



Improving the Quality of Cause of Death Information Related to Maternal Mortality

**As Required by
Texas Health and Safety Code,
Section 1001.0712**



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Executive Summary

[Texas Health and Safety Code, Section 1001.0712](#), directs the Department of State Health Services (DSHS) to study the process and procedures for collecting cause of death information, including any challenges to collecting accurate information relating to maternal mortality.

A report including the findings and recommendations from this review must be submitted to the Governor, Lieutenant Governor, Speaker of the House of Representative, and appropriate standing committees of the Legislature by December 1st of each even numbered year.

This report provides an update on the DSHS efforts to implement the recommendations of the 2018 report, including

- Implementation of the Texas Electronic Vital Events Registrar System,
- A grant award from the Centers for Disease Control and Prevention to fund statewide training of justices of the peace and medical certifiers, and
- Activities associated with the Maternal Mortality and Morbidity Review Committee.

This report also describes DSHS' efforts to further examine the challenges to collecting accurate information relating to maternal mortality. In September 2020, DSHS staff presented the contents of this report to and solicited feedback from the Maternal Mortality and Morbidity Committee.

1. Introduction

Death certificates serve public health, administrative, and legal purposes. Death certificates contain medical information such as cause of death, manner of death, pregnancy status, whether an autopsy was performed, whether tobacco use contributed to death, and injury information for deaths where the manner is not natural. The death certificate is as important to public health as the medical record is to patient care. It is therefore vital to ensure that the information in death certificates is of high enough quality to support state efforts to provide reliable mortality statistics and public health programming.

[Texas Health and Safety Code, Section 1001.0712](#) directs the Department of State Health Services (DSHS) to study the process and procedures of collecting cause of death information including any challenges relating to maternal mortality.

DSHS first published this report in 2018.¹ In the 2018 report, DSHS performed in-depth analyses on the following topics:

- Issues relating to the quality of the death information collected, including the accuracy and completeness of the information;
- The role of medical certifiers in death information collection;
- The perception of individuals collecting the death information regarding the information's integrity;
- Required training for individuals collecting death information; and
- Structural, procedural, and technological issues of collecting the information.

In the following report for 2020, DSHS will

- Review the challenges to quality cause of death information, including maternal mortality data;
- Describe activities performed to act on the recommendations of the last report; and
- Describe updates to previously made findings and assessments.

¹ The 2018 *Improving the Quality of Cause of Death Information Related to Maternal Mortality* report is available at dshs.texas.gov/legislative/2018-Reports/SB17Report.pdf.

2. Background

Vital events, including births, deaths, fetal deaths, and marriages, that take place in Texas must be reported to the Department of State Health Services (DSHS). There are approximately 900,000 vital events registered each year. DSHS works with medical facilities, funeral homes, and local government offices to ensure reported events are accurate and timely. Once vital events are reported from statutorily authorized data providers (such as physicians, medical examiners, justices of the peace, birth clerks, and midwives), the reports are reviewed and registered as official vital records.

The medical information captured on birth, death, and fetal death records underlie public health research and surveillance into areas such as maternal mortality, birth defects, and leading causes of death. DSHS staff must work with data providers to ensure that the information provided accurately reflects medical and health records.

DSHS uses vital statistics for public health activities to improve the health and well-being of Texans. Public health interventions, based on mortality statistics, seek to prevent deaths by intervening as early as possible in the sequence of events that lead to death. Incomplete, inaccurate, or nonspecific reporting on death certificates can lead to under- or over-counting of causes of deaths, which can affect public health programs, policy, and funding as well as responses to disasters, outbreaks, and emergencies.

The conversion from paper-based reporting to electronic reporting in 2007 improved the timeliness of death registration, promoted standardized death certificate reporting, and made mortality data more readily available as a surveillance tool for measuring health. Electronic reporting is considered a national standard and best practice in vital statistics and utilizes automated checks and functionality to enhance data quality, timeliness, and security. These features do not exist in paper-based reporting.

Texas has reviewed the quality and security of the statewide system of vital registration over the last several years. In 2012, DSHS, in conjunction with a birth-record security workgroup established as a provision of the [2012-2013 General Appropriations Act, House Bill 1, 82nd Texas Legislature, Regular Session, 2011 \(Article II, Texas Department of State Health Services, Rider 72\)](#), developed a set of recommendations that addressed the security and effectiveness of the state's

birth record information system. Recommendations to improve the security of vital event data included the replacement of the Texas Electronic Registrar (TER) system with the Texas Electronic Vital Events Registrar (TxEVER) system. DSHS completed the implementation of the new TxEVER system on January 1, 2019.

TxEVER puts Texas at the forefront of modern web-based registration systems in the country because it allows for compliance with the Health Information Technology Standards for Interoperability, Accessibility, and Electronic Health Records.

[Senate Bill 17, 85th Legislature, First Called Session, 2017](#), added [Texas Health and Safety Code, Section 1001.0712](#), directing DSHS to study the process and procedures for collecting cause of death information including any challenges to collecting accurate information relating to maternal mortality. DSHS first published this report in 2018 wherein DSHS described the results of multiple assessments, key findings, and recommendations. A summary of the 2018 report is included in [Appendix A](#). The full 2018 report is available on the [DSHS website](#).

In the 2018 report, DSHS also provided a detailed description of the process of collecting cause of death information and completing a death certificate. This is important context for this report, and the reader is encouraged to review this background information in [Appendix B](#) and [Appendix C](#).

3. Activities Since 2018 Report

Since the publishing of the last report in 2018, the Department of State Health Services (DSHS) has taken steps to 1) implement the recommendations to address previously identified findings and recommendations ([see Appendix A](#)) and 2) continue to assess the quality of cause of death information related to maternal mortality. Below are descriptions of the activities undertaken by DSHS since the last report in 2018.

2019 Death Certificate Data Analysis

In the 2018 report, basic descriptive statistics were conducted to provide context to better understand death registrations in Texas – below are the updated 2019 statistics.

- Using 2019 provisional data, there were 206,457 total deaths registered in Texas, of which 79 percent were certified by physicians, 10 percent by medical examiners, and 10 percent by justices of the peace (JPs).
- Of the total deaths, 62 percent took place in a medical facility setting (of which 37 percent took place in a hospital), 31 percent at the decedent’s home, and 7 percent in an “other” setting.
- There were 13,824 physicians who certified death certificates in 2019, with an average of 12 deaths being certified by each physician.

The Implementation of the Texas Electronic Vital Events Registrar System (TxEVER)

To address recommendations from the 2018 report, as well as recommendations made in 2012 to replace the former electronic registration system, DSHS implemented the Texas Electronic Vital Events Registrar System (TxEVER) in 2019. This new registration system was developed with a focus on improving data quality.

TxEVER has built-in tools to help improve the quality of data that is being provided. In addition to improved functional capabilities, performance, and capacity, this system has edit checks in place for cause of death data entered into the system. For example, this system interfaces with VIEWS (Validation and Interactive Edits Webservice) which is the Centers for Disease Control and Prevention (CDC) national cause of death edit check that allows medical certifiers to address errors or ill-

defined cause of death statements in real time. TxEVER checks the statements that are entered into the system against the CDC VIEWS system for ill-defined causes of death. It should be noted that cause of death determination is up to the medical certifier's best medical opinion, and TxEVER simply prompts them to give full and accurate CDC acceptable cause of death information. These tools are improving cause of death data by quickly conducting edit checks on information entered on the electronic death record.

In addition to system improvements, DSHS Vital Statistics Section (VSS) Field Service Representatives regularly take calls and answer emails about death registration from medical certifiers. Additionally, Field Service Representatives give timely responses to inquiries related to TxEVER account management and provide assistance to ensure accurate and acceptable cause of death information.

CDC Cooperative Agreement Training

DSHS has improved communication with stakeholders and implemented new training programs to educate medical certifiers and bring awareness to the overall importance of the death certificate to public health and how to accurately report cause of death.

Since the recommendations provided in the 2018 report, Texas was awarded a grant as a part of a Cooperative Agreement from the CDC to fund statewide training of justices of the peace (JP) and medical certifiers to provide accurate and timely information when reporting cause of death statements to DSHS VSS. As part of this agreement, the DSHS VSS Field Services team received training from the CDC on how to write accurate cause of death statements so they, in turn, can train all the JP and medical examiners' offices in Texas.

This training was implemented in the spring of 2019, and as of August 2020, 403 JP offices and 9 medical examiners' offices have been trained. This has been particularly beneficial for judges who serve as medical certifiers because they typically do not have a medical background or training to help determine cause of death. These trainings are interactive and provide an opportunity for discussion. Field Services also facilitates and responds to death registration questions at the end of each training.

While this training was specifically implemented to train medical certifiers on how to complete cause of death statements during times of natural disasters, it is

improving overall cause of death data quality through education on how to complete the death certificate and why accurate completion is important.

Activities Related to the Maternal Mortality and Morbidity Review Committee

[Health and Safety Code, Chapter 34](#), was promulgated by [Senate Bill 495, 83rd Texas Legislature, Regular Session, 2013](#), and amended by subsequent actions to establish and authorize the Texas Maternal Mortality and Morbidity Review Committee (MMMRC) as a multidisciplinary advisory committee within, and administered by, the DSHS to study maternal mortality and morbidity in Texas.

The multi-disciplinary MMMRC uses methods and guidelines recommended by the CDC to review details and circumstances surrounding cases of pregnancy-associated death.² The MMMRC studies information for each case and deliberates through a consensus process to determine the underlying cause of death, whether or not the death was related to the pregnancy,³ and whether or not there was a chance that the death could have been prevented through one or more reasonable changes to patient, community, provider, health facility and/or system factors. Together these findings inform the MMMRC in development of recommendations to help reduce the incidence of pregnancy-related deaths and severe maternal morbidity in Texas

The MMMRC continued to meet regularly in accordance with Health and Safety Code, Section 34.004, and has met in Closed Executive Session 5 times between December 2019 and September 2020 for confidential case review and closure of a total of 79 pregnancy-associated death cases. To determine the underlying cause of each death, the MMMRC studies death certificate data, hospital discharge data, information from any available medical and medico-legal (e.g. investigative report,

² A “pregnancy-associated death” is a death of a woman while pregnant or within one year of the end of pregnancy, regardless of the cause. A death’s relation to pregnancy may be determined by review of a multidisciplinary maternal mortality review committee and may be determined to be related to pregnancy, not related to pregnancy, or of undeterminable relatedness.

³ A “pregnancy-related death” is a death of a woman during pregnancy or within one year of the end of pregnancy, from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.

autopsy report) records, and other available sources of information to understand the context and circumstances leading up to and surrounding the woman's death. Because many pregnancy-associated deaths occur weeks or months following the decedent's last known medical encounter, the death certificate is sometimes the primary source of information available to the review committee regarding the circumstances surrounding the terminal event. Data accuracy is critical for the MMMRC's ability to effectively understand the case and to make recommendations to reduce maternal mortality and morbidity.

Use of the Maternal Mortality Review Committee Decisions Form

The MMMRC's determination of underlying cause of death and additional determinations gleaned through the case review process are now documented on the CDC's Maternal Mortality Review Information Application (MMRIA) [Maternal Mortality Review Committee Decisions Form](#). As part of the review process, the MMMRC must answer the question "*Does the committee agree with the underlying cause of death listed on the death certificate?*". Beginning in July 2020, the MMMRC's decision data that is collected in the form will be entered into the MMRIA system, which will facilitate aggregate analysis of findings.

Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM) grant program

In 2019, DSHS applied for a federal funding opportunity under the Preventing Maternal Deaths Act of 2018 (in accordance with Health and Safety Code, Section 34.021) and was awarded to participate in the Enhancing Reviews and Surveillance to Eliminate Maternal Mortality ([ERASE MM](#)) grant program. Along with other enhancements to review processes, participation in the ERASE MM program will require the MMMRC to complete their review of maternal mortality cases within two years of death. The MMMRC is currently finalizing review of the 2013 Pregnancy-Associated Death cohort and will then begin review of the 2019 Pregnancy-Associated Death cohort. Review of more contemporary cases and other enhancements to the MMMRC review process associated with participation in ERASE MM program is expected to further inform strategies for quality improvement of cause of death information.

Use of the Enhanced Methodology to study maternal deaths

Accurate reporting of pregnancy status on the death certificate is critical for evaluating maternal mortality. The standard method for identifying maternal deaths relies on an ICD-10 obstetric cause-of-death code on the official death record. As

reported in the 2018 report, DSHS Maternal and Child Health (MCH) research published in *Obstetrics and Gynecology* analyzed and investigated methods used to identify cases of maternal death.⁴ This research investigated the accuracy of maternal death identification using obstetric cause-of-death codes (O-code) on death records and highlighted an enhanced method for identification of maternal deaths.

Pregnancy status on the death certificate, documented by the pregnancy checkbox, is used by the CDC in determining whether to assign an O-code with a positive pregnancy status as a primary factor considered in O-code assignment. The study found that relying solely on O-codes for identifying maternal deaths appears to be insufficient and can lead to inaccurate maternal mortality data. An enhanced method to identify maternal deaths, including data matching and record review yields more accurate ratios.

DSHS applied the enhanced methodology to study maternal deaths in 2012 and calculated an Enhanced Maternal Death Ratio. Findings from that study are available in the [Maternal Mortality and Morbidity Task Force and Department of State Health Services Joint Biennial Report, September 2018](#).

DSHS has since applied the enhanced methodology to better identify maternal deaths and calculate Enhanced Maternal Death Ratios for 2013 through 2015. The Enhanced Maternal Death Ratios for 2013 through 2015 are anticipated to be detailed in the forthcoming MMMRC and DSHS Joint Biennial Report and will be available on the [DSHS MCH MMMRC Webpage](#).

Maternal Mortality Reporting and Investigation Information

[SB 1599, 85th Legislature, Regular Session, 2017](#), directed DSHS to provide maternal mortality reporting and investigation information, as detailed in [Health and Safety Code, Section 1001.241](#). DSHS was directed to post on their website information regarding the systematic protocol for pregnancy-related death investigations and the best practices for reporting pregnancy-related deaths to the medical examiner or JP of each county, as applicable.

⁴ Baeva S, Saxton DL, Ruggiero K, Kormondy ML, Hollier LM, Hellerstedt J, Hall M, Archer NP. Identifying Maternal Deaths in Texas Using an Enhanced Method, 2012. *Obstet Gynecol* 2018;131;762-769.

Following a literature review, DSHS convened a workgroup of medical examiners and JPs from across the state in November 2018- March 2019, including MMMRC members Dr. Kimberley Molina and Dr. Eumenia Castro, to develop the content for the webpage. The finalized content was reviewed by VSS and members of the workgroup. DSHS is in the process of publishing webpage content, and, in coordination with VSS, will link to the relevant content from the VSS webpage. The website will be available at the end of this year.

4. Additional Findings and Recommendations

Because of the time required to disseminate the findings and recommendations from the last report, as well as to implement improvements, it will likewise take time to see positive change towards improving the quality of cause of death information. As such, the Department of State Health Services (DSHS) continues to endorse the findings and recommendations from the 2018 report.

However, since the 2018 report, the DSHS has continued to examine the challenges to collecting accurate information relating to maternal mortality. These challenges were discussed in September 2020 during a public meeting of the Texas Maternal Mortality and Morbidity Review Committee. DSHS staff also presented on the contents of this report and solicited feedback from the Review Committee. DSHS continues to work with stakeholders on these findings and recommendations.

Additional Finding for 2020 – Adding a message in the Texas Electronic Vital Events Registrar System (TxEVER) for medical certifiers to confirm their responses to the “Pregnancy Checkbox” did not change the frequency of reporting “pregnant at time of death” from 2018 (pre-TxEVER) to 2019 (TxEVER).

Since the 2018 report, DSHS reviewed the findings and recommendations regarding medical certifiers potentially over-identifying the decedent as pregnant at the time of death. The concerns that the former electronic registration system, Texas Electronic Registrar (TER), did not have clear messaging and did not provide sufficient edit checks were taken into consideration during the implementation of the TxEVER.

DSHS found that the confirmation message built into the new system, TxEVER, did not change the frequency of reporting “pregnant at time of death.” Further evaluation will be conducted on these preliminary findings, and improvements in TxEVER to facilitate accurate reporting will continue to be considered.

5. Conclusion

Death certificates serve public health, administrative, and legal purposes. Incomplete, inaccurate, or nonspecific reporting on death certificates can lead to under- or over-counting of causes of deaths, which can incorrectly affect public health programs, policy, and funding, as well as responses to disasters, outbreaks, and emergencies.

The Department of State Health Services (DSHS) addressed recommendations made in the 2018 report through the implementation of a new electronic registration system, additional training opportunities, and continued collaboration with stakeholders to support improved quality in cause of death reporting. Through the [2020-2021 General Appropriations Act, House Bill 1, 82nd Texas Legislature, Regular Session, 2019](#), funding was approved for DSHS to support hiring additional staff to specifically focus on evaluating and implementing quality improvement projects.

DSHS is actively working to make recommendations to reduce maternal mortality and morbidity through ongoing MMMRC case review and research. The quality of data provided in cause of death statements during death certification directly impacts ability to make these public health recommendations. Continued process review will also help to inform strategies for quality improvement of cause of death information.

Addressing challenges with the quality of cause of death information necessitates a broad participatory approach focused on improving the death registration process. The activities conducted to fulfill the requirements of this report are an essential first step in informing and collaborating with the broad group of stakeholders who contribute to the death certificate process. DSHS is committed to increasing the quality of death certificate information to best carry out their mission to improve the health, safety, and well-being of Texans.

List of Acronyms

Acronym	Full Name
CDC	United States Centers for Disease Control and Prevention
DSHS	Department of State Health Services
EDRS	Electronic Death Registration System
ERASE MM	Enhancing Reviews and Surveillance to Eliminate Maternal Mortality
JP	Justice of the Peace
MCH	Maternal Child Health
MMMRC	Maternal Mortality and Morbidity Review Committee
MMRIA	Maternal Mortality Review Information Application
NCHS	National Center for Health Statistics
TER	Texas Electronic Registrar
TxEVER	Texas Electronic Vital Events Registrar
IEWS	Validation and Interactive Edits Webservice
VSS	Vital Statistics Section

Appendix A. Summary of 2018 Report

For the *Improving the Quality of Cause of Death Information Related to Maternal Mortality Report* published in 2018, DSHS conducted multiple assessments to study the quality of cause of death data on death certificates, the process of collecting cause of death information, and any challenges relating to the quality of that information.¹

These assessments included:

- Literature review of related academic and professional research to identify challenges to process and quality experienced in other vital records jurisdictions
- An environmental scan completed by a Maternal Mortality and Morbidity Forum (the Forum) workgroup that was hosted by the Texas Medical Association and DSHS on September 30, 2017
- The findings and recommendations on death certificate accuracy for cases from the Texas Maternal Mortality and Morbidity Review Committee (formerly Maternal Mortality and Morbidity Task Force) Joint Biennial Reports for 2016 and 2018
- Responses from a focus group of funeral directors, physicians, justices of the peace (JPs) and from a panel of experts with broad expertise and experience with vital registration in Texas, other states, and at the national level.

Summaries of the findings and recommendations from the 2018 report are provided below.

Summary of Findings from the 2018 report

Finding 1 - Errors often occur in attempting to identify the underlying cause of death.

The literature reviews and the DSHS Joint Biennial Reports reviewed for the 2018 report recognized the existing concern of inaccurate or incomplete cause of death data being provided on the cause of death section of the death certificate. Not providing completed information regarding the causal order of death or recognizing non-natural events that initiated the chain of processes leading to death means that the true underlying cause of death would not be included in the vital statistics that inform public health funding and programming.

The 2016 and 2018 Texas Maternal Mortality and Morbidity Review Committee recommended improving the quality of death certificate data. This is because death certificate data is the main source of maternal death information for maternal mortality reporting and must be accurate to effectively inform Review Committee recommendations and public health strategies to reduce maternal mortality.

Finding 2 - Errors in reporting pregnancy status may contribute to an inflated maternal mortality rate.

The standard method of identifying maternal deaths relies on the pregnancy status and cause of death listed on the death certificate. DSHS results indicated that mistakes in reporting the pregnancy status was likely a main reason for the higher maternal mortality rate (MMR) reported and is consistent with over-reporting of positive pregnancy status on death certificates across the United States.

DSHS believed that the layout of the pregnancy status field on the death certificate may have contributed to medical certifiers unintentionally selecting the incorrect pregnancy status. This observation was also shared by the Review Committee who noted, in the 2018 Joint Biennial Report, that inaccurate pregnancy status on the death certificate occurred in a majority of the 89 cases they reviewed.

Finding 3 - Lack of training is a barrier to quality reporting on death certificates.

A lack of training for medical certifiers, particularly physicians, is frequently cited in the literature as a common barrier to quality reporting on death certificates. The focus groups and the panel confirmed that training and education are likely large contributing factors to data quality. Focus group participants expressed concern about the lack of training opportunities on how to complete the death certificate and why an accurate death certificate is important.

Finding 4 - Some providers do not understand the important role of death certificates in public health.

In the focus group of funeral directors, participants reported that their biggest challenge in the death certificate process is that physicians have little understanding of the importance of the death certificate. From the family perspective, a more accurate cause of death means that an insurance company could pay a claim sooner. When a cause of death is unclear, processing an insurance claim can take longer. From a public health perspective, cause of death information has significant impact on public health research, surveillance, and intervention planning. The physician's focus group confirmed that there is often

little awareness among some physicians as to the importance of the death certificate or how to complete the cause of death section.

Finding 5 - Logistical inefficiencies within the death registration process lower data quality.

A completed death certificate requires signatures from both an authorized data provider attesting to the demographic and disposition information on a decedent, and an authorized data provider attesting to the cause of death and associated medical information as described in **Error! Reference source not found.** However, there are challenges in obtaining the necessary information to complete the death certificate. At times, the issue is identifying who should certify the cause of death for a specific death. The panel discussed that the appropriate medical certifier for a death certificate is not always immediately evident, and professionals may have varying opinions on their responsibilities.

To identify pregnancy-related and maternal deaths, a pregnancy status field is included on the death certificate. However, medical certifiers explain that pregnancy history is difficult to ascertain unless evidence of pregnancy is discovered during an autopsy and/or the death was related to a comorbid condition with pregnancy. Unless the woman was pregnant at time of death, or the death appears to be related to a recent pregnancy, her pregnancy history is often unknown to the medical certifier.

The logistical inefficiencies impact the timeliness of completing the cause of death information and signing a death certificate. Failure to meet those requirements may lead to disciplinary action for medical certifiers and funeral directors. [Health and Safety Code, Sec. 193.0041](#) prohibits professional licensing agencies from taking disciplinary action if written documentation outlines good faith efforts to timely file the death certificate and demonstrates that circumstances beyond the person's control hampered timely filing. The factors outlined above may be a barrier to timeliness, but also can be difficult to provide written documentation for, leading to potential disciplinary action.

Finding 6 - Some medical certifiers need more resources to support them in their role in the death registration process.

Whereas medical examiners and JPs routinely complete death certificates, many physicians do not use the electronic system every day. As per medical examiners and JPs, some physicians do not want to sign death certificates because they do not

know how to use the electronic system and do not have support when using it. This often leaves the death certificate to be completed by the medical examiner or JP, who has minimal knowledge of the patient.

All participants agreed that a more user-friendly electronic system used to file death certificates, including prompts and data checks, would be helpful in providing immediate assistance and feedback during the data entry process.

Recommendations from the 2018 report

To address the challenges in each of the findings, DSHS made the following recommendations in the 2018 Report:

Recommendation 1 - Improve death certificate quality through medical certifier training and support.

Recommendation 2 - Facilitate communication among stakeholders to reduce role confusion in completing individual death certificates.

Recommendation 3 - Enhance DSHS capacity and expertise to support continued evaluation and improvement in cause of death reporting.

Recommendation 4 - Foster stakeholder input to identify opportunities and challenges to improve quality of death registration data.

Appendix B. Collecting Cause of Death Information

Collecting cause of death information, regarding the circumstances under which an individual died, is required for filing a death certificate for registration.

Death Registration Requirements in Texas

The process of registering a death begins with the funeral director, or person acting as such, filing a Report of Death with the local registrar (for the registration district where the person died) within 24 hours of taking custody of a body. It is the responsibility of the funeral director to complete and file the Certificate of Death within ten days of the date of death (Texas Health and Safety Code, Section 193.002 and 193.003). Completion of the death certificate requires collaboration among the funeral director, the person responsible for medically certifying the death, and others as necessary to complete the certificate.

The Texas death certificate follows the United States standard death certificate set by the National Center for Health Statistics (NCHS) at the United States Centers for Disease Control and Prevention (CDC), and includes items such as name, date of birth, date of death, cause and manner of death, and burial or disposition information. The reporting process is electronic, and the death certificate must be electronically signed by the funeral director and the medical certifier prior to becoming registered by the state as an official vital record.

The medical certifier must be a physician, medical examiner, or Justice of the Peace (JP) with exceptions allowed only as specifically outlined in statute (Texas Health and Safety Code, Section 193.005; Code of Criminal Procedure, Section 49.04 and 49.25). In most circumstances, a physician will be the most appropriate individual to medically certify a death certificate. If the manner of death is anything other than natural and/or the death meets any of the circumstances outlined within statute, the JP or medical examiner should be called immediately for investigation or inquest as to the cause and manner of death and will be the one to medically certify the death certificate. Additionally, in accordance with Code of Criminal Procedure, Section 49.04, the medical examiner or JP should be notified of the deaths of children under the age of six, upon which an inquest is done to determine whether the death was unexpected or the result of abuse or neglect.

Once the death certificate is completed and signed, it must be filed electronically with the local registrar and DSHS Vital Statistics Section (VSS) within ten days of the date of death by the funeral director or the person acting as such. Once the

death certificate is registered as an official vital record by the state, it may only be updated or corrected through an amendment process.

Reporting the Cause of Death

Texas is one of 57 vital records jurisdictions that is independently responsible for overseeing vital statistics systems in the United States. These jurisdictions send data to CDC NCHS to create national-level vital statistics. CDC NCHS provides written guidance and best practices to ensure high quality death certificate and cause of death data, including handbooks and guides for physicians, medical examiners, and funeral directors on medical certification of death and death registration. These can be found at [cdc.gov/nchs/nvss/training-and-instructional-materials.htm](https://www.cdc.gov/nchs/nvss/training-and-instructional-materials.htm).

The cause of death section on the death certificate is where the medical certifier reports the final diseases or conditions that resulted in death, according to their best medical judgment. The cause of death section on the Texas death certificate is divided into two parts – Part 1 and Part 2 – and follows the national standard set by the CDC.

Part 1 in the cause of death section on the death certificate contains four lines - a, b, c, and d - to use for recording, in reverse chronological order, the causal sequence of events or conditions leading to death. The medical certifier must complete Part 1(a) with the immediate cause of death, which is the specific condition that directly preceded the death. To complete the sequence leading to death, the medical certifier works backwards from Part 1(a). The intermediate cause(s) are the significant conditions that preceded and gave rise to the immediate cause of death, and these are listed on the lines below Part 1(a) on the death certificate. The last line is used for the underlying cause of death, which is the initiating condition that triggered the sequence of events leading to death (see Figure 1). The underlying cause of death reported on the death certificate is what drives mortality statistics on leading causes of death.

Figure 1. A Texas Death Certificate Form Showing Parts 1 and 2 for Cause of Death

CAUSE OF DEATH	33. PART 1. ENTER THE CHAIN OF EVENTS – DISEASES, INJURIES, OR COMPLICATIONS – THAT DIRECTLY CAUSED THE DEATH. DO NOT ENTER TERMINAL EVENTS SUCH AS CARDIAC ARREST, RESPIRATORY ARREST, OR VENTRICULAR FIBRILLATION WITHOUT SHOWING THE ETIOLOGY. DO NOT ABBREVIATE. ENTER ONLY ONE CAUSE ON EACH LINE.		Approximate interval: Onset to death
	IMMEDIATE CAUSE (Final disease or condition -----> resulting in death)	a. _____ Due to (or as a consequence of):	_____
	Sequentially list conditions, if any, leading to the cause listed on line a. Enter the UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST .	b. _____ Due to (or as a consequence of):	_____
		c. _____ Due to (or as a consequence of):	_____
		d. _____ Due to (or as a consequence of):	_____
PART 2. ENTER OTHER SIGNIFICANT CONDITIONS CONTRIBUTING TO DEATH BUT NOT RESULTING IN THE UNDERLYING CAUSE GIVEN IN PART I.		34. WAS AN AUTOPSY PERFORMED? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		35. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> No	

In general, the medical certifier should try to provide a specific and clear causal sequence of events that resulted in death. If the medical certifier is unable to determine a sequence or chain of events that ends in death, then the medical examiner or JP may need to be consulted about conducting an investigation.

The medical certifier can use terms like probable or presumed when reporting the cause of death on the death certificate. Also, if the certifier is unable to determine the cause, they should record the cause as unknown, undetermined, or unspecified.

Part 2 is for reporting all other significant diseases, conditions, or injuries that contributed to death, but which did not result in the underlying cause of death given in Part 1.

An excerpt from the CDC’s Physicians’ Handbook on Medical Certification of Death is reproduced in Appendix B to show the accurate completion of Part I and Part II of the cause of death section of the death certificate.

Reporting Pregnancy Status on the Death Certificate

The US Standard Death Certificate was revised in 2003 to include a pregnancy status question for medical certifiers to identify whether a female decedent was pregnant at time of death or had been pregnant in the last year. Texas adopted this item in 2006. On Texas’s death certificate form, medical certifiers are presented with a drop-down menu with the following options:

- Not pregnant within past year;
- Pregnant at time of death;
- Not pregnant, but pregnant within 42 days of death;
- Not pregnant, but pregnant 43 days to 1 year before death; or
- Unknown if pregnant within the past year.

Information from the pregnancy status item is a factor used to determine maternal mortality rates.

Appendix C. CDC Excerpt on Death Certificate Completion

An excerpt from the CDC's *Physicians' Handbook on Medical Certification of Death* is reproduced below to show the accurate completion of Part I and Part II of the cause of death section of the United States standard death certificate.⁵

Case History no. 6

A 34-year-old male was admitted to the hospital with severe shortness of breath. He had a 9-month history of unintentional weight loss, night sweats, and diarrhea. The patient had no history of any medical condition that would cause immunodeficiency. An Elisa test and confirmatory Western Blot test for human immunodeficiency virus (HIV) were positive. T-lymphocyte tests indicated a low T helper-suppressor ratio. A lung biopsy was positive for *pneumocystis carinii* pneumonia (PCP), indicating a diagnosis of acquired immunodeficiency syndrome (AIDS).

The patient's pneumonia responded to pentamidine therapy, and the patient was discharged. The patient had two additional admissions for PCP. Seventeen months after the patient was first discovered to be HIV positive, he again developed PCP but did not respond to therapy. He died 2 weeks later.

Figure 2. Cause of Death Section of Death Certificate for Case History no. 6

CAUSE OF DEATH (See instructions and examples)		Approximate interval: Onset to death
32. PART I. Enter the <u>chain of events</u> --diseases, injuries, or complications--that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.		
IMMEDIATE CAUSE (Final disease or condition resulting in death) ----->	a. <u>Pneumocystis carinii pneumonia</u> Due to (or as a consequence of):	<u>2 weeks</u>
Sequentially list conditions, if any, leading to the cause listed on line a. Enter the	b. <u>Acquired immunodeficiency syndrome</u> Due to (or as a consequence of):	<u>17 months</u>
UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST	c. <u>HIV infection</u> Due to (or as a consequence of):	<u>Over 17 months</u>
d. _____		
PART II. Enter other significant conditions contributing to death but not resulting in the underlying cause given in PART I.		

Source: DHHS Publication No. (PHS) 2003-1108 03-0002 (4/2003)

⁵ Available at cdc.gov/nchs/data/misc/hb_cod.pdf

Figure 2 shows an accurate completion of the decedent's death certificate. The immediate cause of death was pneumocystis carinii pneumonia (PCP) and is correctly named on Part I(a). The individual's HIV infection is the last item listed in Part I and is therefore correctly identified as the underlying cause of death. Because this death certificate accurately captures the individual's underlying cause of death as the HIV infection, public health programs and policies will have accurate information to guide their actions.

When the cause of death section on the death certificate is not completed accurately, inaccurate information is introduced into the public health statistics analysis and vital information is lost, as would be the case if only "cardiac arrest" was listed as the cause of death.

Part 2 of this death certificate is left blank because there were no other known factors that may have contributed to the death but did not directly cause the death to occur.