

Educational Case: Death Certification and the Role of the Medical Examiner/Coroner

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The following fictional case is intended as a learning tool within the Pathology Competencies for Medical Education (PCME), a set of national standards for teaching pathology. These are divided into three basic competencies: Disease Mechanisms and Processes, Organ System Pathology, and Diagnostic Medicine and Therapeutic Pathology. For additional information, and a full list of learning objectives for all three competencies, see <http://journals.sagepub.com/doi/10.1177/2374289517715040>.

Keywords

pathology competencies, diagnostic medicine, autopsy, death certificate, forensic autopsy, reportable deaths, cause of death, manner of death, coroner, medical examiner

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Primary Objective

AU 2.2: Components of the Death Certificate. Discuss the key components of the death certificate; difference among immediate, intermediate, and underlying (proximate) cause of death based on disease process; and the role of mechanisms of death on a death certificate.

Competency 3: Diagnostic Medicine and Therapeutic Pathology; Topic AU: Autopsy; Learning Goal 2: Death Certificate.

Secondary Objective

AU 3.2: Reportable Deaths. Identify circumstances of death that need to be reported to the medical examiner/coroner.

Competency 3: Diagnostic Medicine and Therapeutic Pathology; Topic AU: Autopsy; Learning Goal 3: Forensic Autopsy.

Patient Presentation

A 45-year-old male is admitted to the hospital from his skilled nursing facility 1 month prior to his death, with clinical signs and symptoms of sepsis. Urine and blood cultures confirm the clinical suspicion of urosepsis due to *Escherichia coli*. Medical history includes obesity, quadriplegia, neurogenic bladder with indwelling catheter, autonomic instability, hypertension, obstructive sleep apnea, and diabetes mellitus. The patient develops

pneumonia and his oxygenation status worsens 2 days prior to his death. He is intubated and sedated. A lung biopsy is performed and shows changes consistent with diffuse alveolar damage. The clinical team meets with the family for a care conference and shares the results of the biopsy. The clinical team states that, due to his underlying diseases and the severity of his current illnesses, it is not likely that he will survive the current hospitalization. The family decides to transition the patient to comfort care and he dies 2 days after developing acute respiratory distress syndrome.

Diagnostic Findings, Part I

No additional information is gathered by this medical provider and the death certificate is completed as follows:

- (Immediate) Cause of death: Cardiorespiratory failure
- Due to (intermediate cause of death): *E coli* sepsis
- Manner of death: Natural

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Questions/Discussion Points, Part 1

What is the difference between cause and manner of death?

Cause of death is an injury or disease process that resulted in an individual's death.¹⁻⁴ A myriad of terms may be used to describe cause of death, including disease processes such as acute myocardial infarct or injuries such as gunshot wound of the head. When sequences of injuries or events occur, the cause of death portion of the death certificate may be further subclassified into immediate (the last injury or disease process in the sequence or the event immediately before death), intermediate, and underlying cause of death (the injury or disease that set off the sequence of events that resulted in death, also known as the proximate cause of death).¹⁻⁴ These terms are connected via "due to" statements on a death certificate. For example, if an individual sustains a myocardial infarct, from arteriosclerotic heart disease, which subsequently ruptures causing cardiac tamponade from hemopericardium, the cause of death would be listed as such:

- Immediate cause of death: Hemopericardium with cardiac tamponade
- Due to: (intermediate cause of death): Ruptured myocardial infarct
- Due to: (underlying cause of death/proximate cause of death): Arteriosclerotic heart disease

Manner of death is a public health categorization that generally includes only 5 options: natural (a death due to disease processes), accident (nonnatural injuries caused the death; the majority of traffic collisions and drug toxicity deaths are certified as such), suicide (an individual intentionally acted to end their life), homicide (another individual/s caused injuries that resulted in a death), and undetermined (certified when there is conflicting or insufficient information to categorize).¹⁻⁴ It is important to note that manner of death classification is strictly defined by public health terminology and not intended to dictate legal actions (for example, if a 2-year-old finds a gun and shoots another individual, the death may be classified as a homicide, as one individual caused the death of another individual; however, murder or manslaughter charges are not likely to be filed against the 2-year-old. In another example, if a pedestrian is struck by a vehicle and dies as the result of blunt force injuries sustained in that collision, the manner of death may be certified as accident. This does not preclude legal charges, including vehicular manslaughter charges, from being filed against the driver of the vehicle).

Is this death certificate complete? If it is not, please state what should be changed or what additional information may be necessary to complete the death certificate?

The death certificate is not complete. At this time, the physician completing the death certificate does not have enough information. Although the immediate and intermediate causes

of death are known (acute respiratory distress syndrome due to *E coli* urosepsis), the clinician should ask themselves why a 45-year-old male developed these conditions to the degree that they caused death. Phrased another way, a healthy 45-year-old male should likely not develop urosepsis, so what is different about this individual patient that caused this disease to develop and cause his death? In this situation, the indwelling catheter is the likely origin for the urosepsis, which was placed due to a neurogenic bladder related to quadriplegia. The cause of the patient's quadriplegia needs to be established, as it may relate to the underlying cause and manner of death. In addition, as specific time intervals are known for the individual elements of the immediate and intermediate causes of death, these time intervals should be listed in the appropriate section of the death certificate.

Should "cardiorespiratory failure" be listed as an immediate cause of death?

Cardiorespiratory failure is most appropriately categorized as a mechanism of death and is the terminal mechanism of death for most individuals. Death certificates not only serve to provide family members with important information about disease processes but are also important resources for public health data collection and monitoring of diseases (such as cancer and heart disease) and injury subtypes. As such, cardiorespiratory failure is too nonspecific to be of assistance to either the family of the decedent or public health departments and should not be included in this death certificate. The background information provided in the clinical history is sufficient to provide a specific cause of death.

Diagnostic Findings, Part 2

The original death certificate is filed and the family elects cremation as final disposition for the body. The funeral director in charge of the cremation calls the local medical examiner's office to inquire if the bullet in the deceased's spine needs to be removed prior to cremation.

Questions/Discussion Points, Part 2

What additional steps should the medical examiner's or coroner's office complete to investigate this death?

The medical examiner's or coroner's office is tasked with investigating unexpected, unexplained, and unattended deaths of individuals in the communities they serve. Reports of deaths are usually made by medical personnel and law enforcement; however, anyone, including family members and funeral directors, may report circumstances of death to the office, as occurred in this case. Given the remote trauma and potential retained evidence (the bullet) available for recovery, the medical examiner's office will usually begin by obtaining law enforcement and medical records to compile information used to complete a death certificate. Depending on circumstances,

the individual may be brought for a postmortem examination to retrieve the projectile. Of note, given that remote trauma was involved in the death, this death would fall under the jurisdiction of the medical examiner or coroner and should have been reported by medical personnel at the time of his death.

In this situation, law enforcement investigation and medical records indicate that the deceased was shot by an unknown assailant 20 years prior to his death, resulting in quadriplegia, neurogenic bladder, and finally urosepsis, which ultimately resulted in his respiratory distress syndrome.

Should the death certificate be changed, and if so, please list the immediate, intermediate, and underlying cause of death and the manner of death?

A death certificate should tell the whole story of this patient's history and therefore should be amended to work backward from the underlying cause of death (the disease or injury that set off the sequence of events that resulted in death) to the immediate cause of death (the last event/injury in the sequence, in this case, acute respiratory distress syndrome). A death certificate should be amended and reissued as the cause of death statements is incomplete and the manner of death is incorrect. As another individual caused the injury that set off the chain of events that resulted in the individual's death, the most appropriate manner of death is homicide. The death certificate, as signed by the medical examiner following autopsy examination and investigation, read as follows:

- Immediate cause of death: Acute respiratory distress syndrome (Time interval: 2 days)
- Due to: *E coli* urosepsis (time interval: 1 month)
- Due to: Quadriplegia with neurogenic bladder (time interval: 20 years)
- Due to: Gunshot wound of the back
- Manner of death: Homicide

Teaching Points

- The cause of death is the disease or injury that resulted in an individual's death and should be categorized from the first disease or injury (the underlying cause of

death) that set off the sequence that lead to the immediate cause of death.

- Each death must be traced back to the inciting disease or injury, which may have occurred years prior to the death.
- "Cardiorespiratory failure" is a nonspecific mechanism of death that provides insufficient detail about the circumstances of death and does not allow for important information to be passed to decedent's families or public health monitoring systems. Whenever possible, specific disease processes and injuries should be listed as causes of death for accurate death certification.
- The medical examiner's office or coroner's office are tasked with investigating unexpected, unexplained, or unattended deaths in a particular region. Medical providers are responsible for reporting deaths that may fall under the medical examiner's or coroner's jurisdiction to the appropriate office.

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