Certifying A Death in Vermont – Tutorial

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Certifying a Death in Vermont

This tutorial is designed to familiarize you with death certification and death reporting principles.

All Vermont deaths must be certified using the Electronic Death Registry System (EDRS), and you must enroll prior to reporting. This tutorial <u>does not facilitate enrollment</u> to use the EDRS or address how to use the EDRS application.

The following procedures should be followed when a physician is asked to certify a death

1. Evaluate if the death is reportable to the medical examiner. Each state has specific laws relating to which cases are reportable to the Medical examiner or Coroner. In VT these are described under 18 V.S.A. § 5205. Also see reportable deaths.

Familiarity with local law is essential. If you are unclear if the death is reportable, it is wise to report it, there is no charge for doing so (1-888-552-2952). If the medical examiner accepts the case then they will certify the death.

If the medical examiner declines jurisdiction and asks you to certify the death, proceed to Step 2. Of course before reporting a case one must know something of the circumstances of the death which may require contacting another physician or reviewing the medical record. (see #2).

2. Evaluate if there is a more appropriate certifier. Physicians are often asked to certify deaths of patients about whom they have little or no personal knowledge. Examples include emergency room physicians, hospitalists, and cross covering physicians.

In these instances contacting the personal or attending physician should be attempted as they may be able to more accurately and completely certify the death. If there is no one more appropriate, proceed to Step 3.

3. Certify the cause of death as accurately as possible.

An Example of a Poorly Written Cause of Death Statement

Part I

A. Septic Shock

Due to, or as a consequence of:
B. Gram-negative Sepsis
Due to, or as a consequence of:
C.

When reading this one should immediately ask, "Why did this person become septic?" Spontaneous sepsis in an otherwise healthy person is extremely rare. Was there something else going on with this person?

A cursory review of the patient's medical record indicated this patient had multiple sclerosis with a neurogenic bladder and a chronic indwelling catheter which resulted in a urinary tract infection. An accurate and complete cause of death statement would be:

Part I

A. Gram-negative sepsis

Due to, or as a consequence of:

B. Urinary tract infection

Due to, or as a consequence of:

C. Indwelling catheter or neurogenic bladder

Due to, or as a consequence of:

D. Multiple Sclerosis

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I.

This gives a much better understanding of exactly why this person died. It tells a specific story and gives an etiologically specific underlying cause of death.

It is the purpose of this tutorial to help a practicing physician generate competent and useful cause of death statements.

Name Known to Physician and Date of Death

The name known to physician is just that. The patient's name as you know it to be. For example, you may know the man as Al Newman. This is what you should enter. Alfred Edward Newman IV may actually be the deceased's full name. The patient's complete legal name will be entered by the funeral director.

Approximate age of death - This is used by staff of the Office of the Chief Medical Examiner when reviewing death certifications.

The date of death is the date the person is pronounced dead.

Definitions

Before moving on to the remaining sections, we will first define several key terms and concepts:

- Cause of Death (immediate and underlying)
- Mechanism of Death (sometimes called Mode or Immediate Cause)
- Manner of Death

Cause of Death

Stated very simply, a cause of death is the disease or injury responsible for starting the lethal sequence of events, which ultimately lead to death. A competent cause of death must be as etiologically specific as possible. Etiologically specific causes of death are the disease entities studied in basic pathology courses. Examples include:

- Atherosclerotic cardiovascular disease
- Chronic alcoholism
- Hypertensive cardiovascular disease
- Blunt trauma
- Multiple Sclerosis
- Alzheimer's disease
- Breast Carcinoma
- Parkinson's disease

- Prostate carcinoma
- Pulmonary emphysema
- Diabetes Mellitus
- Hodgkin's disease
- Viral Encephalitis*
- Bacterial Meningitis*
- Pertussis (whooping cough)*
- Human Immunodeficiency Virus*

Mechanism of Death (or Mode of Death)

The mechanism of death is the altered biochemistry or physiology whereby the cause exerts its lethal effects. Mechanisms are not specific and can NEVER replace or substitute for a cause of death.

Examples of Mechanisms of Death

- Bronchopneumonia
- Coagulopathy

^{*}Infectious diseases or suspected infectious diseases, which are a threat or potential threat to public health must be reported to the Vermont Department of Health (1-888-588-7781 or 1-802-951-4080)

- Acute myocardial Infarct
- Multi-organ failure
- Cardiopulmonary arrest
- Respiratory failure
- Congestive heart failure
- Intracerebral hemorrhage
- Liver failure
- Respiratory arrest
- Asystole
- and the list goes on.

Mechanisms can never stand alone on a death certificate and always need an underlying cause of death.

Always ask yourself what the mechanism is due to in order to find the underlying cause of death.

Examples

- Coagulopathy due to Coumadin treatment for **chronic atrial fibrillation**
- Coagulopathy due to Liver failure due to Hepatic Cirrhosis due to Chronic alcohol abuse
- Intracerebral hemorrhage due to rupture of berry aneurysm
- Intracerebral hemorrhage due to middle cerebral artery infarct due to atherosclerotic cardiovascular disease
- Congestive heart failure due to Coronary artery atherosclerosis
- Congestive heart failure due to pericardial adhesions due to viral pericarditis
- Congestive heart failure due to calcific aortic valve stenosis

In these examples the *mechanisms are italicized* and the **causes are in bold**.

Manner of Death (Item 27)

The Manner of death describes the circumstances surrounding the death. In Vermont and in most of this country there are only 5 choices

- Natural
- Suicide
- Homicide
- Accident
- Could Not Be Determined

• Pending Investigation (only available to medical examiners)

All cases that are not due exclusively (100%) to natural disease MUST, by law, be reported to the Medical Examiner's Office (1-888-552-2952). If an injury in any way contributes to the person's death, no matter how long ago that injury was sustained, the death is not considered natural.

Cause of Death Part I (item 28) - Introduction

Part I of the Cause of Death is formatted so that sequential information is reported with ONE CONDITION per line, starting with the most recent condition and going backward in time.

Part I

A. Most recent condition (e.g., Cardiac tamponade)

Due to, or as a consequence of:

B. Next oldest condition (e.g., Ruptured myocardial infarct)

Due to, or as a consequence of:

C. Oldest (original, initiating) condition (e.g., Atherosclerotic coronary artery disease)

In this scenario "Cardiac Tamponade" and "Ruptured myocardial infarct" are non-specific mechanisms. Both can be caused by various pathologic processes. However, in this case, atherosclerotic coronary artery disease is the underlying cause which initiated the events of infarct, rupture and subsequent tamponade, the immediate cause or mechanism of death.

Cause of Death Part I Examples

Example 1 - Chronic Alcohol Abuse

Another sequential Part I formatted example:

Part I

A. Upper gastrointestinal hemorrhage

Due to, or as a consequence of:

B. Ruptured esophageal Varix

Due to, or as a consequence of:

C. Cirrhosis of the liver

Due to, or as a consequence of:

D. Chronic alcohol abuse

In the example, "chronic alcohol abuse" is the underlying cause of death. "Upper gastrointestinal hemorrhage" is the immediate cause or mechanism of death. The other two conditions are

intermediate steps which fall somewhere in the pathologic process between the underlying, which begins the lethal chain of events and the immediate cause or mechanism of death.

Example 2 - Myxomatous Degeneration

A major goal in writing cause of death statements is to report the underling cause of death as specific as possible.

Part I

A. Cerebral infarct

Due to, or as a consequence of:

B. Thrombo-embolism to right internal carotid artery

Due to, or as a consequence of:

C. Bacterial endocarditis of mitral valve

Due to, or as a consequence of:

D. Floppy mitral valve syndrome

In this example, myxomatous degeneration or the floppy mitral valve syndrome is the etiologically specific condition that started the lethal sequence of events. To date there is no known cause of mitral valve degeneration thus it is a "competent" underlying cause of death.

Example 3 - Amyotrophic Lateral Sclerosis

In this example, Amyotrophic Lateral Sclerosis is the underlying cause of death

Part I

A. Respiratory Failure

Due to, or as a consequence of:

B. Amyotrophic Lateral Sclerosis

Due to, or as a consequence of:

C.

Due to, or as a consequence of:

D.

"Respiratory Failure" was the final and fatal complication of the progressive neurologic disease and is the immediate cause or mechanism of death in this patient with Amyotrophic Lateral Sclerosis, the underlying cause of death.

It is necessary to report Amyotrophic Lateral Sclerosis as the underlying cause of death because there are a number of conditions that can cause Respiratory Failure. Other possibilities that can cause respiratory failure include:

- Pulmonary Emphysema
- Flail Chest from trauma *

- Pneumocystic Currinii Pneumonia complicating AIDS
- Congestive Heart Failure complicating Coronary Athersclerosis.
- Anaphylaxis from Food Allergy *
- Bronchial Asthma
- Legionnaires Disease**
- Hantavirus**
- etc.

If only Respiratory Failure was reported it would be impossible for a user of the Cause of Death Statement to know which underlying condition this patient had.

** suspected and/or confirmed cases must be reported to the Vermont Department of Health (1-888-588-7781 or 1-802-951-4080). If the patient dies these case or suspected cases must also be reported to the OCME (1-888-552-2952).

Example 4 - Challenges in Reporting the Immediate Cause

Sometimes it may not be possible to report an immediate cause of death.

Consider a 50 year old woman with metastatic breast cancer. After enduring years of treatment modalities (surgical, chemo and radiation) she dies quietly in bed at home. Her death was expected so she does not fall under the medical examiner's jurisdiction, and permission for a hospital autopsy could not be obtained.

Part I

A. Metastatic Breast Carcinoma

Due to, or as a consequence of:

B.

Due to, or as a consequence of:

 \mathbf{C}

In this scenario, insufficient information exists to cite an immediate cause or mechanism such as bronchopneumonia, hemorrhage of a brain metastasis or some other mechanism. In cases like this, Line A serves as both the underlying and immediate cause, a "single line" format.

When reporting a cancer in the EDRS you will receive a "soft edit" asking you to be sure you have included the site, cell type (Invasive Ductal) and whether the condition has mastastasized, if this is known. If you have already provided this information you simply select the option to "Verify" your statement when this message appears. Otherwise, you should provide the additional details.

Cause of Death Part I - Uncertainty

^{*} cases which need to be reported to the Medical Examiner

It is acceptable to express uncertainty* and one can qualify cause-of-deaths with words such as "probable" or "presumed."

Part I

A. Acute myocardial infarction

Due to, or as a consequence of:

B. Probable coronary artery atherosclerosis

Due to, or as a consequence of:

C.

Since all cause-of-death statements are opinions based on the available information and need only meet the test of being "more likely than not," these qualifiers are not usually necessary.

"TO THE BEST OF MY KNOWLEDGE, ON THE BASIS OF THE CASE HISTORY, EXAMINATION AND/OR INVESTIGATION, DEATH OCCURRED AT THE TIME, DATE AND PLACE AND DUE TO CAUSE(S) AND MANNER STATED" This is the statement you attest to every time you certify a death.

*If after reviewing a patient's records and history you have no idea what disease or injury caused this person to die, contact the Medical Examiner.

Cause of Death Part I - Nonspecific Process

Many patients may die of fatal nonspecific processes or complications of an underlying cause of death.

Consider an elderly patient who develops a Upper gastrointestinal hemorrhage, and dies prior to a full medical work up and there is no autopsy.

Part I

A. Upper gastrointestinal hemorrhage.

Due to, or as a consequence of:

B. Undetermined natural causes.

Due to, or as a consequence of:

C.

Of course, one should be reasonably certain that only natural causes were involved. This approach lets a death certificate user know that thought was given about the underlying cause of death and that it wasn't just omitted through oversight.

Using the same scenario but adding that the patient had symptoms and signs suggesting peptic ulcer disease or had past peptic ulcer disease, it would be preferable to certify the death as:

Part I

A. Upper gastrointestinal hemorrhage.

Due to, or as a consequence of:

B. Probable peptic ulcer disease.

Due to, or as a consequence of:

C.

Medical judgment and common sense are required for certifying the cause of death. Truthfulness, completeness, and reasonable accuracy should be the goal. *Convenience and expedience* should not play a role when certifying causes of death.

Cause of Death Part II (Item 29) - Introduction

In all previous examples only a single underlying disease entity existed. In many patients several conditions (disease and/or injury) exist simultaneously and are either inseparable or have added together to cause death.

Part I

A.

Due to, or as a consequence of:

В.

Due to, or as a consequence of:

C.

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I.

Part II exists for citing "Other Significant Conditions." This section is used to report conditions which co-existed or pre-existed and contributed to death but did not result in the underlying cause of death reported in Part I.

Cause of Death Part II - Example

Acute Myocardial Infarct

The case below is a classic example of the intended use of Part II.

Scenario: A 64 year old man who is obese (5'8", 260lbs.), is a diabetic (type II), smokes one pack of cigarettes per day and is being treated for hypertension, calls EMS complaining of chest tightness, left arm pain and shortness of breath. During transportation he arrests and despite resuscitation protocols is pronounced dead in the ER.

Part I

A. Acute myocardial infarction

Due to, or as a consequence of:

B. Atherosclerotic coronary artery disease

Due to, or as a consequence of:

C.

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I -

- Essential hypertension
- Obesity
- Diabetes Mellitus Type II
- Tobacco

The clinical course is highly suggestive of myocardial ischemia. However, this obese man also had hypertension; both conditions, which can contribute to cardiac hypertrophy which increases cardiac oxygen demand and may facilitate or exacerbate the effects of coronary athersclerosis.

Since the hypertension and obesity coexisted and contributed to death but did not cause the coronary athersclerosis, they are correctly listed in Part II.

Listing diabetes and tobacco abuse in Part II is a matter of convention (general agreement). Since diabetes and tobacco have been shown to cause atherosclerosis, people can argue to place them in Part I.

However, in specific cases it may be difficult to show a cause and effect relation. Using this convention recognizes the contribution these "risk factors" have and ensures they are recorded in mortality statistics (Vermont, like many states, has a separate question asking the physician if they believe tobacco contributed to death, see below).

Cause Part I - A Word about Intervals

The Cause of Death Part I contains a space for reporting the interval between the onset of each condition and death. Try to be as accurate as possible, and using generic intervals such as (seconds, minutes, hours, days, weeks, months, years, and decades) is acceptable. It should be apparent that intervals get longer when reading from top to bottom.

Examples

Part I

A. Intracerebral hemorrhage

Interval between onset and death

Approx. 8 hours

Due to, or as a consequence of:

B. Hypertensive Cardiovascular Disease Interval between onset and death

10-15 years

Part I

A. Failure to Thrive Interval between onset and death

Approx. months

Due to, or as a consequence of:

B. Alzheimer's Dementia Interval between onset and death

years

Part I

A. Broncho Pneumonia Interval between onset and death

Approx. days

Due to, or as a consequence of:

B. Pulmonary Emphysema Interval between onset and death

5 years

Due to, or as a consequence of:

C. Tobacco Use Interval between onset and death

30 years

Other Factors

In addition to reporting the Cause of Death, there are a few questions regarding specific aspects of the decedent's health and the event of the death that require your response. These questions all have check boxes for you to indicate a response.

30. Did Tobacco contribute to Death? This box was added to the VT certificate of death in 2001. Four choices are available to the physician: YES, NO, PROBABLY and UKNOWN. Please check the choice which you believe best represents this person's history.

31. If Female? This question was added based on the 2003 US Standard Death Certificate to gather information of use to maternity mortality review programs. If the decedent is Male leave the item blank or enter "Not Applicable" when using the EDRS. If the decedent is Female but younger than 5 years or older than 75 years, then enter "Not Applicable". If you do not know the pregnancy status of a female decedent, indicate "unknown".

32a. Was ME Contacted? If you contacted the Office of the Chief Medical Examiner regarding the circumstances of the death answer "Yes" even if a Medical Examiner did not take over the case.

32b. ME Case # - Leave blank, this is a field that is only completed by the Office of the Chief Medical Examiner.

33. Was an Autopsy preformed? YES or NO

34. Were findings available prior to completion of cause of death? YES or NO. If no autopsy was done this should be left blank. If an autopsy was done but the results were not available prior to you completing the Cause of Death statement, check NO. If an autopsy was completed and results were available to you at the time of completing the death certificate, check YES.

Manner of Death (box 27a)

Six choices are available:

- Natural
- Homicide
- Accident
- Could not be Determined
- Suicide
- Pending

If you as a physician are contemplating any but Natural, contact the Medical Examiner at 1-888-552-2952.

Place of Death and Hospice Care

There are two items asked in death reporting that while not specifically related to the cause of death, require information that is best known and completed by physicians.

19. Did Decedent Receive Hospice Care (in past 30 days)? - This question was added at the request of Vermont medical providers involved in end of life care and will help inform planning related to this issue. Since most hospice care is not provided in a "Hospice Facility" in Vermont, funeral directors (and family members) often do not know whether the decedent was receiving this care.

Items 20 & 21a-c. Place of Death - These fields should be completed by a physician whenever possible, but it is particularly important for deaths that occur in a hospital. A funeral director or family member is unlikely to know whether the death should be considered "Inpatient", "Emergency Room" or "Dead on Arrival". When a physician does not provide this information, the funeral director has to track it down later in the process by contacting Medical Records, the physician or other hospital staff. This will delay completion of a certificate for a family.

Pronouncement of Death

42b and d. - Actual or Presumed Time of Death and Time Pronounced Dead

The time of death (item 42b) is the time the patient died. Many times the exact time of death is not known and this should be stated. For example: An elderly women with multiple medical

problems is discovered dead in bed on routine morning rounds. The exact time of death is unknown and the pronounced dead on, would be the time the body is discovered dead. An unknown time should be written or entered into the EDRS as 99:99. You also may choose to indicate a time is "Approximate" by including the symbol "~" in front of the time. In the EDRS this is indicated by checking the box labeled "Approximate"

By consensus, the first "official" person informed of the death can pronounce, this can be the nurse or nurse supervisor alerted to the death. The date and time should then be recorded. This should never be left blank and "Not Pronounced" is unacceptable.

In some instances time of death and time pronounced dead are the same. Consider a patient who arrested in the field or hospital. The time resuscitation efforts are stopped would be the time of death and the time pronounced dead.

Box 43a. - Date Certified

This is the date you sign the Preliminary Report of Death or "certify" the death electronically using the EDRS. You must not leave this field blank.

Where to Get Help

The OCME is available to assist in certifying deaths of your patients. For a consultation call 802-863-7320, M-F 8:00 -4:00.

If you need to report a death or to inquire if a death does fall under medical examiner jurisdiction call 888-552-2952, 24 hours/7 days a week.

Scenarios

In the following section, 11 clinical scenarios are given followed by a cause of death statement and a discussion of the case.

As an exercise, read the case history and write a cause of death statement on a piece of scratch paper before moving on to the discussion.

Scenario 1

1. A 66 year old woman was found dead, sitting on a couch in her home by her daughter. She was last known alive the previous evening and complained of being tired. The police contact you to certify the death. You review her records which shows she is being treated for borderline

hypertension and 2 years previous suffered a stroke leaving her with a very slight residual hemiparesis of her right arm. How would you certify this death?

Discussion:

Part I

A. Atherosclerotic cardiovascular disease

Due to, or as a consequence of:

В.

Due to, or as a consequence of:

 \mathbf{C}

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I - hypertensive cardiovascular disease.

From the police investigation and death scene description, no foul play is suspected, and everything points to a sudden natural death. The actual mechanism of this death may be subject to debate.

In the differential is acute cardiac arrhythmia, which could have been precipitated by an ischemic atherosclerotic occlusion (Myocardial infarct) or as a direct result of a hypertrophied heart from hypertension. Since this patient does have a history of cerebral vascular disease, a cerebral infarct or hypertensive hemorrhage may have been the terminal event.

In all scenarios the underlying cause of death would be her cardiovascular disease. In many people atherosclerosis and hypertension are found to co-exist. Deciding between the two is not always practical so the alternative, listing hypertension in Part I and Atherosclerosis in Part II would also be acceptable.

A third possibility would be to combine them in single line as hypertensive and atherosclerotic cardiovascular disease. Non-specific mechanisms such as sudden death syndrome, acute cardiopulmonary arrest or terminal arrhythmia should not be used.

If during your review of the chart you find diseases/risk factors such as hyperlipedemia, smoking or obesity you may list these in Part II.

Scenario 2

A 52 year old man was raking leaves began having chest tightness and trouble catching his breath. He told his wife who immediately took him to the emergency room. In the ER, EKG showed changes indicative of ischemia. On his way to the cardiac catheterization lab, he arrested and despite full ACLS protocols, he expired. How would you certify this death?

Discussion

A man aged 52, although young, is solidly in the age when cardiac events cause sudden death. His circumstances of chest tightness and dyspenia in the setting of exertion combined with the EKG findings clearly indicate the cause of death and should be certified as:

Part I

A. Acute Myocardial Infarction
Due to, or as a consequence of:
B. Atherosclerotic cardiovascular disease
Due to, or as a consequence of:
C.

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I

Again if risk factors such as obestiy, smoking, hypertension etc., are obvious, found in the patients medical record, or elicited through conversation with the wife, they could and should be added to Part II.

Should this case be reported to the medical examiner? There is no 24 hour rule in Vermont. Hospital deaths entirely from natural disease in which a diagnosis has been made with reasonable medical probability, despite that the patient survived less than 24 hours in the hospital, need not be reported to the Medical Examiner.

As we get older, ages like 52 seem to get younger and physicians have a hard time certifying these types of death. Even families may want to know what happened for certain. Since there is no "foul play" (illicit drugs suspected, trauma or any threat to public health) even if the Medical Examiner is called jurisdiction could be waived.

This is the perfect type of case for a hospital autopsy, which can be arranged through Fletcher Allen Health Care (847-2700) by contacting the clinical pathology resident on call.

Scenario 3

A 34 year old woman is brought to the Emergency Room by friends, who say the found her unresponsive in the bathroom. Examination reveals no external injuries but the CT scan shows a large intracerebral hemorrhage. She remains comatose for the next several days, is prononced dead by neurolgic criteria and support is withdrawn. You are covering night float and have been asked to certify her death.

Discussion

Even though you don't know this patient, you are obligated to learn some things about her in order to find out if she is a reportable case. The diagnosis of intracerebral hemorrhage is terribly non-specific and will require you to read the imaging reports or contact the primary care team.

For example: if the hemorrhage is subarachnoid and the working diagnosis is rupture of a berry aneyursm, you may certify the case as:

Part I

A. Subarachnoid Hemorrhage *Due to, or as a consequence of:* B. Rupture of Berry Aneurysm *Due to, or as a consequence of:* C.

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I.

However, if initial urine toxicology showed the presence of cocaine, then you must contact a medical examiner. Similarly, if trauma is suspected as in a subdural or epidural hemorrhage, or if there are skull fractures these must be reported.

Some common regions for hemorrhages and probable underlying causes include:

- Basal ganglia distribution due to hypertension
- Middle cerebral artery distribution due to Atherosclerotic cardiovascular disease or thromboembolism (Does the patient have a history of atrial fibrillation?)
- Frontal lobe distribution due to cerebral amyloid angiopathy (any history of dementia?)

Metastatic carcinoma (Any lesions or history?)

Scenario 4

A 52 year old paraplegic man arrives in the Emergency Room from an outside hospital. He is asystolic on arrival. The transfer note just says recurrent pneumonia. How would you proceed?

Discussion

Again some further information is required, just as if this patient still retained a pulse. After a quick call to the transferring institution you learn this man suffered a spinal cord injury several years ago during a bicycle accident. This represents a delayed death from a traumatic injury and is reportable to the medical examiner. His death certificate would be:

Part I

A. Bronchopneumonia
Due to, or as a consequence of:
B. prolonged immobility / paraplegia
Due to, or as a consequence of:
C. spinal cord injury from blunt impart

C. spinal cord injury from blunt impact during a bicycle accident

Interval between onset and death

days

5 years

In this instance the spinal cord injury with resulting paraplegia is what made this otherwise healthy 52 year old man susceptible to recurrent brochopneumonias. This brings up a discussion of pneumonia.

Pnuemonia can NEVER stand alone on a death certificate. People who get and die from pneumonia ALWAYS* have some underlying condition which makes them debilitated and susceptible to the bronchopneumonia. It may be cancer, chronic alcoholism, dementia or a viral upper respiratory illness.

People who are anatomically and neurologicaly intact do not aspirate and get pneumonia. People with dementia, those who are status post laryngeal surgery for cancer, with esophageal dysmotility from diabetes or scleroderma , or who are intoxicated due to drugs and or alcohol can and do get bronchopneumonia. The underlying cause is what made these people susceptible to the pneumonia.

*Lobar pnueumonia is a different pathologic entity than bronchopneumonia and can cause the death of otherwise healthy non debilitated people.

Scenario 5

Your called to the MICU, where a 56 year old woman has just died. The nurse tells you she has been in the unit for the past two weeks and has multi-system failure and you need to issue a death certificate.

Chart review tells you this woman first presented to her primary care physician about 6 weeks ago with fever, abdominal pain and jaundice. She underwent several endoscopies with stenting of the common bile duct, and was doing fine for a couple of weeks.

She presented again with returned jaundice, pain and fever and was taken to the operating room to remove a gangrenous gallbladder. At this time a peripancreatic abcess was identified and drained and she was placed on an appropriate antibiotic.

Following the surgery, she had an overall downhill course complicated by renal failure, respiratory problems and anemia. The family adamantly denies a hospital autopsy and since no violence is contributory, the medical examiner has declined jurisdiction. How would you certify this cause of death?

Discussion

In a case like this, when you do not know the patient, a phone call to the primary care doctor, a more appropriate certifier, should be in order. However if your are left to do the certification it is sometimes easier to work backwards.

She has multi-system failure-Why? She has been in the ICU following surgery for a necrotic gallbladder and peripancreatic abscess. Why did she have a necrotic gallbladder? She had obstruction of the common bile duct from gallstones. Therefore:

Part I

A. multiple medical complications

Due to, or as a consequence of:

B. gangrenous cholecystits with peripancreatic abcess

Due to, or as a consequence of:

C. cholelithiasis

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I.

In Part II, other contributory factors can be added. Is she diabetic, obese, hypertensive, have sickle cell disease or immunosupressed in any way, etc.?

Suppose this patient's kidneys shut down following injection of contrast material for imaging studies. Would that change your thinking?

Part I

A. Acute renal failure

Due to, or as a consequence of:

B. infusion of radiographic contrast material while being evaluated for medical complications of gangrenous cholecystits with peripancreatic abcess

Due to, or as a consequence of:

C. cholelithiasis

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I.

In a scenario such as this, when a complication of medical treatment may have contributed to death, a report to the medical examiner is indicated.

Scenario 6

A 76 year old man, with a long history of cardiovascular disease, sustained a fall in the bathroom of his home on the afternoon of September 20. He was transported to Fletcher Allen Health Care where a diagnosis of left femoral fracture was made.

On September 22 he underwent surgical stabilization/pinning.

On the September 25, he was transferred to a local rehabilitation center with plans for return home in several weeks. He was found dead in his room in the rehab center on the morning of September 29. You are the covering physician. How do you certify this death?

Discussion

A 76 year old man with long standing heart disease could drop dead at any time, and it wouldn't be a surprise to anyone. The mechanism of this type of death would most likely be an arrythmia brought on by an acute ischemic event caused by the underlying atherosclerosis. However in this scenario, a fracture of a major bone can not be ignored.

Pathophysiologically, at the time of the fall several things are happening. There is an acute blood loss, there may be marrow elements being transported to lungs (fat emboli) and there is definitely pain. All of which would cause a degree of cardiac stress.

After surviving the acute injury, this man is then subjected to a surgical procedure. Again some more blood loss, anesthesia/intubation, more pain (or at least pain medication). Again he survived these stressful insults and is discharged to rehabilitation.

Here he has several hard days of physical rehab. We must also consider the mental stress placed on this man (strange surroundings, constant medications, fear of never regaining independence, etc.).

In the end, he is found dead in bed. The exact mechanism of his death can be debated. It may have been an ischemic event from his underlying coronary disease or possibly a pulmonary embolism from a thrombosed leg vein.

The point being the recent stress are all brought on as a consequence of the trauma related to the fall, and his death must be reported to the medical examiner. His cause of death, without an autopsy could be certified as

Part I

A. Atherosclerotic coronary artery disease
Due to, or as a consequence of:
B.
Due to, or as a consequence of:

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I. Femoral fracture from blunt impact (fall from standing height), osteoporosis/osteopenia

In this case, we consider his greatest morbidity his heart disease and the fracture was just enough to "put him over the edge". The osteoporosis/osteopenia was added as another contributory factor, because if he didn't have it, the probability he would have broken his femur from a low impact fall would be very low.

Again, if he had other risk factors (diabetes, high lipids, etc.) or diseases (Chronic bronchitis, emphysema) these could also be added to Part II. As a general rule any death that occurs within six months of a fracture should be reported to the medical examiners office.

Scenario 7

You are called to certify the death of a 96 year old woman who was found dead in bed at the nursing home she has lived for many years. Her only medication is hydrochlorothiazide, in low dose that she has been taking for years.

The nursing staff say "she has been slowing down" but has no recent illnesses or complaints. How would you certify this death?

Discussion

This is a fairly common scenario faced by physicians who have a geriatric population. Many of these people tend to die with there diseases rather than from there diseases. It is hard to know exactly what the final mechanism of death was but we can be sure it was not violent and was just a natural progression of life to death. These types of deaths can be certified in several ways:

In patients with a known disease, in our case hypertension, this can be listed as the underlying cause.

Part I

A. Hypertensive cardiovascular disease

Due to, or as a consequence of:

R

Due to, or as a consequence of:

C.

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I.

Another variation, since we think she died with hypertension rather than from hypertension would be to list the underlying cause of death as unknown natural causes or old age and list the known diseases as risk factors.

Part I

A. OLD AGE

Due to, or as a consequence of:

В

Due to, or as a consequence of:

 \boldsymbol{C}

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I. Hypertensive cardiovascular disease.

Scenario 8

An 81 year old man is brought to the emergency room by his family with severe abdominal pain. Work-up suggests peritonitis from a perforated bowel. His medical history also includes dementia, which is thought to be Alzheimer's type.

The family does not want any invasive/heroic efforts and so the man is made pain free with morphine and dies 3 days later. How would you certify this death?

Discussion

In this case we have to eliminate a violent mechanism for the perforation through a history obtained by the family. He was not in a car accident, sustained a fall or physically abused.

This puts us into the realm of natural disease, and in an older individual the differential list is long and may include cancer, diverticulosis, peptic ulcer, appendicitis, etc. Since we did not know what caused the perforation we can certify the death as:

Part I

A. Peritonitis

Due to, or as a consequence of:

B. Perforation of bowel

Due to, or as a consequence of:

C. Unknown natural disease

Part II. OTHER SIGNIFICANT CONDITIONS: Conditions contributing to death but not resulting in the underlying cause of death in Part I. Dementia (Alzheimer's type)

By using "unknown natural disease", we let the user of the death certificate know that the cause was thought about and although we do not have a specific etiology we do know that it was not violent. By leaving the certificate as perforation of bowel there are still many unanswered questions.

Adding the Dementia in Part II, gives us a reason why we may not have worked up the exact cause for Part I.

Scenario 9

A 42 year old paraplegic woman developed sepsis from infected ducubitus ulcers. How would you certify this death?

Discussion

Part I

A. Sepsis

Due to, or as a consequence of:

B. Infected Decubitus Ulcers

Due to, or as a consequence of:

C. Paraplegia

But this is not enough. One must ask "Why is this person paraplegic?" A review of the history states that she suffered a spinal cord injury in a motor vehicle collision 10 years prior. This

makes a non- natural event a contributory factor and therefore must be reported to the medical examiner.

If, however, the paraplegia was due to pathologic fractures complicating metastatic breast carcinoma, a natural disease, then this death need not be reported. It is the physician's responsibility to inquire about the underlying process.

Scenario 10

This is the third admission within a 3-month time of a 52 year old man who again presents with abdominal distention and pain. Abdominal films show air fluid levels consistent with a small bowel obstruction. His oral intake is stopped and he is decompressed with a nasogastric tube. His condition is improved and he is discharged on hospital day three.

A week later he returns with similar symptoms but this time accompanied by fever. Films show free air in the peritoneal cavity. A surgical consult is obtained and he is taken to the OR where a segment of necrotic small bowel is removed and many abdominal adhesions are noted and lysed. Despite aggressive antibiotic therapy, the man dies.

Prior to his first admission 3 months ago, he had no past history except for peritonitis complicating acute appendicitis when he was in college. How would you certify this death?

Discussion

This case involves a long term sequela related to a natural disease process. One can hypothesis an individual developing abdominal adhesions resulting from peritonitis. Years may go by without any problems but eventually develop a nidus for bowel torsion/obstruction, which may end up infarcted and necrotic.

Using this scenario, which follows clinical judgment and common sense the cause of death may be written as follows:

Part I	Interval between onset and death
A. Peritonitis	days
Due to, or as a consequence of:	
B. small bowel infarct with perforation	days
Due to, or as a consequence of:	
C. abdominal adhesions	years
Due to, or as a consequence of:	
D. appendicitis	approximately 20 years

One must remember that time frame is not an issue. The underlying cause of death is that which in a natural and continuous sequence, unbroken by an efficient intervening cause, produces the fatality and without which the end result would not have occurred.

In this patient, if he did not have appendicitis all those years ago, he most likely would have never had a strangulated small bowel and would be alive today.

Scenario 11

A 21 day old infant dies from respiratory failure in the PICU. The infant had been transported to the hospital the prior week for "apnea". Pneumonia and encephalopathy developed and the child subsequently died.

A review of the medical record indicates she was born at 33 weeks gestation and that a culture for Pertussis is pending.

Discussion

This case can be certified as:

Part I.

- Bronchopnumonia and Encephalopathy due to
- Pertussis infection (probable)

Part II. Prematurity (born at 33 weeks gestation)

This case demonstrates that although the diagnosis is uncertain (culture for pertussis is pending) given the clinical suspicion the death can be certified. Also, based on the clinical suspicion this case needs to be reported to the Vermont Department of Health (1-888-588-7781 or 1-802-951-4080), since Pertussis is a potential threat to public health.

This ends the Scenario section. Continue through the subjects on the menu for more information about autopsies, reportable diseases, what to look out for and more.

Death Investigation in Vermont

Vermont law created a statewide medical examiner system back in the mid 1950's. From its inception, death investigation has relied upon community based local death investigators coordinated through a central system led by a forensic pathologist, the chief medical examiner.

This system has evolved over the years from local investigators the majority of whom were physicians, to today's statewide cadre of advanced emergency medical service technicians, paramedics, and nurses, as well as physicians.

Investigation Team

- Chief Medical Examiner Steven Shapiro, MD
- **Deputy Chief Medical Examiner** Elizabeth A. Bundock, MD, Ph.D.
- Local Medical Examiner Coordinator Lauri McGivern, F-ABMDI
- Office Manager Jennifer Sumner
- Records Specialist Karen Dean
- **Local Medical Examiners** Approximately 60 individuals statewide whose backgrounds include service as doctors, nurses and advanced emergency medical technicians.

How the System Works

There are only two places where an individual can die. Either in a health care facility such as a hospital, or somewhere else.

Death outside of a Health Care Setting

When someone is found dead by another person either in a residence or outdoors the usual response is to call 911. This call will activate the police, who will respond to the scene and make an assessment. Unless the death is suspected as in a person sent home with hospice or some other home health care provider, a local medical examiner should be contacted and "(t)he medical examiner and a designated law enforcement officer shall thereupon together immediately make a proper preliminary investigation. 18 V.S.A. § 5205 (b)".

If preliminary investigation indicates no "suspicious" circumstances, and information gathered from the scene, interviews and the person's primary care physician can determine the cause and manner of death, the OCME will issue the death certificate. If however initial investigation indicates something "suspicious," the cause or circumstances of death are uncertain or the state's attorney or chief medical examiner, deem it necessary and in the interest of public health, welfare and safety, or in furtherance of the administration of the law, the body will be transported to the OCME facility for further investigation. That investigation may range from a detailed visual inspection, right up to a full medical autopsy, with associated ancillary testing (including, but not limited to toxicology, histology, radiograph, and photography).

Death within a Health Care Setting

The following procedures should be followed when a physician or other health care provider is asked to certify a death under their care:

1. Evaluate if the death is reportable to the medical examiner. In VT these are described under 18 V.S.A. § 5205(exit VDH). Also see <u>reportable deaths</u>.

Familiarity with local law is essential. If it is unclear whether the death is reportable, it is wise to report it, there is no charge for doing so (1-888-552-2952). If the medical examiner accepts the case then they will certify the death.

If the medical examiner declines jurisdiction and asks for the death to be certified, proceed to Step 2. Of course, before reporting a case one must know something of the circumstances of the death which may require contacting another physician or reviewing the medical record. (see #2).

2. Evaluate if there is a more appropriate certifier. Physicians are often asked to certify deaths of patients about whom they have little or no personal knowledge. Examples include emergency room physicians, hospitalists, and cross covering physicians.

In these instances contacting the personal or attending physician should be attempted as they may be able to more accurately and completely certify the death. If there is no one more appropriate, proceed to Step 3.

3. Certify the cause of death as accurately as possible.

Local (Assistant) Medical Examiners

The local (assistant) medical examiners are individuals with extensive experience in the medical profession which may include medicine, nursing, emergency medical work who meet the training and certification requirements for death investigation established by the chief medical examiner and approved by the commissioner. 18 V.S.A. § 508.

Local medical examiners serve under the direction and supervision of the chief medical examiner. They are usually the first-contact people for death notification, and duties include triaging calls, gathering initial information, visiting death scenes, and working with local law enforcement, State's attorneys, emergency services, hospitals, families, etc. Once primary information is obtained, the local examiner will consult with the OCME. In short, these professionals are the OCME "first responders."

Become a Local Medical Examiner

If you are interested in becoming a local medical examiner, or would like more information, please contact Local Medical Examiner Coordinator Lauri McGivern at Lauri.McGivern@state.vt.us.

Autopsy

By Vermont Law, only the chief medical examiner or county states attorney may authorize an autopsy against family wishes. Just because a case falls under OCME jurisdiction does not necessarily require an autopsy be done. We work closely with families to ensure their wishes are met while at the same time fulfilling the statutory requirements.

If an autopsy is requested by the family, in a case that falls outside the jurisdiction of the OCME, it can be arranged through the local hospital.

The attending physician should contact the hospital pathology group or can arrange autopsy through the Fletcher Allen Health Care Department of Pathology

Contact Information

Brenda Waters, MD Director of Fletcher Allen Autopsy Service

Tel.: 802-847-2700

Email: Brenda. Waters@vtmednet.org

Red Flags

If any of the following terms are included in the events leading to death, call the Medical Examiner.

Accident	Exposure	Misadventure
Adverse Reaction	Fall	Neglect
Asphyxia	Fire	Overdose
Aspiration	Fracture	Paralysis
At work	Gunshot	Poisoning
Bite	Homicide	Sting
Burn	Ingestion	Suicide
Choke	Injury	Toxicity
Contusion	Intoxication	Wound
Cut	Laceration	

Reportable Cases

Reportable cases include:

- Any violence
- Suddenly when in apparent good health
- All accidents (falls, motor vehicles, industrial)
- All suicides
- All suspected drug overdose or chemical or poisoning
- All persons in custody
- Deaths during or due to complications of therapeutic procedure
- Deaths related to employment
- All possible threats to public health
- Any suspicious or unusual deaths
- Anyone who dies within 6 months of sustaining a fracture (includes hip fractures in elderly)

How To Report A Case

To report a case or reach an OCME investigator for consultation, call our Vermont toll free number (888-552-2952). Your call will be answered by our central dispatch service. They will ask you "Are you reporting a new case?" Please answer yes.

They will then ask your location and a call back number. Our investigators are dispatched by county. The nearest investigator will be paged out and return your call within several minutes. *Please be patient*.

Please be prepared with the following minimal information:

- Name of the deceased and age/ date of birth.
- The circumstances surrounding the death or why you think this is a reportable case.
- The investigator will be able to discuss the case with you and decide on a course of action.

The investigators are in contact with the on-call forensic pathologist. Please do not try to reach the pathologist directly.

Common Mistakes

In this section some common mistakes encountered during death certification are presented along with explanations.

Examples of Common Mistakes on Death Certificates

1. Non-specific Causes - By far the most commonly encountered errors in cause of death statements are lack of an etiologic specific cause of death.

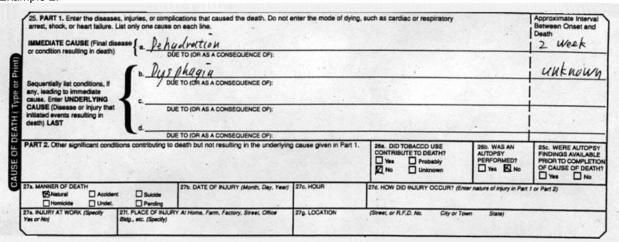
Example 1:

arrest, shock, or heart failure. List only	es, or complications that caused the death. Do not enter the mode of dying, sone cause on each line. (Aftin PUMONAL), ALLEST	such as cardiac or respiratory		Approximate Interval Between Onset and Death
IMMEDIATE CAUSE (Final disease or condition resulting in death)	DUE TO (OR AS A CONSEQUENCE OF):			
	a ASPIRATION EVENT			18 HOURS
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING	DUE TO JOR AS A CONSEQUENCE OF:			18 Hoors
CAUSE (Disease or injury that initiated events resulting in death) LAST	DUE TO JOR AS A CONSEQUENCE OF): d	PNEWMONIA		2 Days
PART 2. Other significant conditions of LIVER FAILUR	DUE TO JOR AS A CONSEQUENCE OF): intributing to death but not resulting in the underlying cause given in Part 1. LE LENAL FAILURE	28a. DID TOBACCO USE CONTRIBUTE TO DEATH? Des Probably No Unknown	26b. WAS AN AUTOPSY PERFORMED 7	26c. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETIO OF CAUSE OF DEATH
	27b. DATE OF INJURY (Month, Day, Year) 27c. HOUR Pending	274. HOW DID INJURY OCCUR? (E	inter nature of injury in Part	1 or Part 2)
	ACE OF NUURY At Home, Farm, Factory, Street, Office 27g, LOGATION tt. (Specify)	(Street, or R.F.D. No. City or 1	Town State)	

In this case, nothing listed gives any indication of what disease or injury is responsible for this individuals condition. A brief review of his medical history shows this is a 49 man with hepatic cirrhosis from years of alcohol abuse. The Cause of death could be stated simply as

- a. Terminal complications of hepatic cirrhosis days
- b. Alcohol abuse years

Example 2:



In this example one immediately should question, why this person is having dysphagia? It turns out this 97 year old man is in the terminal stages of Alzheimer's disease, which should be added to line c.

Example 3.

25. PART 1. Enter the diseases, injuries, arrest, shock, or heart failure. List only on		Service .	th as cardiac or respiratory		Approximate Interval Between Onset and Death
IMMEDIATE CAUSE (Final disease	Q enal 1=0,1	UVe			Death
or condition resulting in death)	DUE TO (OR AS A CONSEQUENCE OF):		16.		
Sequentially list conditions, if any, leading to immediate	DUE TO (OR AS A CONSEQUENCE OF):				
cause. Enter UNDERLYING CAUSE (Disease or injury that initiated events resulting in death) LAST	DUE TO (OR AS A CONSEQUENCE OF):				
C *-	DUE TO (OR AS A CONSEQUENCE OF):				
PART 2. Other significant conditions contri	buting to death but not resulting in the underlying	cause given in Part 1.	26s. DID TOBACCO USE CONTRIBUTE TO DEATH? Yes Probably No Unknown	26b. WAS AN AUTOPSY PERFORMED? Yes No	26c. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETIC OF CAUSE OF DEATH
	27b. DATE OF INJURY (Month, Day, Year) incide ending	27c. HOUR 2	No. HOW DID INJURY OCCUR? (E	nter nature of injury in Part	1 or Part 2)
27e. INJURY AT WORK (Specify Yes or No) 271. PLACE Bidg., etc. (27g LOCATION (Street, or R.F.D. No. City or T	own State)	

Is the renal failure in this patient a complication of Diabetic nephropathy, Hypertension, ethylene glycol intoxication, immune complex glomerulonephritis? Etc. etc. A review of the medical records shows this 74 man has had 2 previous myocardial infarcts and has been treated for hypertension and diabetes for many years. His death should be certified as:

- a. renal failure weeks
- b. hypertensive and atherosclerotic cardiovascular disease years

Part 2. Contributory factors: Diabetes Mellitus, type II

Example 4

25. PART 1. Enter the diseases, injuries, arrest, shock, or heart failure. List only on IMMEDIATE CAUSE (Final disease or condition resulting in death)	Contract to the second floor	ed the death. Do not enter the mode of the Heart Formula of the Heart Formula of the MSEQUENCE OF):	(2) (2)	THE RESERVE AND DESCRIPTION OF THE PERSON NAMED IN		Approximate intervine Between Onset and Death
Ch.	DUE TO (OF AS A COM	ISEQUENCE OF):				,
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING . c.	DUE TO (OR AS A CON	ISEQUENCE OF):				
CAUSE (Disease or injury that initiated events resulting in death) LAST	DUE TO (OR AS A COM	ISEQUENCE OF):			4	
	DUE TO (OR AS A CON	NSEQUENCE OF):		O home sale		
PART 2. Other significant conditions contri	buting to death but not resu	ulting in the underlying cause given in P		DBACCO USE TE TO DEATH? Probably Unknown	26b. WAS AN AUTOPSY PERFORMED? Yes No	25c. WERE AUTOP FINDINGS AVAILAB PRIOR TO COMPLE OF CAUSE OF DEA
27a. MANNER OF DEATH Accident St. St.		JURY (Month, Day, Year) 27c. HOUR	27d. HOW DID	INJURY OCCUR? (E	inter nature of injury in Part	1 or Part 2)
27e. INJURY AT WORK (Specify Yes or No.) 27l. PLACE Bidg., etc. (OF INJURY At Home, Farm, Fi	actory, Street, Office 27g. LOCATION	(Street, or R.F	D. No. City or 1	Town State)	

This example gives no indication of the cause of the congestive heart failure. Is it due to Alcoholic cardiomyopathy?, Coronary artery disease? Pericardial adhesions from viral myocarditis? Or as end stage hypertensive disease? As it turns out this woman has severe calcific aortic stenosis which has resulted in congestive heart failure. Her death certificate should read:

- a. congestive heart failure months
- b. aortic stenosis years
- c. dystrophic calcification years

2. To many causes

Example 5

25. PART 1. Enter the diseases, injuries, or complianrest, shock, or heart failure. List only one cause of	n each line				Approximate Interval Between Onset and Death
IMMEDIATE CAUSE (Final disease a Chor condition resulting in death)	rome +acw	te rena	utailure		
Th. Con	naestive hoa				
any, leading to immediate cause. Enter UNDERLYING	PD, A. Fil	o, toba	cco abuse		
initiated events resulting in death) LAST	E TO JOHAS A CONSEQUENCE OF: E TO JOHAS A CONSEQUENCE OF:	vere F	VD, ASC	JD	
PART 2. Other significant conditions contributing to		cause given in Part 1.	26a. DID TOBACCO USE CONTRIBUTE TO DEATH? Ses Probably No Unknown	26b. WAS AN AUTOPSY PERFORMED? Ves No	25c. WERE AUTOPS FINDINGS AVAILABL PRIOR TO COMPLETI OF CAUSE OF DEAT
27s. MANNER OF DEATH Natural	27b. DATE OF INJURY (Month, Day, Year)	27c. HOUR	27d. HOW DID INJURY OCCUR? (EI	nter nature of injury in Part	f or Part 2)
27s. INJURY AT WORK (Specify Yes or No) 271. PLACE OF INJUR Bidg., etc. (Specify)	Y Al Home, Farm, Factory, Street, Office	27g LOCATION	(Street, or R.F.D. No. City or T	own State)	

In this example, mechanisms of death (chronic and acute renal failure and congestive heart disease) are mixed in with etiologically specific causes of death(Ethanol abuse, Tobacco abuse, Atrial fibrillation, hypertension, abdominal atherosclerotic aneurysm, peripheral vascular disease and atherosclerotic cardiovascular disease) in no logical sequence. This 90 year old man was found dead in his room during routine morning rounds. He was last known alive the previous evening with no acute complaints. The most logical clinical scenario was that he suffered an ischemic cardiac event and arrhythmia while he slept. The cause of death should be written as:

- a. ischemic cardiac arrhythmia (probable) minutes
- b. Atherosclerotic coronary artery disease years

Part 2. Hypertension, Atrial fibrillation, Generalized atherosclerotic vascular disease, Chronic obstructive pulmonary disease (type unspecified), Tobacco and Alcohol abuse.

See also abbreviations and pronouncement of death

3. Putting the cart before the horse

Example 6

arrest, shock, or heart failure. List IMMEDIATE CAUSE (Final diseas	only one cause o	cardopular,	an a	and the same of th	* *	Approximate interval Between Onset and Death
or condition resulting in death)	(b	e to lon as a consequence of:	mellitis			300
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING	a -	Pa_astia				
CAUSE (Disease or injury that initiated events resulting in death) LAST	ou d	E TO (OR AS A CONSEQUENCE OF):				
	DU	E TO (OR AS A CONSEQUENCE OF):				
	s contributing to	death but not resulting in the underlying		26s. DID TOBACCO USE CONTRIBUTE TO DEATH? Ves Probably No Unknown	26b. WAS AN AUTOPSY PERFORMEDS Was No	26c. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETION OF CAUSE OF DEATHY Ves No
27a. MANNER OF DEATH Natural Accident Homicide Under.	Suicide Pending	27b. DATE OF INJURY (Month, Day, Year)	27c. HOUR	274. HOW DID INJURY OCCUR? (Er	nter nature of injury in Part	1 or Part 2)
	PLACE OF INJUR Sp., etc. (Specify)	Y At Home, Farm, Factory, Street, Office	27g LOCATION	(Street, or R.F.D. No. City or To	Dwn State)	

The way this example is written the patient's diabetes is due/ caused by dementia. This 85 year old woman with end stage dementia who has been diabetic for many years was found dead in bed on routine rounds. The death should be certified as:

a. Dementia (Type unspecified)

Part 2. Diabetes mellitus.

Note: If the type of dementia is known or could be implied from the patients history Multiinfarct dementia complicating atherosclerotic cardiovascular disease, parkinsons disease or alzheimers disease it should be reported. If the cause is multifactorial then all causes may be listed

a. Dementia (vascular and Alzheimer's type)

alternatively

a. Dementia (multifactorial, see part 2)

Part 2. Alzheimer's disease; cerebral infarct due to thromboembolsim from atrial fibrillation

Example 7

25. PART 1. Enter the diseases, injuries, arrest, shock, or heart failure. List only or	ne cause on each line.	ath. Do not enter the mode of dy	ing, such as cardiac or respiratory		Approximate Interval Between Onset and Death
IMMEDIATE CAUSE (Final disease a.	Advanced ovakia	n SARCOMA			17 months
or condition resulting in death) (a.	DUE TO (OR AS A CONSEQUENC	E OF):			I MORTINS
(b.	Bowel Obstruction	^			2 Month
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING	DUE TO (OR AS A CONSEQUENC	E OF):			
CAUSE (Disease or injury that initiated events resulting in death) LAST	DUE TO (OR AS A CONSEQUENC	E OF):			
	DUE TO (OR AS A CONSEQUENC	E OF):			
PART 2. Other significant conditions control	ributing to death but not resulting in th	e underlying cause given in Par	11. 26a. DID TOBACCO USE CONTRIBUTE TO DEATH? Yes Probably No Unknown	26b. WAS AN AUTOPSY PERFORMED?	25c. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETK OF CAUSE OF DEATH Yes No
7	27b. DATE OF INJURY (Mons Suicide Pending	h, Day, Year) 27c. HOUR	27d. HOW DID INJURY OCCUR? (Enter nature of injury in Pa	rt 1 or Part 2)
27e. INJURY AT WORK (Specify Yes or No.) 271. PLAC Bldg., etc.	E OF INJURY At Home, Farm, Factory, Stree (Specify)	et Office 27g. LOCATION	(Street, or R.F.D. No. City or	Town State)	

The way this is written, the ovarian sarcoma was caused by a bowel obstruction. Clearly it is the opposite. Also intervals should increase in time as you get farther from the immediate cause of death.

- a. Bowel obstruction 2 months
- b. Ovarian Sarcoma 7 months
- 4. Non Reported Trauma

Example 8

25. PART 1. Enter the diseases, injuries, or complianrest, shock, or heart failure. List only one cause of	n each line.		such as cardiac or respiratory		Approximate Interval Between Onset and Death
or condition resulting in death)	ETO JOR AS A CONSEQUENCE OF:	ALURE			DAYS
(b DE	HY DRATION E TO JOR AS A CONSEQUENCE OF):				WEEKS
any, leading to immediate cause. Enter UNDERLYING < c. DEX		TAKE			MONTHS
	E TO (OR AS A CONSEQUENCE OF):				
PART 2. Other significant conditions contributing to	death but not resulting in the underlying	g cause given in Part 1.	26a. DID TOBACCO USE CONTRIBUTE TO DEATH? Yes Probably No Unknown	28b. WAS AN AUTOPSY PERFORMED? Yes No	26C. WERE AUTOPS: FINDINGS AVAILABLE PRIOR TO COMPLETE OF CAUSE OF DEATH Yes No
27a. MANNER OF DEATH Natural	27b. DATE OF INJURY (Month, Day, Year)	27c. HOUR	27d. HOW DID INJURY OCCUR? (E	inter nature of injury in Par	11 or Part 2)
27e. INJURY AT WORK (Specify Yes or No) 271, PLACE OF INJUR Bidg., etc. (Specify)	Y Al Home, Farm, Factory, Street, Office	27g. LOCATION	(Street, or R.F.D. No. City or 1	fown State)	

In this example, one should question why this individual (who is 38 years old) has decreased his oral intake and what is the etiology of his triparesis. This individual sustained a spinal cord injury as a result of a motor vehicle collision 12 years prior. These types of cases must be reported to the medical examiner's office (1-888-552-2952). The Death Certificate was amended to read:

- a. Complications of decreased oral intake months
- b. Tripalegia 12 years
- c. Spinal cord Injury 12 years
- d. Blunt impact (motor vehicle collision) 12 years

And the Manner of death was changed to Accident

Example 9

25. PART 1. Enter the diseases, injuries, or complicarrest, shock, or heart failure. List only one cause of IMMEDIATE CAUSE (Final disease or condition resulting in death)	rations that caused the death. Do not en each line. PULLUAN AL ETO IOR AS A CONSEQUENCE OF:				Approximate Interval Between Onset and Death MMUIES
(· /	ETO (OR AS A CONSEQUENCE OF):	NE			MUMIES
CAUSE (Disease or injury that initiated events resulting in death) LAST	E TO (OR AS A CONSEQUENCE OF):				
PART 2. Other significant conditions contributing to OSTED Por NoSIS	death but not resulting in the underlying	cause given in Part 1.	26a. DID TOBACCO USE CONTRIBUTE TO DEATH? 1945	26b. WAS AN AUTOPSY PERFORMED?	25c. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETIO OF CAUSE OF DEATH Yes No
27a. MANNER OF DEATH Shehural Accident Suicide Homicide Undet. Pending	27b. DATE OF INJURY (Month, Day, Year)	27c. HOUR	274. HOW DID INJURY OCCUR? (E.	nter nature of injury in Par	(or Part 2)
27e INJURY AT WORK (Specify 271. PLACE OF INJUR Bidg., etc. (Specify)	Y At Home, Farm, Factory, Street, Office	27g LOCATION	(Street, or R.F.D. No. Cay or 1	own State)	

In this example a pulmonary embolism is listed as the immediate cause (Mechanism) of death with the cause being a hip fracture. The pathophysiology implied is that the immobility during convalescence placed this individual at risk for deep venous thrombosis and pulmonary embolism. What is not listed is the cause of the femoral (hip) fracture.

This 81 year old woman was living independently when she slipped on ice while shoveling snow from her walkway. She was transported to the hospital had surgical fixation and subsequently was discharged to a rehabilitation center. She suffered a sudden collapse while walking. The inclusion of the osteoporosis as a contributory factor is essential. It explains why she is more susceptible to slight trauma.

This death also needs to be reported to the OCME. The death certificate would be amended to read: a. Pulmonary embolus minutes

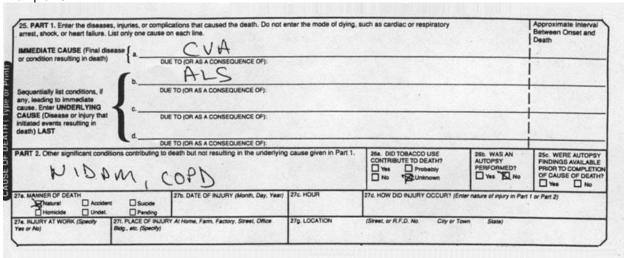
- b. Thrombosis of Leg veins weeks
- c. Immobility weeks
- d. Femoral fracture due to blunt impact (Fall) weeks

Contributory: osteoporosis

Manner: Accident (fell from standing height while shoveling snow)

5. Abbreviations

Example 10



Please do not abbreviate. Remember the majority of end users of Death Certificates never went to medical school. Even what we consider common abbreviations have no business on death certificates. Also this cause of death does not make sense. Amyotrophic lateral sclerosis (ALS) usually causes death by a respiratory mechanism.

6. Illegibility

Example 11

25. PART 1. Enter the diseases, injuries, or complications that caused the death. Oo not enter the mode of dying, arrest, shock, or heart failure. List only one cause on each line. IMMEDIATE CAUSE (Final disease a condition resulting in death)	such as cardiac or respiratory	te :	Approximate Interval Between Onset and Death
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING CAUSE (Disease or injury that initiated events resulting in death) LAST DUE TO (OR AS A CONSEQUENCE OF):	ass		
PART 2. Othersignificant conditions contributing to death but not resulting in the underlying cause given in Part 1.	28a. DID TOBACCO USE CONTRIBUTE TO DEATH? Ves Probably Unknown	26b. WAS AN AUTOPSY PERFORMED TO	26c. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETIO OF CAUSE OF DEATH Yes No
27s. MANUSER OF DEATH Natural Accident Suicide 27b. DATE OF INJURY (Month, Day, Year) 27c. HOUR Natural Accident Suicide 27b. DATE OF INJURY (Month, Day, Year) 27c. HOUR Pending 27s. JALJEY AT WORK (Specily) 27f. FLACE OF INJURY At Home, Farm, Factory, Street, Office 27s. LOCATION 4815/9 No.)	27d. HOW DID INJURY OCCUR? (E (Street, or R.F.D. No. City or 1		1 or Part 2)

Although this is a well thought out and written cause of death statement, many people find it difficult if not impossible to read. Please type or print neatly. The purpose is to convey information

7. Time of Death vs. Pronouncement of death

or condition resulting in death)	25. PART 1. Enter the diseases, 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. IMMEDIATE CAUSE (Final disease { a						
	condition resulting in death) DUE TO (OR AS A CONSEQUENCE OF):						
	-						
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING	DUE	TO (OR AS A CONSEQUENCE OF):					
CAUSE (Disease or injury that initiated events resulting in death) LAST	DUE	ETO (OR AS A CONSEQUENCE OF):					
	DUE	TO (OR AS A CONSEQUENCE OF):					
PART 2. Other significant conditions contributing to death but not resulting in the underlying cause given in Part 1.			26a. DID TOBACCO USE CONTRIBUTE TO DEATH? Ves Probably Dio Unknown	26b. WAS AN AUTOPSY PERFORMED?	26c. WERE AUTOPS' FINDINGS AVAILABLE PRIOR TO COMPLETE OF CAUSE OF DEATH Ves No		
27a. MANNER OF DEATH Natural	☐ Suicide ☐ Pending	27b. DATE OF INJURY (Month, Day, Year)	27c. HOUR	27d. HOW DID INJURY OCCUR? (Enter nature of Injury in Part 1 or Part 2)			
27e. INJURY AT WORK (Specify Yes or No) 271. F Blog.	PLACE OF INJURY , etc. (Specify)	Y Al Home, Farm, Factory, Street, Office	27g LOCATION	(Street, or R.F.D. No. City or Town State)			
TO THE BEST OF MY KNOWLEDGE, ON THE BASIS OF THE CASE HISTORY, EXAMINATION AND/OR INVESTIGATION, DEATH OCCUPRED AT THE TIME, DATE AND PLACE AND DUE TO CAUSE(S) AND MANNER STATED. **Full #* Defining ###* 284. (Signalure)		Staff phys.	3/16/04	3/14/04	1830		
		Pathologist Med. Examiner	200. PRONOUNCED DEAD ON:	unced by me)		
286. NAME AND ADDRESS OF CERTIFIER	(Type or Print)		30. NA	ME OF ATTENDING PHYSICIAN IF OT	HER THAN CERTIFIER	Type or Print)	

In this example the physician indicated this patient was not pronounced dead. The pronouncement time is a convention used for medical legal issues. There is no Vermont law requiring a licensed physician to make an official pronouncement of death. By convention (generally accepted agreement) the time of pronouncement is the time when the first "official" person identifies the individual is dead. This should never be left blank.

Quick Tips

1. Focus on the basic pathologic condition

ex. "Atherosclerotic cardiovascular disease" rather than "Congestive heart failure"

2. Be Concise

Part I

A. Acute myocardial infarct

Due to, or as a consequence of:

B. Coronary artery atherosclerosis

rather than

Part I

A. Thrombotic occlusion of the left anterior descending coronary artery of the heart

3. Report causes; avoid mechanisms

Part I

A. Alcoholic cirrhosis

rather than

Part I

A. Hepatic encephalopathy

4. Do not use medical slang or jargon.

Part I

A. Cerebral infarct

Due to, or as a consequence of:

B. Atherosclerosis Cardiovascular Disease

rather than

Part I

A. Stroke

5. Do not abbreviate

Remember most users of Death Certificates have not been to medical school and do not understand some common abbreviations. Abbreviations will not be accepted by the EDRS. If you enter an abbreviation, you will receive a message indicating possible meanings and requesting that you spell out the appropriate term.

6. Be clear, do not convey confusion

Part I

A. Atherosclerotic coronary artery disease

rather than

Part I

A. Cardiac asystole probably due to heart attack

7. **Avoid vague descriptions** (e.g. massive, catastrophic, etc.)

No one wants to die from a little infarct but these terms give no information.

- 8. "Old Age" and undetermined natural causes are OK. Although, if you have entered this, be prepared for a phone call from the Office of the Chief Medical Examiner asking you to explain the circumstances.
- 9. Avoid creating problems or questions

Part I

A. Peritonitis

Due to, or as a consequence of:

B. Perforated colonic diverticulum

rather than

Part I

A. Cardiovascular collapse

Due to, or as a consequence of:

B. Bowel perforation

10. Separate primary from contributing causes.

(Part II: Other significant conditions contributing to death but not resulting in the underlying cause given in Part I)

11. Is the case reportable to the Medical Examiner? 1-888-552-2952

All cases that have non-natural contributions, no matter how small or how long ago, must be reported to the Medical Examiner. It is better to ask first than to not report. More details

12. If you have to complete a certification using a paper copy of the Preliminary Report of Death, be sure to please **print legibly** in black ink. A good cause of death statement means nothing if it is illegible.

If you have to complete a certification using a paper copy of the Preliminary Report of Death, be sure to clearly **print your name below your signature.**