic 7.3: Pregnancy and maternal deaths

If a woman dies during pregnancy or within 42 days of the termination of a pregnancy, the fact that the woman was pregnant should be indicated on the certificate, even if the direct COD is not related to the pregnancy or to childbirth.

For example, the entry could read 'pregnant, period of gestation 26 weeks'.

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

Note to facilitator:

If the country has specific requirements related to certifying maternal deaths, these should be discussed (for example, a maternal death audit committee or reporting mechanism. In such situations, physicians are responsible for reporting the death to the relevant channels and should not issue a death certificate).

Topic 7.4: Hypertension

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

Hypertension is usually a contributory cause of death, rather than the underlying cause of death. For example, if a person dies from a cerebrovascular disease, but also had hypertension, 'primary hypertension' should be recorded in Part 2 of the medical certificate of cause of death.

Topic 7.5: Diabetes mellitus

The guidelines related to documenting COD when the patient has diabetes are complex:

- Diabetes mellitus can be the UCOD or a risk factor to another UCOD.
- As a rule, if the patient dies from a complication of diabetes mellitus (eg diabetes nephropathy) indicate diabetes mellitus (type I or II) as the UCOD.
- If patient dies from stroke or acute myocardial infarction, document diabetes in Part 2 as a risk factor to the UCOD.

Topic 7.6: Infectious and parasitic diseases

If the causative agent is known, it should be noted on the certificate.

If the causative agent is unknown, write 'cause unknown'.

It is also important to include the site of the infection, if known (eg urinary tract, respiratory tract).

Topic 7.7: Injuries, poisoning and external CODs

A death from, for example, a motor vehicle accident, suicide or homicide, is said to have an external COD. These are also often referred to as 'unnatural deaths'. Doctors may not always have sufficient evidence to decide on the circumstances of the events that led to death (for example, to determine if the death was a homicide or accident).

When a death occurs because of injury or violence, the external cause (the circumstance of the injury) should always be listed as the underlying cause.

The external cause should be described in as much detail as possible.

For example, 'motor traffic accident' is not sufficiently accurate, but 'pedestrian hit by motor car' is clear and accurate. In a case of suicide, simply entering 'suicide' is insufficient; the method of suicide should be entered – 'suicidal death by hanging' is a clear description.

Note to facilitator:

Countries may have their own specific instructions on how to certify deaths due to injuries, poisonings, and other external causes. In countries with a coronial system in place, doctors may need to inform the coroner about deaths from causes in this category before writing a death certificate. Based on the available evidence, the coroner may pronounce the circumstances of death, or a court trial might be requested. It is important that participants are aware of their own specific in-country guidelines for certifying these types of deaths.

Topic 7.8: Deaths due to ill-defined causes

Entering ill-defined conditions including symptoms and signs on death certificates is of no value for public health. This includes conditions such as, paralysis, cough, chest pain and sudden death.

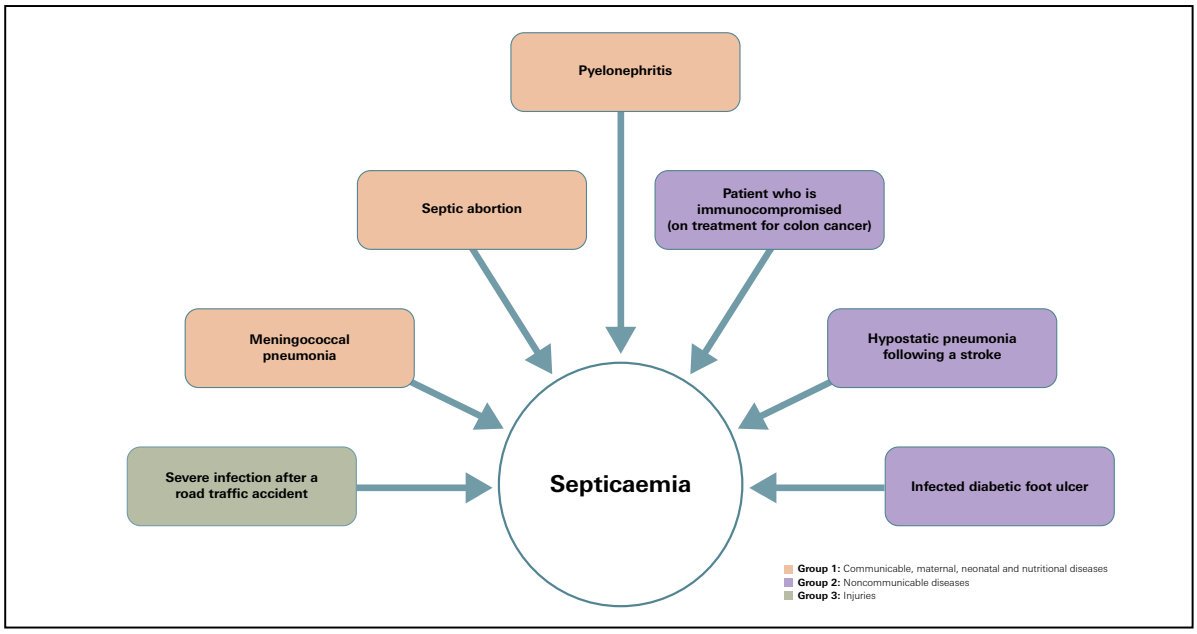
Some conditions and descriptions do not provide any information for decision-makers to guide them in designing preventive health programs. These are known as ill-defined conditions and include:

- **'organ failure'** (eg heart or liver failure). This is not acceptable as a UCOD. The disease or condition causing the organ failure should be entered as UCOD
- **'septicaemia'.** This should not be used as an underlying cause if the source of the infection (eg 'septic abortion' or 'community-acquired pneumonia') can be identified (Figure 5)
- **symptoms and signs** (eg chest pain, cough and fever). These are not causes
- **'senility', 'old age'** and similar terms. If possible, the doctor should enter a specific cause.

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

Where there is insufficient information to be certain of the COD, it is legitimate for the doctor to state 'unknown cause of death'. However, this diagnosis should only be used in exceptional circumstances.

Figure 5 Possible underlying causes of death leading to septicaemia



Topic 7.9: Certifying perinatal deaths

WHO 2016 guidelines recommend using the same adult standard death certificate for the certification of perinatal death. However, for the countries using a separate perinatal death certificate, WHO recommends that additional information should be captured for perinatal deaths (**Annex 5**).

Note to facilitator:

Find out how perinatal deaths are certified in the country/hospital. Get a copy and include in the presentation if there is a special certificate. Find out the definitions used in certifying perinatal deaths (and discuss if these are similar/different to the WHO definition).

Principles governing the concept of perinatal period

- The fetus is potentially viable.
- Both fetal and maternal causes need to be considered.
- At a given period after gestation, the pattern of causes will be similar in both live births and stillbirths.
- A perinatal death can be either a live birth or a stillbirth within the defined perinatal period
- The WHO definition of perinatal deaths formally covers the period from 22 completed weeks of gestation up to (but not including) seven days after birth.
- The decision regarding the lower limit of the perinatal period depends on the facilities in the country for a preterm neonate to survive.
- Depending on the viability of the foetus when it is born, in some countries, the perinatal period may start at 28 completed weeks.
- The perinatal death certificate does not ask for a UCOD.
  - Instead, it asks for the main COD in the fetus (stillbirth) or infant (live birth), and the main cause in the mother (if also deceased).
  - It also asks for other causes in fetus or infant and the mother and for other relevant circumstances.

Note to facilitator:

Complete case study 9.

Case study 9

A 37-year-old grand multipara with gestational diabetes mellitus was admitted to hospital at 32 weeks of gestation.

She was diagnosed with premature rupture of the membranes and put on antibiotics. Two days later, she delivered a baby boy weighing 1.9 kilograms.

The house officer delivered the baby. On examination, the baby was found to be premature and was short of breath. He was diagnosed with neonatal respiratory distress syndrome.

The baby was sent to the premature baby unit for incubator care.

Despite treatment, the baby died 14 hours after birth. Autopsy information may be available later.

Explanation

Main disease or condition in fetus or infant: neonatal respiratory distress syndrome.

Other diseases or conditions in fetus or infant: prematurity or low birth weight.

Main maternal disease or condition affecting fetus or infant: premature rupture of membranes.

Other maternal diseases or conditions affecting fetus or infant: preterm labour, gestational diabetes mellitus and grand multipara.

Other relevant circumstances: none.

Topic 7.10: Other conditions that require more information when reported on the death certificate

Condition	Additional information required
Abscess	Site Cause and/or organism
Aneurysm	Site: cerebral, aortic Cause: atherosclerotic, congenital Ruptures/dissected
Ante partum haemorrhage	Coagulation defects Placenta praevia
Bronchitis	Acute or chronic
Cancer/tumour	Behaviour Location Metastases
Diabetes mellitus	Insulin dependent or not Complications
Embolism	Site Cause: following surgery, inactivity
Endocarditic	Acute or chronic Site: mitral, aortic Cause: rheumatic, bacterial
Haemorrhage	Site Cause (if due to trauma, state circumstances of trauma)
Hepatitis	Course/etiology: acute or chronic, alcoholic, congenital, pregnancy-induced If viral, specify type (A, B, C…)
Vascular disease	Nature: hypertensive, peripheral Cause
Wound/injury	Site Circumstances (place, cause, nature of injury) Intent (suicide vs assault vs unintentional)

Session 8: Group work

Duration	90 minutes
Prepared ahead of time	Have printed copies of case studies to hand out
Additional materials needed	Marker pens, blank death certificates
Purpose and content	The purpose of this session is to promote discussion about cause of death based on the provided case scenarios.
Objectives **At the end of this session, participants will be …**	■ Certify cause a death giving reasoning for their approach ■ Comment on and correct wrongly certified deaths
Getting started	*Note to facilitator:* *1. Handout 5–7 cases to each group, along with blank death certificates. Always use the local version of the death certificate. Prompt doctors to discuss different approaches and to give reasons for the selected approach.* *2. Hand out sample of wrongly filled death certificates (de-identify the deceased and the certifier if using real samples of death certificates). If the participants ask for more information regarding the death certificates, inform them there is no further information available. This is to help them understand the situation of the coders when they have to code death certificates with wrong or minimal information.* Allow 50–60 minutes for the groups to go through the cases, then get the groups to present their approach to class for each death certificate they have written. Prompt the class to comment on the presented case scenarios. Discuss any alternative answers. Emphasise that death certificates should reflect doctors best clinical opinion regarding the UCOD.

Day 2: Training and planning

(6 sessions, total time required 7-8 hours)

Session 1: Revision

Duration	30 minutes
Prepared ahead of time	Arrange for appropriate space to conduct the training Have slides ready to present and printed copies to hand out: ■ '01_Revision.pptx'
Additional materials needed	None
Purpose and content	To review all the sessions from day 1
Objectives **At the end of this session, participants will be …**	Explain all the guiding principles of death certification and certify different conditions
Getting started	**Procedure:** Begin the day by recapping what was discussed the previous day. You may consider asking a participant (or small group) to summarise what they have learnt. Go through the importance and uses of death certification. Revisit the principles of certifying deaths using the death certificate. Ask the participants if they have any questions. Clarify any remaining questions if any.

Session 2: Resources for training

Duration	30 minutes
Prepared ahead of time	Arrange for appropriate space to conduct the training Have slides ready to present and printed copies to hand out: ■ '01_Revision.pptx'
Additional materials needed	None
Purpose and content	To review all the sessions from day
Objectives **At the end of this session, participants will be …**	Explain all the guiding principles of death certification and certify different conditions
Getting started	**Training resources** ■ *Handbook for doctors on cause of death certification*. University of Melbourne, Civil Registration and Vital Statistics Improvement Group, Bloomberg Philanthropies Data for Health Initiative, Melbourne. ■ *Assessing the quality of death certificates: Guidance for the rapid tool.* University of Melbourne, Civil Registration and Vital Statistics Improvement Group, Bloomberg Philanthropies Data for Health Initiative, Melbourne. **Primary reference** ■ World Health Organization (2016). I*nternational statistical classification of diseases and related health problems,* 10th revision, vol. 2, 10th edn, World Health Organization, Geneva. Available at www.who.int/classifications/icd/en/ **Other useful references** ■ *Physicians' handbook on medical certification of death* (US). This handbook can be found at www.cdc.gov/nchs/data/misc/hb_cod.pdf ■ Cause of Death Certification information paper (Australia). This paper can be found at www.ausstats.abs.gov.au/Ausstats/subscriber.nsf/0/FF2D66033DF42F32CA257030007790BD/$File/1205055001_2004.pdf **Online training tools** ■ **WHO** offers a free, online, self-paced course on the basics of death certification, available at http://apps.who.int/classifications/apps/icd/icd10training/ICD-10%20Death%20Certificate/html/index.html ■ The **Pan American Health Organization** has developed a free, online, self-paced course on properly completing death certificates for doctors, available at www.campusvirtualsp.org/en/launch-virtual-course-properly-completing-death-certificates-medical-doctors ■ The **Pan American Health Organization** has also developed two videos on the certification process, which can be used as helpful guides for medical students and doctors. View them online at https://www.youtube.com/watch?v=ZCCgEW5Bikg

Session 3: Certification assessment tool

Duration	90 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '03_Assessment_Tool.pptx' A sample of de-identified death certificates from the country
Additional materials needed	Printed copies of: ■ *Handbook for doctors on cause of death certification.* University of Melbourne, Civil Registration and Vital Statistics Improvement Group, Bloomberg Philanthropies Data for Health Initiative, Melbourne. ■ *Assessing the quality of death certification.* University of Melbourne, Civil Registration and Vital Statistics Improvement Group, Bloomberg Philanthropies Data for Health Initiative, Melbourne. ■ *Medical certificate of cause of death assessment tool.* University of Melbourne, Civil Registration and Vital Statistics Improvement Group, Bloomberg Philanthropies Data for Health Initiative, Melbourne.
Purpose and content	To identify common errors in death certificates using a standard methodology. The assessments can be used to evaluate the effectiveness of the training, and also as part of routine monitoring of death certification practices
Objectives **At the end of this session, participants will be …**	Correctly use the death certification assessment tool to assess the quality of death certificates
Getting started	The University of Melbourne has developed a simple tool to assess the quality of death certification practices by checking for common errors in death certificates. This can be used to assess the quality of death certification as part of routine assessment, or to assess the training needs of doctors in designing COD certification training. The tool can also be used to evaluate the effectiveness of death certification training. The tool checks for seven common errors: 1. multiple causes per line 2. approximate interval between onset and death 3. leaving blank lines within the sequence of events 4. abbreviations used when certifying the death 5. illegible handwriting 6. incorrect or clinically improbable sequence of events leading to death 7. ill-defined conditions entered as the underlying cause of death.

Topic 3.1: Assessing death certificates

The University of Melbourne has developed a tool to assess the quality of death certification practices, by looking for common errors on 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 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.

Detailed instructions on how to use the assessment tool are provided in the supplementary document: Assessing the quality of death certificates: *Guidance for the rapid tool.*

Note to facilitator:

Depending on time and the size of the group, you can do this activity as a large group, get participants to work individually, or divide them into pairs or small groups of three to four people. If the activity is done as a large group, scan or take photos of the supplied death certificates and use these images in a PowerPoint presentation. Get the group to use the assessment tool to identify any errors. If the activity is done individually or in small groups, ensure each person or group has copies of the supplied death certificates and assessment tool. It is important that the concepts of the death certification assessment were taught using the paper version of the certificate before introducing electronic tool.

Session 4: Steps for successful training

Duration	60 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '04_Successful_Training.pptx'
Additional materials needed	Flip chart, marker pens, death certificates, case studies
Purpose and content	To review and explain the steps for successful training, and key principles of effective adult learning. These include: ■ building a supportive learning environment ■ valuing and respecting individuals and their communities ■ employing teaching strategies that promote self-confidence and participation ■ understanding adult learning strategies ■ taking into account diversity (different ages, backgrounds, education levels).
Objectives **At the end of this session, participants will be …**	Apply the key principles needed to train adults, especially doctors and medical students, in death certification
Getting started	Adult learners typically: ■ are concerned about the effective use of time (need to know why the study is important) ■ perceive themselves as doers and use previous learning to achieve success ■ have broad, rich experiences to which new learning can be related ■ are more likely to reject or explain away new information that contradicts their beliefs ■ show a readiness to learn that is influenced by their roles as workers, spouses, parents ■ are more concerned about the immediate applicability of learning ■ are motivated by the potential for feelings of worth, self-esteem, higher pay or personal achievement ■ have well-formed expectations. These may be negative because of prior unpleasant learning experiences. *Note to facilitator: Ask the participants what they think are the key points/principles in training adults. Start a group discussion and then use the slides to illustrate the key points*

Topic 4.1: Steps for successful training

The success or failure of a training program depends less on the ability of the instructors and more on **thoughtful planning and detailed preparation**. A realistic plan should be developed based on the target audience and the time and resources available. Decisions need to be made on format of delivery, venue, and how many instructors will be required to conduct the training and who they will be.

Decide on the audience or, if the audience is already selected for you, know the characteristics of the trainees. It is helpful if the group members have similar characteristics and learning objectives.

The **creation of appropriate content**, selection of specific topics to be covered in detail, the types and number of exercises, what media to use, and the type of visual aids are only some of the decisions and tasks necessary for a successful program.

Preparation and organisation

Detailed preparation and organisation ensures that all needs regarding travel, accommodation refreshments and resources for both the instructors and participants are met.

The timing of the sessions can impact on participants' ability to absorb the material and gain clear understanding. Ensure there is sufficient time for each section of the material, questions, decisions and breaks.

Do not overcrowd your PowerPoint slides.

Use visual aids appropriately. Visual aids should help the trainer, but not take attention away from the point you are trying to make.

Check whether you have enough resources for the program you are planning. If not, you may rethink and replan the program. A small group in a small geographic location (eg one hospital/health area) would cost less. You may also wish to look for external funding.

Note to facilitator:

You will be given all the presentations and materials for the course. Decide how much of the content you want to teach to each group, as the content and extent of the training will differ (for example, planning a two-day course, as opposed to a one-hour presentation at a clinical meeting). You should carefully plan the content to fit the time, audience, and situation.

Logistics for training

Find out all you can about the presentation venue, including:

- size of the room
- seating arrangements
- facilities available – power supply, lights, projector, computer, etc
- whiteboard and markers
- sounds/microphones.

You may need to prepare handouts if multimedia facilities are not available.

Preparing for a presentation

- Practice your timing:
  - a good rule is one slide takes approximately 2–4 minutes, but this is an average (some will be shorter and others longer).
- Don't dwell on the content when introducing the session – you will cover this when you get to each topic. Just provide a brief overview
  - remember that if you spend too much time on your talk there will be less time for practical exercises, questions and discussion.
- Make sure that your material and your slides match in terms of the key points on each slide.
- Check that any technology you use is working before making your presentation (eg linking to internet sites). You do not want to waste time or detract from your talk while trying to fix equipment.
- All audiences will be different, so you need to be flexible within the set program – some days you may need to cut out some of the material and/or exercises; other days you may need to add some extra information or expand on some areas:
  - you will find that, in general, smaller groups will be happier to discuss and talk about issues and ask questions, whereas the larger groups will be quieter – but there will always be exceptions!
- As already highlighted, try to find out as much as you can about the participants before the day or during the introductions.
- Acknowledge that there may be different knowledge levels – this may help you later with questions, as you can use these participants to help out. Try to have multiple levels of exercises, so that the more advanced people can move ahead and not be held up by the inexperienced. Offer to help people who are struggling during the exercise or during breaks.
- Speaking in public is not easy for everyone. Some of the problems that people have include:
  - talking too quickly as a result of nerves
  - troubles with the timing of their talk – either just reading the slides or talking too much about each point
  - problems with the audiovisual equipment.
- When practising, think about situations where things could go wrong and how you would handle them:
  - think about which concepts or exercises you might skip over if the schedule is slipping
  - bring copies of the slides, to be used as handouts to help participants take notes during your oral presentation or in case of equipment failure
  - modern technology allows us to present materials effectively and memorably – but always consider what you will do if the power fails during the presentation.

Handling questions

- You cannot be prepared for all possible questions.
- Read as much background information as possible before your section of the presentation, so that you are confident in presenting.
- There are always members of the audience who sense when presenters are not confident and may ask difficult questions.
- Find out who will be in your audience and their level of knowledge on the topic
- Forewarn participants about how answers will be dealt with:
  - for example: 'Questions will be answered at the end of the presentation' or 'Happy to take questions during the presentation, but if we get a lot may have to hold over to the end'
  - if someone asks a difficult or unrelated question, you can reply by saying something like, 'That is a good question, let me get back to you on that after class'. Be sure to follow-up on the questions.

On the day

- Always try to arrive early to the presentation. This will give you time to check that seating arrangements and lighting are correct:
  - it is possible that, for example, you requested schoolroom set-up and arrive to find that it is theatre style
  - it will give you time to set up your computer and projector and distribute any handouts/material on the desks
  - you can check that all other equipment is working.
- Arriving early also allows you some time to relax before you start, particularly if you had a stressful time getting there.
- It is normal to be nervous or a bit anxious before doing a presentation. It does not matter how many you do there will always be a degree of anxiety before you start your presentation.
- To help overcome the nervousness make sure that you know your material and that you have rehearsed it.
- Take some deep breaths and remember to breathe. A few sips of water can help.
- The most important thing to remember is that you are the facilitator. You should be knowledgeable on the topic, but equally your job is to facilitate the sharing of participants' own knowledge and experience.

Presenting yourself

Clothing

- Your appearance should be appropriate to the culture of the organisation that you are working with and appropriate for the audience. Check beforehand to see if there are any local rules or guidelines in this area.
- Points to remember:
  - be appropriately dressed
  - check out the local dress code
  - pay attention to the details of your dress, such as clean shoes and clothes.

Manner and style

- You need to be confident without being too overbearing or 'showing off'. Don't be condescending or patronising to your audience.
- Let the audience know that you are approachable and are happy to answer questions.
- Some participants may be too shy to ask questions during the session and may want to talk to you in the breaks. Try to accommodate this while leaving enough time for yourself.

Introductions

- Introduce yourself and any co-presenters, including name and work position. However, you do not have to establish your credibility or try to impress them by information overload.
- If it is a small group, perhaps ask everybody to introduce themselves, or do a small 'icebreaker' exercise.
- Introduce your topic. Just outline the main points – there is no need to go into a lot of detail at this stage of the presentation.
- Don't rush, take a deep breath and establish eye contact with the audience.

Presenting confidently – some tips

- Speak slowly, firmly and clearly – check that people down the back can hear you and use a microphone if needed.
- Watch the audience for nods of understanding – if people look puzzled, ask if anyone wants you to go over a point and explain further.
- Avoid long and complex sentences.
- Try not to fidget or overuse other aids (such as laser pointers).
- Pace your presentation and keep an eye on the time you have left. Arrange for a subtle time warning from a colleague at five minutes from the end.

Avoid annoying habits

- All of us have annoying little habits that we are often unaware of. These minor things may become very obvious when you are presenting.
- When speaking try to avoid umming, ahhing or erring. If you are unsure what to say next, take a breath rather than say 'um'.
- People can also have a nervous motion such as tapping their feet, a pen or even the pointer they are using. This can be very annoying and distracting to your audience.
- • Ask someone you trust to point out to you any annoying habits that you may have that you are not aware of so that you can make a conscious effort to avoid doing them while presenting.

Concluding the talk

The conclusion is where you tell the audience what you want them to remember. It is also an opportunity to ask if any major points were not clear or require revision. Remember to thank your audience for listening to you.

Main points to remember

- Check the timing of the presentation
- Be familiar with the venue beforehand
- Practice out loud if possible
- Plan for the unexpected

Session 5: Developing a plan of action

Duration	90 minutes
Prepared ahead of time	Have slides ready to present and printed copies to hand out: ■ '05_Action_Plan.pptx' Make copies of the planning template on A3 paper. Be ready to share the soft copy of the planning template if the groups want to work on computers. Alternatively, they can use butchers' paper to document their plans.
Additional materials needed	Printed copies (enough for one per group, in A3 size) of the planning template (**Annex 7**), butchers' paper (optional), marker pens
Purpose and content	To prompt doctors to think about how they can roll out the training when they return to their hospitals/health areas/countries. The group work should help them to think about potential steps that they must follow. If possible, include a costing component.
Objectives **At the end of this session, participants will be …**	Return to their work places with a plan of action that is ready to be implemented.
Getting started	Note to the trainer: Have slide ready with planning template. Discuss the potential steps that need to be included in the plan. These may include but are not limited to: ■ informing the head of institute and getting the agreement ■ talking to the senior management of the hospital/health regions ■ establishment of a mortality committee ■ doing a baseline assessment ■ collection of information regarding the needs (how many doctors, how many deaths in the hospitals, timing of new interns, death certification process in the hospital, who is responsible for what in relation to death certification in the hospital) ■ resource requirements ■ costing and funding sources. Try to group the participants into logical groups (doctors from the same hospital/health area in the same group). Before they start, ask all groups to appoint a rapporteur and a presenter. At the end of discussion each group can present their plan of action to the group and the group should provide feedback. Collect all the plans and include them in the meeting report.

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

Administrative Data (can be further specified by country)																
Sex	☐ Female				☐ Male				☐ Unknown							
Date of birth	D	D	M	M	Y	Y	Y	Y	Date of death	D	D	M	M	Y	Y	Y	Y

Frame A: Medical data: Part 1 and 2			
1 Report disease or condition directly leading to death on line a Report chain of events in due to order (if applicable) State the underlying cause on the lowest used line		Cause of death	Time interval from onset to death
	a		
	b	Due to:	
	c	Due to:	
	d	Due to:	
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	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	☐ Assault	☐ Could not be determined								
☐ Accident	☐ Legal intervention	☐ Pending investigation								
☐ Intentional self harm	☐ War	☐ Unknown								
If external cause or poisoning:	Date of injury	D	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							

Annex 2: Sample agenda

Standard course
Day 1

Time	Topic
8:00 – 8:30am	Session 1: Welcome and introduction to the training
8:30 – 9:00am	Session 2: Pre-evaluation
9:00 – 9:20am	Session 3: Overview of death certification
9:20 – 9:40am	Session 4: Legal implications and confidentiality
9:40 – 10:00am	Session 5: General guidelines on completing death certificates
10:00 – 10:30am	Morning tea break
10:30 – 11:30am	Session 6: Understanding the International Form of Medical Certificate of Cause of Death
11:30 – 12:00pm	Session 7: Guidelines for recording specific conditions
12:00 – 1:00pm	Lunch break
1:00 – 2:30pm	Session 8: Group work
2:30 – 2:50pm	Wrap-up and close

Training of trainers' course
Day 1

Time	Topic
8:00 – 8:30am	Session 1: Welcome and introduction to the training
8:30 – 9:00am	Session 2: Pre-evaluation
9:00 – 9:20am	Session 3: Overview of death certification
9:20 – 9:40am	Session 4: Legal implications and confidentiality
9:40 – 10:00am	Session 5: General guidelines on completing death certificates
10:00 – 10:30am	Morning tea break
10:30 – 11:30am	Session 6: Understanding the International Form of Medical Certificate of Cause of Death
11:30 – 12:00pm	Session 7: Guidelines for recording specific conditions
12:00 – 1:00pm	Lunch break
1:00 – 2:30pm	Session 8: Group work
2:30 – 2:50pm	Wrap-up and close

Day 2

Time	Topic
8:00 – 8:30am	Session 1: Revision
8:30 – 9:00am	Session 2: Resources for training
9:00 – 10:30am	Session 3: Death certificate assessment tool
10:30 – 11:00am	Morning tea break
11:00 – 12:00pm	Session 4: Steps for successful training
12:00 – 1:00pm	Lunch break
1:00 – 2:30pm	Session 5: Developing a plan of action
2:30 – 3:00pm	Afternoon tea break
3:00 – 4:30pm	Session 6: Practice sessions/Question answer
4:30 – 4:50pm	Wrap-up and close

Annex 3: Logistics for certification training

Number of participants per training course: Approximately 20 doctors

Number of facilitators per training course: Two

Equipment requirements for the training:

- Checklist for organising a training program
- Death certificates (use the local version of the certificate where possible)
- Flip chart
- White board and markers
- Overhead projector or multimedia for slide presentation
- Binders or folders for course materials
- Marker pens to record responses
- Laptops and PowerPoint slides
- Post-it notes (optional)

Appropriate space for the training

Consider the numbers of participants and the types of activities throughout the training. A U-shaped seating arrangement facilitates participatory activities and plenary discussion. There should be enough room for participants to break out into small groups for role-play activities, as well as a comfortable placement of the projector/video screen to view PowerPoint slides. Attention should also be given to ensuring the temperature of the training room is comfortable for participants. A room with natural light is preferred.

Course materials/resources for participants

1. Training schedule
2. Slide handouts for all sessions (translated if applicable)
3. Handbook for doctors on cause of death certification
4. Assessing the quality of death certificates
5. Planning template.

Annex 4: Checklist for facilitators

This checklist shows the steps that you need to complete when you are preparing to conduct a training program. It is not mandatory to complete all these steps before each training program but using this checklist will help you to better prepare for the workshop. Depending on the circumstance that you are working in, you may need to change the list.

Item: Objectives and agenda	**Yes**	**No**
Training objectives identified		
Training agenda developed and agreed upon		
Do we have permission and support from the institutes for this training?		
Item: Target audience	**Yes**	**No**
Number of participants decided		
Participants identified		
Attendance confirmed		
Characteristics of the participants: ■ Are they hospital clinicians? ■ Are they community health doctors? ■ Is there anyone with postgraduate experience?s ■ Is there anyone with prior training on death certification?		
Any other staff category other than doctors attending? *(Keep record of the category of staff and number)*		
Pre-course survey developed		
Item: Venue and date	**Yes**	**No**
Identified a suitable date?		
Decided on the length of the training (one hour, three hours, half a day, two days, etc)?		
Identified and booked suitable venue for the training?		
Enough funding to cover the cost of the training? Venue Refreshment Material development Payments Transport Accommodation (if applicable)		
Have you checked the facilities available at the selected venue? Seating arrangements Ventilation Fans/air conditioning Power supply Computer(s) Multimedia Whiteboard/blackboard Markers/pens		
Item: Facilitators and content	**Yes**	**No**
Has the facilitator been confirmed?		
If it is not you, do you need to meet/contact them to discuss the training?		

Item: Lecture materials	Yes	No
Do you have the necessary resource materials? Presentation materials Case studies		
Have you reviewed the resource materials?		
Have you adapted/edited the resource materials if necessary?		
Do you need to print any materials? *(Keep note of what needs to be printed, how many copies, where the printing will take place and if you require funds for this)*		
Are you planning to do a pre- and post-training evaluation? If so do you have the necessary cases? Have you printed them?		

Annex 5: Participant bingo sheet

Can play a musical instrument	Jumped out of an aeroplane	Can speak three or more languages	Visited two countries that start with the letter C
Has green eyes	Picture has been printed in a newspaper	Has four or more brothers or sisters	Knows how to ride a bike
Shaken hands with someone famous	First time visiting Australia	Travelled for more than 20 hours to get here	Lives in a different country from where they were born
Can rub their stomach and pat their head at the same time	Knows how to play chess	Name has the letter Z	Lives in a different country from where they were born

Annex 6: Perinatal death certificate

Suggested additional detail about perinatal deaths (stillbirths and live-born infants dying within 168 hours (one week) from birth).

Identifying particulars									
Child was born live on	D	D	M	M	Y	Y	at hh:mm	hours	
Child was stillborn on	D	D	M	M	Y	Y	at hh:mm	hours	
	☐ Died before labour	☐ During labour	☐ Not known						

Mother							
Date of birth	D	D	M	M	Y	Y	

Number of previous pregnancies		**Date of last pregnancy**	D	D	M	M	Y	Y
		Outcome of last previous pregnancy						
Live birth	_____	☐ Live birth						
Stillbirth	_____	☐ Stillbirth						
Abortion	_____	☐ Abortion						

1st day of last menstrual period	D	D	M	M	Y	Y	

Delivery	**Antenatal care, two or more visits**
☐ Normal spontaneous vertex	☐ Yes
☐ Other (specify)	☐ No
	☐ Not known

Attendant at birth	
☐ Physician	☐ Other trained person (specify) _____
☐ Trained nidwife	☐ Other (specify) _____

Child	
☐ Single birth	☐ Second twin
☐ First twin	☐ Other multiple (specify) _____

Source: World Health Organization (2016). *International statistical classification of diseases and related health problems*, 10th revision, vol. 2, 10th edn, World Health Organization, Geneva.

Annex 7: Feedback form

Below is an example of a feedback form. You can change it to meet your requirements, and ensure that it aligns with your training course.

Directions: Mark each question with an 'X'. In the 'comments' column, please be as specific as possible.

Please provide your feedback on the course										
Question	**POOR**			**FAIR**			**GOOD**			**Comments**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	
1. The training course met my expectations										
2. The overall format of the sessions was effective										
3. How would you rate the materials for this course (handouts, slides, supplementary materials)?										
4. How would you rate the trainers?										
5. After the training, do you feel confident in being able to certify a death?										

6. The length of the training was:	**Too long**				**Perfect**					**Too short**

Annex 8: Planning template

Activity	Description	Objective	Responsibility	Time frame	Assumption	Resources	Comment

Bloomberg Philanthropies DATA FOR HEALTH INITIATIVE

Australian Government
Department of Foreign Affairs and Trade

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:

Vital Strategies

CDC Foundation
Together our impact is greater

THE UNIVERSITY OF MELBOURNE

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