Related obligations and procedures upon death

Core concepts related to death, changes after death and overview of key concepts in forensic medicine:

Italics = this is additional information, "nice to know", **not need to know*

A) **What is Forensic Medicine?**

Two arms under the Department of Health in South Africa:

- **Forensic Pathology Services (FPS):**
  Primary objective is the rendering of a medico-legal investigation of death service that serves the judicial process. It also aids in the facilitation of the administration of justice.
  (National Code of guidelines for Forensic Pathology Practice in South Africa booklet, 2007, p.5, 13)

- **Clinical Forensic Medicine (CFM):**
  A comprehensive clinical medico-legal investigative service, usually concerning living persons, with interaction between legal, judicial, social and law enforcement systems.
  (WCG: CFMTT meeting: 31 March 2015 Based on the definition derived from the publication: Clinical Forensic Medicine; A Physician's Guide; 2nd Edition)

Both have to do with the interphase between law and medicine. Pathology (FPS) - death, law and the doctor. Clinical (CFM) - patient alive, law and the doctor.

Main Objective in nutshell of FPS:

- Establish the primarily medical cause of death:
  - As per Inquests Act, National Health Act and Health Professions Act:
    - Investigate all deaths from other than natural causes (including anaesthetic and procedure related deaths)
    - can include a post mortem examination, no consent of next of kin required
    - includes specimen collection ranging from histology to toxicology if applicable
    - can include scene of death investigation too if applicable
    - includes related and applicable medico-legal documentation and report compilation
    - can include expert testimony in court proceedings
- Establish the mechanism of death
- Establish relevant information which may become relevant or important at future legal/administrative proceedings
  - Timeous and appropriate harvesting/collecting of specimens
  - Collection other evidence as deemed appropriate

- Facilitate the category of death
    - Homicidal, suicidal, accidental, natural or undetermined
- Facilitate and assist SAPS in the accurate identification of the body
    - Using special procedures where necessary ranging from DNA collection, fingerprints to specialised services such as facial reconstruction in skeletonised cases
- Provision of Mortality data to relevant stakeholders:
    - to inform research
    - prevention strategies
    - assist fiscal allocations nationally (accurate cause of death per death notification forms)
- Research
- Training
    - Doctors (undergraduates, post graduates, general and forensic officers)

<u>Main objectives of CFM in nutshell (aka package of care of CFM):</u>

- Management of victims of:
    - Sexual offences as per Criminal Law (Sexual Offences and Related matters Amendment) Act
    - Domestic violence as per Domestic Violence Act
    - Elderly abuse and priority of access
    - Human trafficking
- Custodial medicine, as requested courts or SAPS
    - Assessments mental stability
    - Pre- and post confessions examinations
    - Exam alleged perpetrators
- Offences under National Road Traffic Act
    - Such as driving under the influence of an intoxicating substance
- Assistance in specific matters related to Children's Act
    - Child assessments for placements or child abuse cases
    - Age estimations
- Transversal aspects
    - DNA reference samples - paternity testing, perpetrators etc.
    - Expert witness in court
    - Second opinions
    - Recordkeeping
    - Advocacy
    - Testing for intoxicating substances
- Substance abuse
    - Assessments prior to rehabilitation programmes

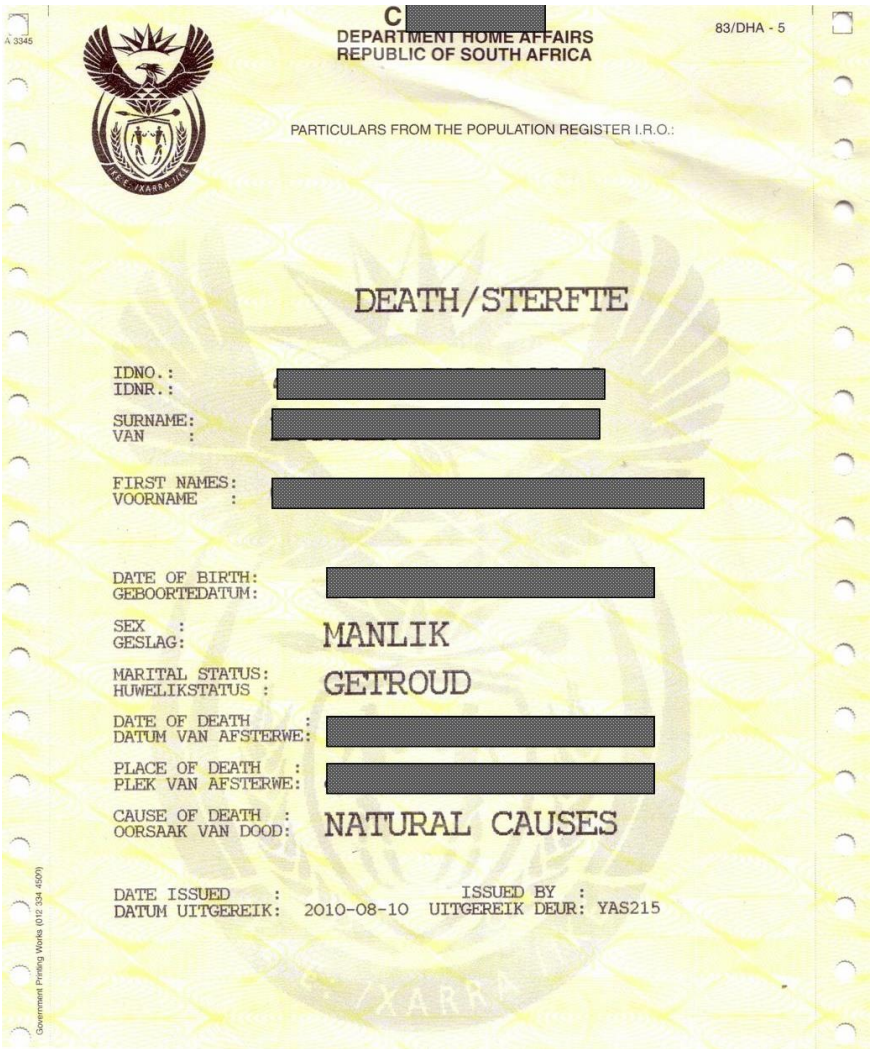
Related obligations and procedures upon death
Division of Forensic Medicine, FHS, UCT

Important to distinguish:

- **Death declaration**:
    - Legal requirement to declare or pronounce death once a person has died according to the clinical criteria of death (see details in pathophysiology of death notes).
    - Can be issued by emergency personnel such as paramedics or medical professionals, mostly doctors and occasionally professional nurses and rarely traditional leaders in very rural areas.

- **Death Notification**:
    - All deaths/stillbirths in SA need to be registered as per The Births and Deaths Registration Act 51 of 1992.
    - No form is needed in the case of an aborted non-viable foetus.
    - The above Act defines stillbirth as 'a child that had at least 26 weeks of intra-uterine life but showed no sign of life after complete birth'. In other words, a gestational period of 26 weeks is the legally defined point of 'viability'. Any birth, live or dead, after 26 weeks gestation requires registration of birth, and in the case of stillbirth, also of death.
    - Any live birth, defined (Criminal Procedures Act, Section 239 (1) of Act 51 of 1977) as one where the child breathed, whether or not an independent circulation was established, requires registration of birth irrespective of the gestational period, and where appropriate, death notification with the DHA-1663 form
    - The death notification form (DNF) - DHA1663B - is the form used to fulfil this obligation.
    - The form states the identity of the deceased and cause of death - natural or unnatural or undetermined (see more detail below).
    - Important to note the form consists of 2 parts so to speak:
        - DHA-1663 A: (section A - F) Pages 1 of 3, 2 of 3 and 3 of 3
            - Completed by various people depending on the section.
            - Department of Home Affairs - who then issue the Death Certificate (see below)
        - DHA-1663 B: (section G on page 1 of 1)
            - This is the Medical Certificate of the cause of death /stillbirth section. This section is in keeping with international accepted standards
            - **Sealed after completion** to maintain confidentiality (the form is designed in such a way) and goes to Stats SA for mortality data and statistical purposes (this is why doctors can write diseases that contributed to death here such as HIV, which is essential for the mortality data of our country, yet not breech confidentiality of the patient)
            - See below for the guide to the formulation of the cause of death on this section
    - See the short video linked to the completion of the DNF.

- **Death Certification**:
    - The Department of Home Affairs (or at any South African embassy, mission or consulate if the death occurs abroad) will issue a Death Certificate (see Fig. 1 below) on receipt of the Death Notification Form (Form DHA1663 sections A – F) and the Death Report (Form BI1680).
    - These are not the same as the Burial form.
    - An abridged death certificate will be issued free of charge on the same day of registration of death. An unabridged death certificate can be obtained by completing Form BI-132 and paying the required fee
    - This important document is used to settle estate issues, financial institutions and assist with releasing policies for life insurance etc.
    - The things noted on this form is the deceased's name, I.D., gender and cause of death.
    - In terms of the Cause of death on this form it only states: Natural, Unnatural or Undetermined causes (i.e. family cannot see on this form what the Medical sequence of diseases or terminal causes of death were as this information was sent to Stats SA)



C [redacted]

DEPARTMENT HOME AFFAIRS
REPUBLIC OF SOUTH AFRICA

83/DHA - 5

PARTICULARS FROM THE POPULATION REGISTER I.R.O.:

DEATH/STERFTE

IDNO.: / IDNR.: [redacted]

SURNAME: / VAN : [redacted]

FIRST NAMES: / VOORNAME : [redacted]

DATE OF BIRTH: / GEBOORTEDATUM: [redacted]

SEX : / GESLAG: MANLIK

MARITAL STATUS: / HUWELIKSTATUS : GETROUD

DATE OF DEATH : / DATUM VAN AFSTERWE: [redacted]

PLACE OF DEATH : / PLEK VAN AFSTERWE: [redacted]

CAUSE OF DEATH : / OORSAAK VAN DOOD: NATURAL CAUSES

DATE ISSUED : / DATUM UITGEREIK: 2010-08-10

ISSUED BY : / UITGEREIK DEUR: YAS215

Fig 1. Death Certificate with Natural Causes noted

Related obligations and procedures upon death
Division of Forensic Medicine, FHS, UCT

Natural vs. unnatural (non-natural) deaths

The decision of labelling a death "natural" or "unnatural" is important, and still very much a medical decision to make based on circumstances and opinion of medical evidence at hand on a case by case basis.

This decision may have far reaching implications for the family of the deceased with regard to the payment of insurance monies and other benefits and for the course of justice. A decision which may have financial (insurance claims), criminal (suicides, homicide), civil (action for damages), social (pensions) implications.

- Natural death:
  - E
    precipitated by any external cause or procedure or therapeutic mishap, and no-one can be held responsible for the death.
  - Examples include:
    - Diabetes, coronary artery disease, tuberculosis, asthma etc
  - A medical practitioner who attended to the person before death may issue DNF
  - Medical Practitioner who did not attend to the patient, may examine the corpse and issue DNF

- Unnatural death:
  - Falls under FPS in terms of the National Health Act 61 of 2003: “death due to unnatural causes” include the following:
    - any death due to the application of force or any other physical or chemical factor, direct or indirect, with or without complications
      - example: deaths related to stab wound to the chest, head injury, drug overdoses, electrocution, drowning, burns etc.
    - any death where another person, by negligent act (commission) or omission can be held responsible for the death (even deaths usually considered due to natural causes)
      - example: elderly person dying of malnutrition in old age home
    - any death as contemplated in section 48 of the Health Professions Amendment Act, 2007. This includes deaths due to or during any therapeutic, diagnostic or palliative procedure (includes anaesthetic deaths).
      - example: erroneous intubation into oesophagus or air embolism via air from not flushing the intravenous line
    - where death is sudden and unexpected or unexplained (including adults and children)
      - example: “cot deaths”
  - If the Medical Practitioner suspects death due to other than natural cause – Inform SAPS – **Do not complete the DNF**
  - Autopsy must be done in terms of the Inquests Act 58 of 1959 – the Medical Practitioner performing the autopsy will issue DNF

** additional information: Interesting cases to think about:*

- *tetanus neonatorum*
- *liver failure due to the excessive use of alcohol*
- *birth trauma with or without the use of forceps*
- *silicosis*
- *bronchopneumonia in cases of negligence e.g. aspiration during intubation an elderly person dying in hospital sometime after having sustained a fractured neck of the femur (distinguish between pathological fracture due to osteoporosis and traumatic fracture)*
- *status asthmaticus precipitated by pollen or other allergens*
- *death due to Malaria contracted through the bite of a mosquito*
- *AIDS contracted via sexual intercourse are natural deaths; however, in both cases if occurred following transfusion with infected blood it will not be considered to be natural as death may have been brought about by an act or omission on the part of another person or service*

<u>Medico-legal importance of correct “labeling” of natural vs unnatural cause of death:</u>

- Generally an unnatural death is readily identifiable when it is the consequence of an external factor or e.g. electrocution, shooting, stabbing
- Lobar pneumonia, coronary artery disease, carcinoma, are usually due to natural causes.
- **Remember** an apparently natural death may be the end result of trauma:
  - example: lobar pneumonia in a person with a head injury dying after prolonged period of existing in a vegetative state.
- A suspected unnatural death may be the consequence of natural disease:
  - example: a "drowning" due to myocardial infarction while swimming or the driver died in motor vehicle crash but prior to impact had a myocardial infarction (which actually causing the crash).
- If uncertain, or in above mentioned cases, refer for medico-legal investigation to confirm or disprove natural disease.
- Other examples are: ischaemia caused by T.N.T, poisoning; sepsis may have been caused by criminal abortion; a malignant tumour may have been caused by industrial exposure to a noxious substance.
- Do not allow circumstances in which the body was found to influence decisions e.g. Acute Asthma attack precipitated by wrongful supply of a B-blocker.
- Keep an open mind and a healthy suspicion that "the obvious and expected did not happen"

<u>Different type of autopsies:</u>

- Academic / clinical autopsy:
  - need consent from next of kin
  - family may incur costs involved to perform autopsy
  - performed on persons who died of natural causes - i.e. cause of death is known
  - indication for autopsy is to study the extent of the disease process
  - usually performed by anatomical pathologists

    - tissues kept for research, teaching or further study needs to have additional consent from next of kin

- Medico-legal / Forensic autopsy:
    - no consent required by next of kin
    - family cannot refuse post mortem investigation as mandated by law
    - no cost incurred to family
    - performed for deaths due to unnatural causes, sudden unexpected deaths, and unexplained deaths
    - performed by forensic pathologists, coroners, medical examiners, district surgeons
    - tissues kept for:
        - determination of the cause of death does not need consent - this can include larger organs such as the heart (eg. cardiothoracic surgery deaths) or brain (diffuse axonal injury in MVA's)
        - tissues kept for research or other purposes needs to have additional consent from next of kin

<u>Inquests:</u>

The Inquests Act no 58 of 1959 provides for the holding of Inquests in cases of death or alleged death apparently occurring from other than natural causes. This includes deaths occurring in association with a medical procedure, as defined by the Health Professions Amendment Act). The purpose of the Act is to provide for judicial inquiries into certain cases of death.

At an Inquest there is no accused.
The magistrate holding the Inquest is required to record a finding (Section 16) as to:

- The identity of the deceased person
- The cause or likely cause of death.
- The date of death.
- Whether the death was brought about by any act (of commission) or omission prima facie involving or amounting to an offence on the part of any person (prima facie added by Inquest Amendment Act (Act no.8 of 1991).

The inquest may become a trial or the magistrate may refer the case for formal prosecution to the National Prosecuting Authority, depending on the outcome of the above four questions.

* *For more details on Inquest procedure etc. then read Vanders Compilation of Medical Law for Students compiled by dr van der Heyde, p.12 - 18*

BEVINDING VAN LANDDROS / FINDING OF MAGISTRATE

(a) **Identiteit** van die oorledene (meld volle naam, identiteitsnommer of ouderdom en geslag)
Identity of the deceased (state full name, identity number or age and sex)
.....
.....

(b) **Datum** van dood / **Date** of death .....

(c) **Oorsaak** of waarskynlike oorsaak van dood / **Cause** or likely cause of death
.....
.....
.....

(d) Handeling of versuim wat 'n **misdryf** insluit of uitmaak
Act or omission involving or amounting to an **offence**
.....
.....
.....

Fig. 2 example of section on form that magistrate completes for Inquest

What is an expert witness?:

- An expert witness, professional witness or judicial expert is a witness, who by virtue of **education, training, skill, or experience**, is believed to have expertise and specialised knowledge in a particular subject beyond that of the average person, sufficient that others may officially and legally rely upon.
- Junior doctors can be expert witnesses, less experience than a medical officer but enough for an intern and more than a lay person.
- Expert evidence presented to the court should be the independent product of the expert uninfluenced by the exigencies of litigation.
- Should provide independent assistance to the court by way of objective and unbiased opinion to matters within this expertise.
- Never assume the role of an advocate.
- Should state the fact or assumptions on which his opinion is based.
- Not omit to consider material facts which could detract from his concluded opinion.
- Make it clear when a particular question or issue falls outside his expertise.
- If an expert's opinion is not properly researched because he considers that insufficient data are available, then this must be stated.
- If, after exchange of reports, an expert changes his view on a material matter, having read the other side's expert's report or for any other reason, such change of view should be communicated to when appropriate, to the court.
- Own advice: **dress up**, **speak up** and **shut up**

"What qualifies you to be a ballistic expert?"

b) Death Notification Form

Important definitions in formualtion of the cause of death:

- **Cause of death**:
  "all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstance of the accident or violence which produced any such injuries."
  (Twentieth World Health Assembly, 1967)
- **Primary or 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."
  (World Health Organization, 1994)
  This is usually put on the lowest possible line in Part 1 of paragraph 77.
- **Mechanism(s) (or mode) of death:**
  physiological changes which ultimately cause the moment of death, e.g. disturbance of the acid base balance, change in heart speed or rhythm and suppression of cardiac contractility or the respiratory centre and the like.
  The mechanisms, and loose concepts such as "cardiac arrest", "shock" or "respiratory arrest", **are not primary medical causes of death**.
- **Terminal / immediate cause of death:**
  usually a complication which occurs, e.g. bronchopneumonia (terminal cause) after a head injury or fractured femur in old age (the primary medical cause).
- **Contributing cause of death:**
  not the primary cause of death but **contributes to an earlier death**.
  Example: a person may sustain a stab wound to his heart which leads to cardiac tamponade. He also suffers from ischaemic heart disease due to coronary artery atherosclerosis. In this example should the stab wound result in significant tamponade the stab wound be the primary cause of death. The coronary artery atherosclerosis would contribute to death by impeding blood supply to the heart.
- **Predisposing cause of underlying condition:**
  may lead to a particular event, e.g. the rupture of a berry aneurysm as a result of hypertension
- **Precipitating cause of death:**
  Excitement or fury may precipitate a cerebral haemorrhage or myocardial ischaemia resulting in death in a person which underlying atherosclerosis.
- **Manner of death:**
  - Circumstances of how the cause of death arose; namely:
    - Natural
    - Accidental
    - Homicidal
    - Suicidal
    - Iatrogenic
    - undetermined
  - This is usually not noted on the DNF in cases of unnatural deaths.

Related obligations and procedures upon death
Division of Forensic Medicine, FHS, UCT

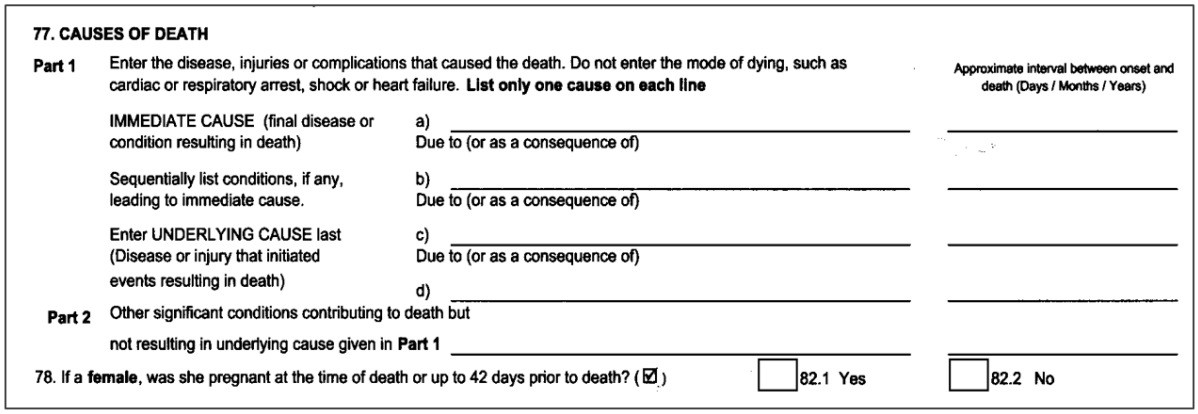
Brief guide on completion of Death Notification Form:
(to read in conjunction with other documents related to DNF Tasks)
The Medical Certificate of Cause of Death - page 1 of 1, DHA-1663 B

- Section G.1- for all deaths occurring after 1 week of birth (excluding stillbirths and perinatal deaths) has 2 parts for the causes of death:
    - **Part 1**: **Causal sequence leading to death**
        - The direct cause of death is entered in Part 1 a). This line must always be filled in.
        - If the direct cause of death was a consequence of another disease or condition, this antecedent cause should be entered in Part 1 b), and so forth.
        - If more than one line is completed, each condition must be a cause of the condition above it. There must be a pathophysiological causal sequence.
        - The initiating cause in the sequence is the underlying cause of death and should be reported on the **lowest used** line in Part 1.
        - Always use consecutive lines, starting at Part 1 a). Never leave blank lines between filled in lines. If there is only one cause of death, it is entered at Part 1 a) and the subsequent lines are left blank.
        - Enter only one disease, condition, event, or injury per line.
        - Sequence needs to make sense, in sense from bottom (start) then up to end at a)

    - **Part 2**: **Other significant conditions that contributed to the death**
        - Other significant conditions that contributed to the death but do not fit into the causal sequence are entered in Part 2.
        - More than one condition can be entered on this line, but should be listed in order of importance.

    - Duration between onset of disease and death
        - The column on the right hand side of Part 1 and Part 2 is to record the approximate interval between onset of the condition and death if known.
        - If more than 1 condition is entered in Part 2, insert the duration in brackets after each condition.

- Section G.2 - for Stillbirths and deaths occurring within 1 week of birth (perinatal deaths)



77. CAUSES OF DEATH

Part 1 Enter the disease, injuries or complications that caused the death. Do not enter the mode of dying, such as cardiac or respiratory arrest, shock or heart failure. **List only one cause on each line**

Approximate interval between onset and death (Days / Months / Years)

IMMEDIATE CAUSE (final disease or condition resulting in death) — a) _____ Due to (or as a consequence of) _____

Sequentially list conditions, if any, leading to immediate cause. — b) _____ Due to (or as a consequence of) _____

Enter UNDERLYING CAUSE last (Disease or injury that initiated events resulting in death) — c) _____ Due to (or as a consequence of) _____

d) _____

Part 2 Other significant conditions contributing to death but not resulting in underlying cause given in **Part 1** _____

78. If a **female**, was she pregnant at the time of death or up to 42 days prior to death? (☑) ☐ 82.1 Yes ☐ 82.2 No

Fig. 3 Example of section 77 on DNF for Medical Certificate for the Cause of Death

<u>General terminology and guidelines related to DNF:</u>

- Give as full a description of disease conditions as possible to help the classification and coding process for each medical certificate of cause of death.
- Do not use abbreviations, except for HIV and AIDS, TB or PTB, which are acceptable.

- Diabetes mellitus
    - If type I or type II known, specify. If unknown, can simply report diabetes mellitus.
    - Can be the underlying cause of death or a risk factor for another underlying cause of death
    - If patient dies from a complication of diabetes mellitus, e.g. diabetic nephropathy or diabetic ketoacidosis, document diabetes mellitus (type I or II) as the underlying cause of death in Part 1
    - If a patient dies from a stroke or myocardial infarction, document diabetes mellitus in Part 2, as it is a risk factor for cardiovascular disease

- HIV
    - Where a person died of HIV-related conditions, it is important to include HIV/AIDS on the death certificate. Do not use terms such as RVD, retroviral disease, immunodeficiency, etc.
    - Remember this section of the DNF is sealed for confidentiality and sent to Stats SA for mortality data, the family should not see this section.
    - Where a person was known to be HIV positive and died from an opportunistic infection, HIV must be reported as the underlying cause of death in Part 1. Refer to the WHO clinical staging of HIV disease for a comprehensive list of opportunistic infections and AIDS defining conditions.
    - Often, a person with HIV/AIDS may have multiple conditions (e.g. cancer, opportunistic infections) at the time of death. In this case, the condition most likely to have resulted in death must be reported in Part 1 a) with HIV/AIDS reported in the line below. The other conditions that do not fit into the causal sequence must be reported in Part 2.

    - Where an HIV positive person had TB and it is likely that TB was the immediate cause of death, TB must be reported in Part 1 a, with HIV reported on the line below.

- Infectious and parasitic diseases
    - If the causative organism is known, it should be documented on the certificate.
    - Document the site of the infection, if known.

- Hypertension
    - Indicate whether essential or secondary, if known. If unknown, hypertension alone is acceptable.
    - If secondary, then the underlying cause needs to be part of the causal sequence.

- Neoplasms
    - Primary site of neoplasm must be stated if known – if unknown, this must be stated, e.g. unknown primary malignant neoplasm.
    - Benign or malignant
    - Histological type (if known)

- Ill-defined conditions
    - These are of no value, do not provide any information, and should not be reported on death notification form.
    - Organ failure (e.g. heart, renal or liver failure) - where possible, the condition causing organ failure should be entered as underlying cause. If unknown, state this.
    - Septicaemia – avoid using this term if the source of infection is known (e.g. community-acquired pneumonia). If the source of infection is unknown, septicaemia, source unknown may be reported.
    - Symptoms and signs are ill-defined terms and should not be reported on the medical certificate of cause of death.
    - Mode of dying (e.g. cardio-pulmonary arrest; brain death) – should not be reported.
    - Senility or old age – avoid. Always enter a specific cause, where possible.

- Pregnancy
    - If a woman dies during pregnancy or within 42 days of the end of pregnancy, even if the death was not related to the pregnancy, this should be included on the death certificate.

- Unknown cause of death / unnatural or procedure related
    - Refer for further forensic investigation

Examples of possible sequencing:

Part 1 a)	Cardiac Tamponade	30 minutes
Part 1 b)	Ruptured Mycardial infarction	1 hour
Part 1 c)	Atherosclerotic coronary heart disease	1 year
Part 1 d)		
Part 2	Hypertension	5 years

Part 1 a)	Raised intracranial pressure	2 hours
Part 1 b)	TB meningitis	2 weeks
Part 1 c)	Tuberculosis	2 months
Part 1 d)		
Part 2	Nil	

Part 1 a)	Gram negative pseudomonas sepsis	1 day
Part 1 b)	Urinary Bladder infection	5 days
Part 1 c)	Catheterisation for neurogenic bladder	2 weeks
Part 1 d)	Multiple sclerosis	5 years
Part 2	Diabetes Mellitus	10 years

Case Scenario:

A 10 month old child is brought in by his mother because of a fever, which has been present for approximately 3 days. On examination the child is found to be severely malnourished, with a distended abdomen and loss of muscle mass, and with neckstiffness. A lumbar puncture led to the diagnosis of H. Influenza meningitis, and IV treatment was started. After one day in hospital, the child became tachypnoeic, with bilateral crepitations in the lungs. He died a few hours later.

Part 1 a)	Bronchopneumonia	1 day
Part 1 b)	H Influenza Pneumonia	3 days
Part 1 c)		
Part 1 d)		
Part 2	Malnutrition	

Note: In this case, malnutrition was not considered to be the direct cause of the meningitis but could have contributed to the child's poor reaction to the infection.