



Death Investigation and Certification in Italy

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ABSTRACT

The certification of cause and manner of death is fundamental for legal and epidemiological purposes. In Italy, as in several other European countries, the death certificate is legal proof of an individual's death. The incorrect assessment of cause and manner of death can have serious implications for public health and the judicial system. Unnatural deaths can be erroneously reported as natural deaths, leaving accidents or homicides undetected. Many reasons can explain such inaccuracy, such as the level of training of medical practitioners involved in death investigations or a lack of information regarding the decedent's medical history. In January of 2011, the Italian death certificate changed to conform to European rules dealing with statistical recording. This paper discusses the concept of manner of death in the Italian death investigation system, along with a brief history of Italian legislation, and discussion of the professionals involved in the certification of death, responsibilities for the determination of cause and manner, and how the manner of death is used. *Acad Forensic Pathol.* 2015 5(3): 454-461

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INTRODUCTION

The certification of cause and manner of death is fundamental for several legal and practical purposes. Proper death certification is required to arrange a burial or cremation, and to recognize unnatural deaths supporting a judicial process or compensation claims (1, 2). Death certificates also serve as legal proof of an individual's death (3). Worldwide, they are the main source of national mortality and vital statistics, as well as other epidemiological data of public interest such as morbidity. The recording of these data has played an important role in the development of modern medicine and strategies of public health.

The accuracy of death certificates is questionable for various reasons, including the level of expertise and training of the medical practitioner and personnel involved in the death investigation, lack of medical records related to the deceased, lack of circumstantial information related to the fatal event, and the perceived lack of importance of the death certificate (4, 5). In the English-speaking world, the coroner has been charged with the determination of cause and manner of death since the 11th century (6), and the coroner in some jurisdictions is not required to have a degree in medicine. In recent history there has been a trend to replace coroners with physicians specifically educated as medical examiners since death investigation often involves medical issues and necessarily requires the involvement of appropriately trained medical personnel (7). In Italy, as in most of Europe, only a medical practitioner can determine how and why a person died.

The incorrect assessment of cause and manner of death affects not only statistics, but may allow unnatural deaths to go undetected (8). The determination of cause and manner of death is an opinion given to the best of the certifier's knowledge, based on clinical findings and information available at the time the death certificate is completed. The certification of cause and manner of death should be reliable and objective, based on external examination or autopsy and review of medical records and circumstances related to the death, preferably by a trained physician (3, 4).

Correlation of medical history with physical findings on the body and laboratory tests is the classical medical approach for establishing a reliable diagnosis (6).

A substantial discrepancy between the diagnoses listed on death certificates and diagnoses made at autopsy persists in modern medicine (9-11). Lack of training of the certifier, the inaccuracy in the certification, and limited postmortem examinations (such as external examination without a subsequent autopsy) often explain such discrepancies (11-14). The forensic pathology community is aware that the risk of misclassification of cause and manner of death can be high, especially if a death is certified without an autopsy and scene investigation. The degree of certainty required to classify the cause and manner of death depends on the circumstances of the death (15). An autopsy, combined with the medical history, scene investigation and review of the circumstances of death, is still considered the gold standard for determining the cause and manner of death (15, 16). The autopsy is a reliable mechanism of quality control, especially in traumatic deaths (11) but in many countries, standard criteria for assigning cause and manner of death are lacking (17). This article will describe the concept of manner of death in the Italian death investigation system along with a brief history of model legislation, the categories and criteria adopted, the professionals involved in the certification of death and responsible for the determination of cause and manner, and how the manner of death is used.

DISCUSSION

Historical Background and Professionals Involved in the Certification of Death in Italy

In Italy, the first model legislation regarding death investigation was issued in 1910 (*Circolare Fani*). The *Circolare Fani* describes in detail the minimum standards of a forensic autopsy, including external and internal body examination. Article 103 of Italian Health Law (RD n° 1265, 27 July 1934) states that only the physician who has cared for the decedent and has knowledge of that person's medical history can certify the death. If the death has occurred without an

attending physician, or the cause and manner of death are uncertain, the death certificate can only be signed by a physician appointed by the Local Health Authority as the *necroscopo* (a physician specifically tasked to certify the death based on an examination of the body). In the Italian public hospitals, the *necroscopo* is usually the chief of the Department of Legal Medicine or, if this position is not present, the director of the hospital.

In Italy, there is no official death investigation agency (such as a coroner or medical examiner system) that investigates and certifies suspicious deaths. Departments of legal medicine in universities can be a resource in managing the death investigations in their own regions, but this happens only in large cities. For this reason, the position of the *necroscopo* can be crucial in a death investigation. The role of *necroscopo* was revised in 1990 by the Mortuary Police Rules (*Regolamento di Polizia Mortuaria* – RPM, law 285/90). Based on the RPM, the postmortem examination must be performed no earlier than 15 hours and not more than 30 hours after death. The examination can be performed sooner only in cases where there is certainty that death has occurred, such as dismemberment, decapitation, or the heart is electrically silent for not less than 20 minutes as recorded by electrocardiography. Furthermore, the decedent cannot be buried before 24 hours after death. For sudden deaths, the examination must be performed 30 hours after death. If the death has occurred without an attending physician, a hospital autopsy can be requested or performed by the *necroscopo*. Such nonjudicial autopsies are usually managed by the National Health Services, but a declining autopsy rate is occurring in Italy as in other countries. Factors contributing to the decline of autopsies include clinical reluctance, increased confidence in new diagnostic tools, cost containment, and concerns about legal action if a misdiagnosis is detected (16, 18, 19). In Italy, many nonjudicial or hospital autopsies can be changed to forensic autopsies. In every case of suspicious or violent death, as well as in potential medical malpractice cases, the physician completing the death certificate or the *necroscopo* must inform the Judicial Authority of the need for further investigation and request a forensic autopsy.

In Italy, as in many countries with Roman legal tradition, magistrates or prosecutors have absolute authority to proceed with further death investigation. Forensic autopsies are not mandatory, even when the manner or cause of death is unclear, or when a crime may be connected to the death. Law enforcement officers decide if an external examination is sufficient for the death investigation or if a forensic autopsy has to be performed. They can choose their medical expert based on training and competence, but sometimes poorly skilled physicians are appointed as medical examiners. Based on the conclusions provided by medical experts and generally after only an external examination of the body, law enforcement officers select the cases in which a complete forensic autopsy will be carried out. In the Italian death investigation system, the majority of violent deaths are still certified without a full autopsy.

According to a recent U.S. National Association of Medical Examiners (NAME) position paper, forensic pathologists, in the performance of their duties, should be considered neutral experts and not prosecution or defense experts, except when explicitly hired *ex parte* (20). They should not be dependent upon law enforcement officers for all their information, and they should be free of pressure from police, prosecutors, or other agencies to modify their conclusions. Manner of death classification should not be made to facilitate prosecution or investigations, or to promote a personal interest or agenda (15). This is very different from the Italian model, in which a forensic autopsy will most likely not be requested if the expert appointed by the prosecutor is able to find even a presumptive manner of death that is of no judicial interest. This model undoubtedly has contributed to the declining autopsy rate in Italy. Since external examinations are the most common method used to investigate unnatural deaths, toxicological analysis is often not performed since such additional testing would need to be authorized by law enforcement officers. Approximately 4-5% of the 580 000 deaths per year in Italy are due to non-natural causes (21), and the majority of traumatic deaths are certified without an autopsy or review of medical records. Therefore, misdiagnoses and misinterpretation of medical findings are inevitable.

The Italian Death Certificate

The death certificate must be completed as prescribed by the Italian Institute of Statistics (ISTAT). Since 1926, ISTAT has been the official institution collecting death certificates. In 2011, a new death certificate was designed by ISTAT based on previous Italian rules of law (Royal Law 1265/34 and Law 285/90) and conforming to European rules dealing with statistical recording (Rule EU 1338/08, 16.12.2008).

Prior to 2011, there were four different types of Italian death certificates based on sex and age: blue for males and pink for females, further divided into deaths less than one year of age and deaths greater than one year of age. Each death certificate contained two columns: one for natural deaths and one for violent deaths. Natural deaths required a full explanation of the cause(s), including the immediate, intermediate, and underlying causes of death, and any other disorders contributing to the fatal event. For violent deaths, the certifier indicated the manner of death by checking the appropriate box to indicate accident, suicide, homicide, or accident at work. A description of the injuries was required, as was a mode of death (e.g., intoxication, motor vehicle crash, hanging, gunshot, fall) and antemortem medical conditions contributing to death.

Since 2011, there are no more color-coded certificates for males and females. For female decedents, the certifier must indicate if the decedent was pregnant at death or within the preceding 12 months. There are no longer columns for natural and violent deaths: all conditions (disease, injury, intoxication) related to the immediate, intermediate and underlying cause(s) of deaths are summarized in a single chain of events, with time intervals or estimations (Part I). Contributing conditions are also listed on the certificate (Part II). For non-natural deaths, the circumstances of the death (e.g., fall, hanging, gunshot, intoxication) are entered and the manner of death (homicide, suicide, or accident) is checked on the appropriate box. Of note, in contrast to U.S. death certificates, Italian death certificates do not offer an undetermined manner. Additional fields collect information about the nature of accidents (such as work-related), the type

of transportation in transportation-related deaths, and the victim's position in motor vehicle deaths (driver, passenger, pedestrian).

Criteria for Proper Certification of Cause and Manner of Death

The cause of death refers to disease(s) or injury(ies), or their combination, that led to death. There may be underlying, intermediary, and immediate causes in a logical chain of events. The mechanism of death usually refers to anatomic, metabolic or physiologic alterations that alone give no etiologically specific explanation of what started the sequence of fatal events (22). Manner of death refers to the circumstances in which a death occurred. The investigation and findings from the death scene are extremely important. According to NAME guidelines (15), manner of death classification should be objective and based on simple, established criteria. On the back of the Italian death certificate are instructions for (and examples of) proper certification of cause and manner of death. Among the examples related to violent deaths, three common scenarios include a pedestrian struck by a motor vehicle, a case of anaphylaxis caused by medication, and a fall from stairs. For all these scenarios, it is recommended to list accident as the manner of death because the death was the result of unintentional or unpredictable events.

The ISTAT has realized that the certification of death requires training to properly complete the cause and manner of death. The purpose of the death certificate is not to identify the legal responsibility for a fatal event, but to provide a useful administrative tool by which deaths are grouped according to similar features. The certifier of death is expected to identify factors contributing to death, differentiate natural from unnatural deaths, and provide useful information surrounding the fatal event. If non-natural factors are identified as immediate or proximate causes of death, they must be properly placed on the death certificate. Where no non-natural factors (such as injury, drug toxicity, or other environmental hazards) contributing to death are identified, the death can be classified as natural (23). Proper manner of death classification is particu-

larly problematic in delayed deaths, where the original traumatic event may be overlooked by the certifier because of the time interval between injury and death. In Italy, apart from the instructions on the back of the death certificate, there are no standard criteria for assessing cause and manner of death. Written criteria and published guidelines are needed. Such guidelines are under construction by the Italian Group of Forensic Pathologists, resembling the Guide for Manner of Death approved by NAME in 2002 (15).

Manner of Death Categories

In Italy, the death certificate is not used in court as evidence of the cause and manner of death, but is used only to prove that a person is dead. In some countries around the world, death certificates are documents of public domain, while in others only relatives or persons with a lawful right or claim can obtain them. Although fatal events share similar features that allow them to be grouped into categories (6), every death is unique and might be further investigated in order to prosecute a suspected crime or to adjudicate a civil claim. A death classified originally as natural can be changed to an unnatural manner based on new investigative findings. All medical practitioners need to be aware that manner of death can be changed based on new circumstantial information.

For example, an accidental manner can cover a wide range of fatal scenarios among which only “accident at work” has been considered worthy of mention on the Italian death certificate. Occupational fatalities usually include falls, motor vehicle accidents, electrocution, blunt trauma due to falling objects, or as a result of fires or explosions. Since they are preventable, in Italy, such fatalities can be also prosecuted as second-degree murder or manslaughter because worker safety is not only responsibility of the worker, it is the primary responsibility of the employer. The occupational death can be the combination of unsafe work environments, insufficient safety practices, or negligent employer supervision. Such failings are not listed on the death certificate, as they have to be evaluated in the context of applicable criminal and civil laws.

According to Saukko and Knight, manner of death is not as much a medical decision as it is an administrative categorization (1). The World Health Organization has developed specific recommendations to improve the accuracy of the cause and manner of death (24). In order to assist medical practitioners in completing the death certificate properly, these guidelines have been incorporated in the Italian death certificate. However, although some general scenarios are well established and generally accepted, classification of manner of death can be controversial for others, such as for therapy-related deaths and delayed deaths.

We believe it would be useful to add in the Italian death certificate an additional manner of death: “therapeutic complication.” Death investigation for medical malpractice is increasing worldwide and, although there are no official data on the autopsy rate in Italy, forensic autopsies performed on therapy-related deaths are probably much more frequent than those related to occupational fatalities. In Italy, since 2010, fewer than 1000 occupational deaths per year have been reported by the National Institution for the Assurance of Accidents at Work, with a decreasing trend up to 2014. In contrast, deaths related to preventable errors in medical practice are increasing, and expected to be per year much more than occupational deaths. According to Gill et al., the certification of therapeutic complication allows more consistent reporting of deaths occurring under medical care (25). Another option would be healthcare-related accident, which has the advantage of keeping the current system of classifying most such events as accident (26). Both terms have the advantages of not being synonymous with negligence or malpractice, as it is beyond the expertise of the certifier to evaluate the appropriateness of treatment or the responsibility of the clinicians. A specific subcategory of accidental manner of death for fatalities under medical care could cover potentially all those questionable scenarios, ranging from predictable but undesirable complications occurring during diagnostic or therapeutic procedures like nosocomial infections to adverse reactions to drugs or other clinical or surgical interventions that carry a known but acceptable risk.

In contrast to U.S. death certificates, Italian death certificates do not offer an undetermined manner. It is our opinion that this option should be also listed in the Italian death certificate with an appropriate box. In several cases the findings at the autopsy do not explain the manner of death even after further testing (e.g., toxicology, histology, microbiology). Undetermined as an additional subcategory of manner of death could help to inform the relatives, the offices of public health and law officers (e.g., judges, magistrates, lawyers) that even a complete death investigation including body external and internal examination cannot always determine cause and/or manner of death. According to NAME guidelines, sudden infant death syndrome or sudden unexpected and unexplained deaths may be better classified as undetermined, as well as other scenarios when there is not enough clinical or circumstantial information to classify them otherwise or other categories are not appropriate (15). Undetermined in manner could be also used in those rare cases where evidence exists to support more than one possible determination as recommended by a NAME panel (27), even for some drug-related deaths where the misuse or abuse of opioids could be the result of a clear intent of self-harm and not simply an accident.

CONCLUSION

The death certificate is a document that serves different purposes. Properly assessing the cause and manner of death requires training to reduce the risk of misclassification. Inaccuracy in death certification is a worldwide problem in clinical and forensic practice, affecting the reliability of statistical data derived from death certificates.

A retrospective study of deaths certificates in an academic institution found that 34% of cases had no proximate cause of death, or the wrong cause and manner of death (4). Medical examiners and coroners have an error rate up to 28% in determining cause and manner of death if an autopsy is not performed, especially in apparent natural deaths (12, 14). The majority of errors have been reported to be the result of an over-diagnosis of coronary heart disease, hypertensive cardiovascular disease, and cancer (13, 14). In the classification of manner of death, disagreement among medical ex-

aminers and coroners can be high, particularly in challenging death scenarios (5), and raising the need for peer review in forensic pathology (28).

Misdiagnoses are inevitable in Italy, because most deaths are certified by untrained clinicians, are based on external examination without a subsequent autopsy, and/or have limited review of medical records and circumstantial information. New death certificates have helped, but the risk of inaccuracy remains high when the cause and manner of death are not supported by autopsy findings and/or scene information. This is particularly true for trauma deaths in Italy, as the investigation of such deaths is usually not accompanied by radiological imaging nor blood samples for toxicological analysis. The lack of basic knowledge regarding traumatic injuries recently led to the misinterpretation of medical findings and an inaccurate manner of death in a case of undetected patricide (29).

Despite advances in imaging techniques, both minor and severe injuries often can be discovered only at autopsy (11). Previous studies on the accuracy of the cause of death as recorded on death certificates have shown unrecognized injuries in 11% of all cases (10, 30). Other studies of missed injuries discovered at autopsy after traumatic death have shown missed injury rates up to 68% (11, 30, 31). In a study of 155 consecutive forensic exhumations, major deviations between the cause and manner of death as stated on the death certificate and as diagnosed after autopsy were found in 37% of cases, with an emphasis on undetected homicides (32). It has been estimated that in Germany, some 1200 homicides per year go unrecognized on death certificates because no forensic autopsy was performed (8).

Forgoing forensic autopsies in trauma deaths is a violation of Recommendation No. R 99 of the Committee of Ministers (Council of Europe) adopted in 1999 (33, 34) and partially applied in several European countries. The main scope of the EU recommendation dealing with the harmonization of medicolegal autopsy rules in Europe was to underscore some principles and procedures, including 1) cases where death may be due to unnatural causes, the competent authority, accompanied by one or more medicolegal experts, should where

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