



Death Certification in Alaska

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State of Alaska Registrar

03/2025



Agenda

- **Part 1: Alaska Vital Records**
- Part 2: Why does death certification matter?
- Part 3: How do I fill out a death certificate?
- Part 4: Practice cases
- Part 5: Medical Examiner
- Part 6: ICD-10 Coding and National Databases



Alaska Health Analytics and Vital Records (HAVRS)

- Registration:
 - Birth and adoptions
 - Death and fetal death
 - Induced termination of pregnancy
 - Marriage and divorce
- Issue certified copies of vital records to Alaskans, burial transit permits
- Collect and analyze data, prepare reports and maintain dashboards



Alaska Health Analytics and Vital Records (HAVRS)

In **Alaska**, cause of death / death certification can be completed by all licensed providers

- *including MD, DO, RN, NP, PA*



Alaska Health Analytics and Vital Records (HAVRS)

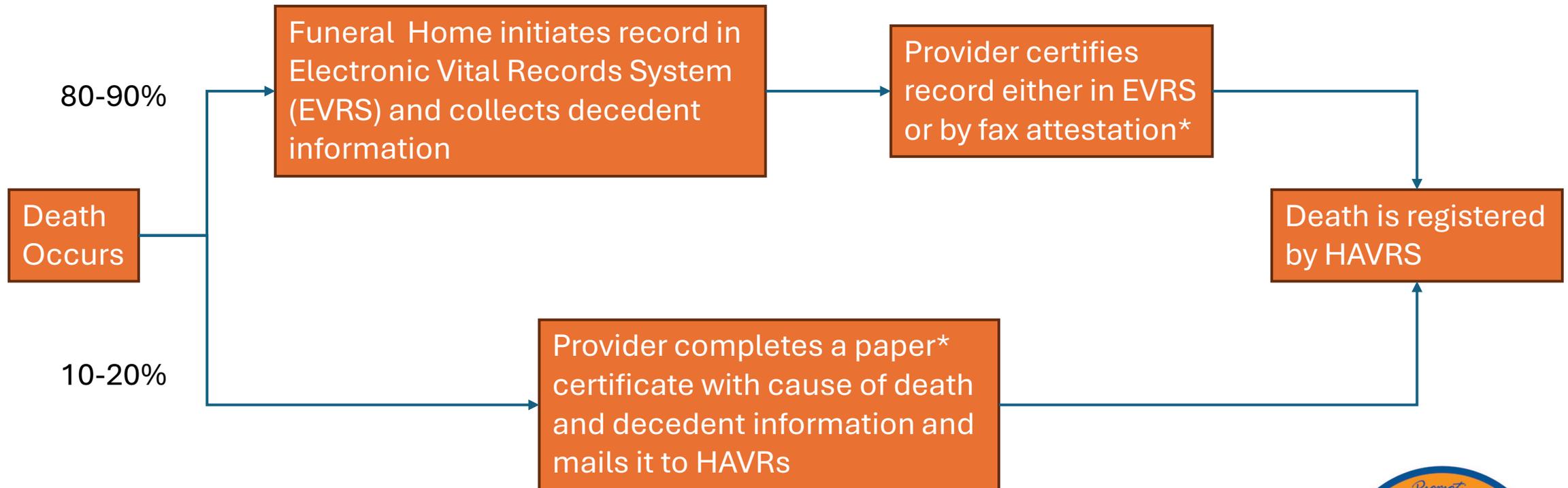
Governed by the Vital Statistics Act (Alaska Statutes 18.50)

- **Births:** within 5 days after the birth (§ 18.50.160)
- **Deaths:** within 3 days after the death (§ 18.50.230)
- **Fetal deaths:** within 3 days after delivery (§ 18.50.240)

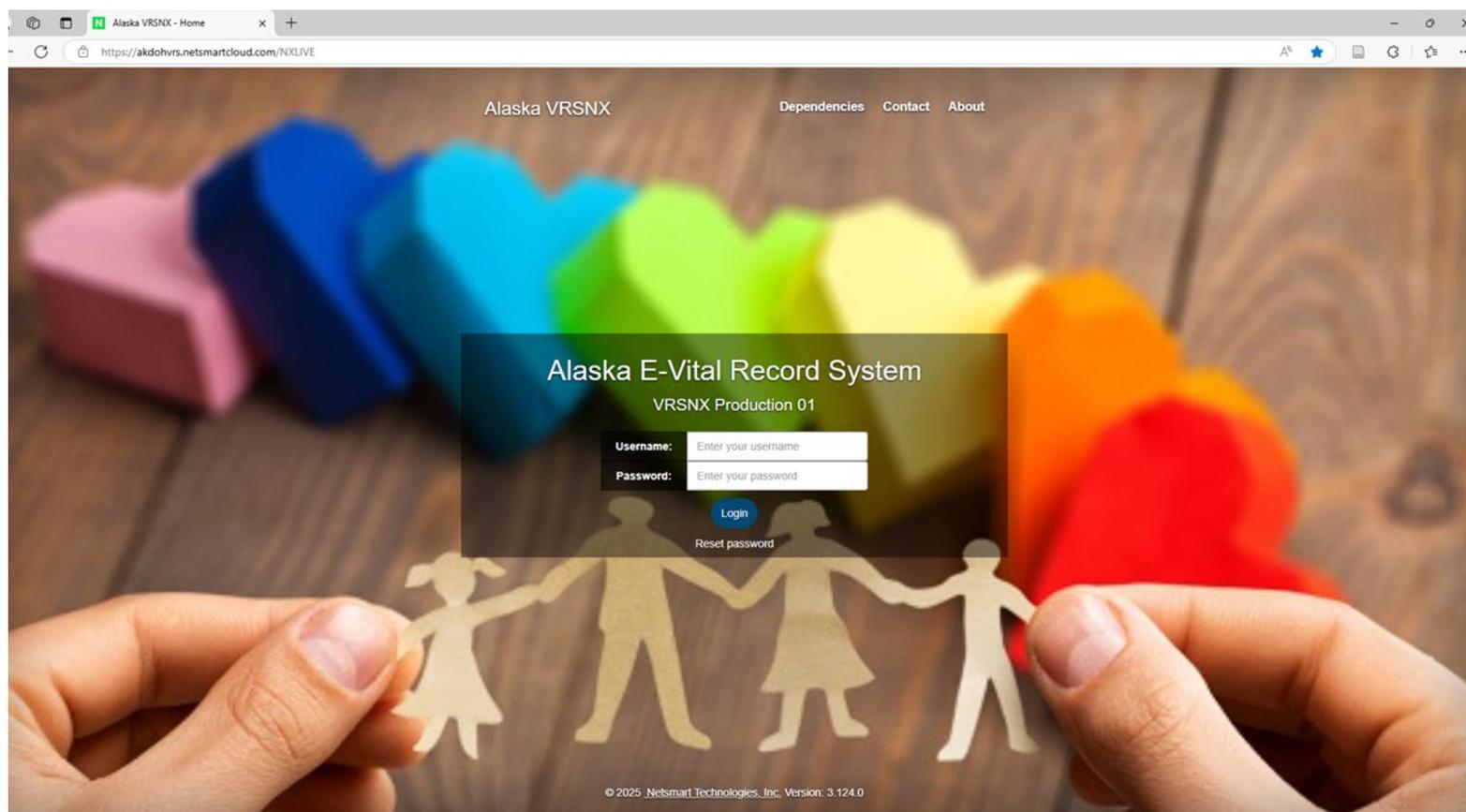
In **Alaska**, cause of death / death certification can be completed by all licensed providers (including MD, DO, RN, NP, PA)



Death Registration Process



Electronic Vital Records System (EVRS)



Are you a death certifier?

Please consider using our new EVRS!

hss.dph.evrsaccounts@alaska.gov



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Why does death certification matter?

- Fulfills responsibilities as physicians on four levels:
 - Patients
 - Families
 - Hospitals
 - Society



How is death certificate data used?

- State and national mortality statistics
- Determine which medical conditions receive research and development funding
- Set public health goals
- Measure health status at local, state, national, and international levels



Why does death certification matter?

- **Fentanyl overdose deaths:** inform providers, patients and advocates, and is a tool for advocating for more funding
- **Maternal deaths:** changes in clinical practices
- **COVID-19:** informed decisions on public health measures
- **Infant deaths:** product recalls, safe sleep initiatives



Why do we need this session?

- Physician competence assessed in 1993, 2004 and 2020:
 - 70-85% of certificates with one error
 - 33-45% wrong cause of death
- Vermont Review of 601 death certificates (trainee and attending):
 - 93% had a change in ICD-10 code
 - 60% had wrong cause of death

Lakkireddy DR, Gowda MS, Murray CW, Basarakodu KR, Vacek JL. Death certificate completion: how well are physicians trained and are cardiovascular causes overstated? *Am J Med.* 2004 Oct 1;117(7):492-8. doi: 10.1016/j.amjmed.2004.04.018. PMID: 15464706.

Pritt BS, Hardin NJ, Richmond JA, Shapiro SL. Death certification errors at an academic institution. *Arch Pathol Lab Med.* 2005 Nov;129(11):1476-9. doi: 10.5858/2005-129-1476-DCEAAA. PMID: 16253030.

Schuppener LM, Olson K, Brooks EG. Death Certification: Errors and Interventions. *Clin Med Res.* 2020 Mar;18(1):21-26. doi: 10.3121/cmr.2019.1496. Epub 2019 Oct 9. PMID: 31597655; PMID: PMC7153801.

McGivern L, Shulman L, Carney JK, Shapiro S, Bundock E. Death Certification Errors and the Effect on Mortality Statistics. *Public Health Rep.* 2017 Nov/Dec;132(6):669-675. doi: 10.1177/0033354917736514. Epub 2017 Nov 1. PMID: 29091542; PMID: PMC5692167.

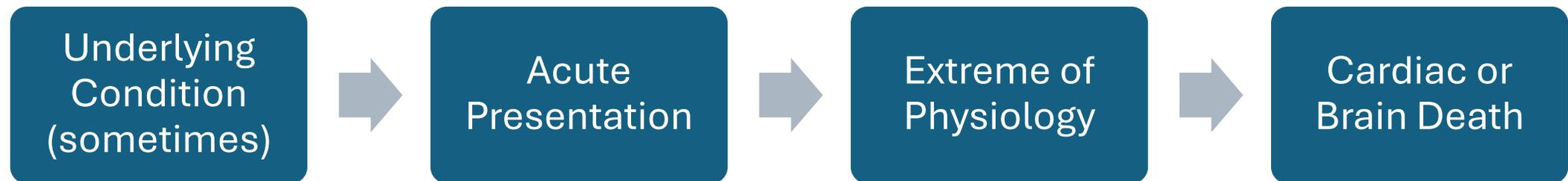


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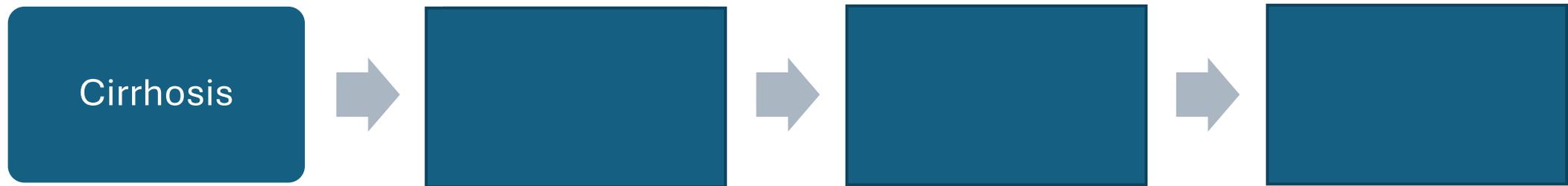
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How does someone die?



How does someone die?



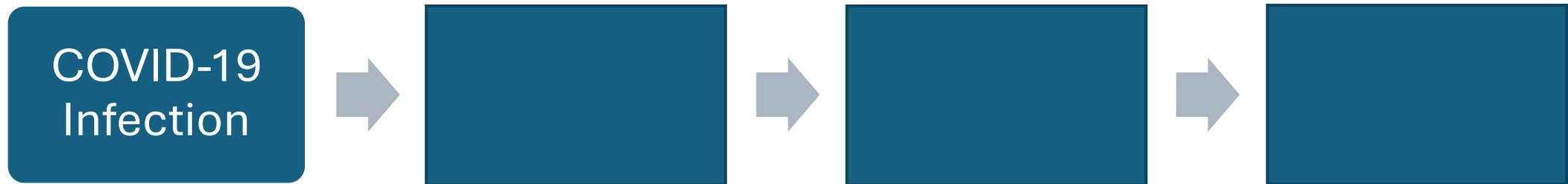
How does someone die?

Coronary
Artery
Disease



```
graph LR; A[Coronary Artery Disease] --> B[ ]; B --> C[ ]
```

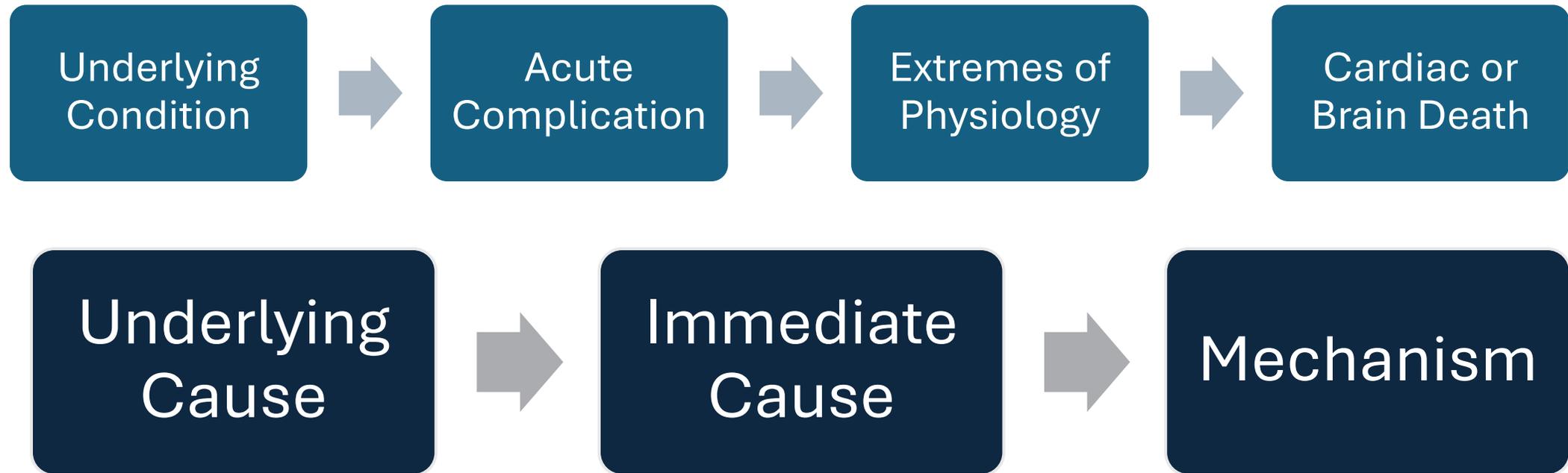
How does someone die?



How do Pathologists view cause of death?



Comparing two frameworks



How do medical examiners view cause of death?



Note: Cardiac/Brain Death generally not included on the death certificate!



Breaking it down



- **Underlying (proximate) cause:** Disease that started the lethal chain of events
 - Can be chronic (Cryptogenic Cirrhosis) or acute (COVID-19)
- **Immediate Cause:** Complication directly linked to the underlying cause
 - Why did they get admitted/sent to the ICU?
- **Mechanism:** Physiologic/biochemical effect of immediate cause leading to death
 - Hypoxemia, hyperkalemia, severe acidosis, hypovolemia



Matching



Sepsis	
End Stage Renal Disease Secondary to Diabetic Nephropathy	
Disseminated Intravascular Coagulation	
COVID-19 Infection	
Myocardial Infarction	
Lung Cancer	
Hemorrhagic Shock	

Specificity Always required: Think ICD-10 Codes

- Failure to thrive, old age, metabolic encephalopathy
- Sepsis, cirrhosis, renal failure, aspiration pneumonia
- Cerebrovascular accident, pulmonary embolism, pancytopenia
- Hemorrhage, urinary tract infection, cardiac arrest



Cause of death statement

Cause of Death

Pending Cause of Death **Manner of Death**

Immediate Cause (Final disease or condition resulting in Death)

Approximate Interval - Onset to Death

List Conditions Leading to the Cause

Due to or as a Consequence of

Approximate Interval - Onset to Death

Due to or as a Consequence of

Approximate Interval - Onset to Death

Due to or as a Consequence of

Approximate Interval - Onset to Death

Cause of Death

Other Significant Conditions Contributing to Death.



Underlying Cause

- Can stand alone in many cases
- Must be as specific as possible

Cause of Death

Pending Cause of Death **Manner of Death**

Immediate Cause (Final disease or condition resulting in Death)

Approximate Interval - Onset to Death

← Here if “standing alone”

List Conditions Leading to the Cause

Due to or as a Consequence of

Approximate Interval - Onset to Death

Due to or as a Consequence of

Approximate Interval - Onset to Death

Due to or as a Consequence of

Approximate Interval - Onset to Death

← Usually goes here

Cause of Death

Other Significant Conditions Contributing to Death.



Immediate Cause(s): chain of events

Cause of Death

Pending Cause of Death **Manner of Death**

Immediate Cause (Final disease or condition resulting in Death)

Approximate Interval - Onset to Death



List Conditions Leading to the Cause

Due to or as a Consequence of

Approximate Interval



Due to or as a Consequence of

Approximate Interval - Onset to Death



Due to or as a Consequence of

Approximate Interval - Onset to Death

Cause of Death

Other Significant Conditions Contributing to Death.



Mechanism: Does it add to the story?

- GI Bleed -> Exsanguination
- UTI -> Septic Shock
- Pneumonia → Septic Shock vs. Respiratory Failure?



Other significant conditions

Cause of Death

Pending Cause of Death **Manner of Death**

Immediate Cause (Final disease or condition resulting in Death)

Approximate Interval - Onset to Death

List Conditions Leading to the Cause

Due to or as a Consequence of

Approximate Interval - Onset to Death

Due to or as a Consequence of

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Due to or as a Consequence of

Approximate Interval - Onset to Death

Cause of Death

Other Significant Conditions Contributing to Death.

Contributing factors NOT directly in chain



Contributing Conditions

- Does the condition affect severity of the underlying cause of death?
- Not a problem list
- Does not require time intervals
 - Ex 1: COVID-19 pneumonia and COPD
 - COPD does not cause COVID infection, but affects severity, so should be a contributing condition



Did Tobacco Use Contribute to Death?

35. DID TOBACCO USE CONTRIBUTE TO DEATH?

- Yes
- Probably
- No
- Unknown

- Deaths due to emphysema or lung cancer
- Deaths due heart disease and head / neck cancers
- Fires started by smoking, *in utero exposure*



Pregnancy status

36. IF FEMALE:

- 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
- Unknown if pregnant within the past year

- Annual count of maternal deaths is relatively small, correcting even a few errors can impact State and National rates
 - 2 National Verification Processes:
 - Division of Vital Statistics (all States), quarterly
 - Division of Reproductive Health (subset of States, including Alaska), monthly
-

Death certification

- Provide a "story" of why the patient died at this time and in this way.
- Conditions recorded on the death certificate represent **Medical Certifiers' best medical opinion.**



Practical Tips

- Work in reverse—start from the underlying cause
- Express uncertainty when appropriate
 - Suspected, likely, possible, probable, presumed
- Avoid abbreviations
- Not always one right way of doing things
- Absolute certainty of a diagnosis is not required, and many times, not possible
 - Cause of death based on your best medical opinion
 - An acceptable diagnosis is “more likely than not,” or 51% certainty



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Example Case 1

- A 30-year-old, gravida 6, para 5, with a history of gestational hypertension reported to the emergency room at 36 weeks gestation with complaints of abdominal cramping and light vaginal bleeding during the past 12 hours.
- At the time of first assessment, fetal heart tones were detected. The uterus was tense, irritable, and tender. The mother was hypotensive with tachycardia. A presumptive diagnosis of abruptio placenta was made, and an emergency cesarean section was performed under general anesthesia. The baby was stillborn.
- The mother continued to bleed from her uterus and phlebotomy sites and went into profound shock secondary to disseminated intravascular coagulation. Despite administration of blood and clotting factors, intravascular pressure could not be maintained, and the mother died on the operating table. Maternal autopsy confirmed the clinical diagnosis.

Part I. Chain of Events		Cause	Duration
Immediate cause	a.		
	b.		
	c.		
	d.		
Part II. Other Significant Conditions			

Example Case 1

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Part I. Chain of Events		Cause	Duration
Immediate cause	a.	Hemorrhagic shock	Minutes
	b.	Disseminated intravascular coagulopathy	Hour
	c.	<i>Abruptio placenta</i>	Over 13 hours
	d.		
Part II. Other Significant Conditions		Gestational hypertension, 36 weeks into pregnancy	

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If Female, choose one of the following:

1. Not pregnant within last year

2. Pregnant at time of death

3. Not pregnant, but pregnant within 42 days of death

4. Not pregnant, but pregnant 43 days to 1 year before death

8. Not applicable

9. Unknown

Example Case 2

- A 1,480-gram male infant was born at 32 weeks gestation to a 20-year-old primiparous woman. Newborn screening found elevated levels of immunoreactive trypsinogen in the blood. The infant developed respiratory distress syndrome and required mechanical ventilation for 7 days.
- Despite receiving adequate calories for growth, the infant gained weight poorly and had persistent diarrhea. Steatorrhea was confirmed upon microscopic examination. Results from a sweat chloride test given on the 21st day after birth were negative, but the patient had an elevated sweat chloride concentration of 85 millimoles per liter when the test was repeated at 35 days of age.
- On the 37th day after birth, the infant became lethargic and was noted to be edematous. *Escherichia coli* was cultured from the infant's cerebral spinal fluid, total serum proteins were reported to be low, and clotting studies were prolonged. The infant died at 45 days of age despite appropriate life-saving efforts. Gross autopsy confirmed the clinical impression of cystic fibrosis.

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Immediate cause	a.		
	b.		
	c.		
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Part I. Chain of Events		Cause	Duration
Immediate cause	a.	<i>Escherichia coli</i> meningitis	7 days
	b.	<i>Cystic fibrosis</i>	45 days
	c.		
	d.		
Part II. Other Significant Conditions		Prematurity, malabsorption, respiratory distress syndrome, failure to thrive	

Example Case 3

- A 32-year-old female with current intravenous drug use and a hepatitis C diagnosis reported to the emergency room with septic shock stemming from a staph infection. Findings included vegetations on the tricuspid valve, and acute kidney injury.
- 3 weeks later, after undergoing multiple treatments and operations, the patient was critically ill with endocarditis, necrotizing pneumonia, renal failure, and now with ascites that suggest intestinal perforation. The patient was transitioned to comfort care.

Part I. Chain of Events		Cause	Duration
Immediate cause	a.		
	b.		
	c.		
	d.		
Part II. Other Significant Conditions			

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Part I. Chain of Events		Cause	Duration
Immediate cause	a.	Cardiac arrest	minutes
	b.		
	c.		
	d.		
Part II. Other Significant Conditions			

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9. Unknown

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Manner of Death

- Natural
- Accident
- Suicide
- Homicide
- Undetermined



Manner of Death

- **Natural—caused 100% by disease, clinicians certify**
- Accident
- Suicide
- Homicide
- Undetermined



Cause of Injury

Death: New

Image count: 0

Notes count: 0

Decedent Decedent Demographic Decedent Race Ethnic Relative/Informant Disposition Trade Call/Transfer Certifier Cause of Death **Injury Data** Signatures Print Requests Fax Flags Supermic

Injury

Date of Injury

Is this DATE approximate? (Y/N)

Time of Injury

A = AM or P=PM

Is this Time Approximate? (Y/N)

Place of Injury

Address

Apt No

Country

State

County

City

Zipcode

FIPS Country Code

FIPS State Code

FIPS City Code

FIPS County Code

Injury at work?

Transportation Injury?

Specify Transportation Injury

Vehicle

Describe how the Injury Occurred



Cause of Injury

Death: New

Image count: 0

Notes count: 0

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Injury

Date of Injury

Is this DATE approximate? (Y/N)

Time of Injury

A = AM or P=PM

Is this Time Approximate? (Y/N)

Place of Injury

Address

Country

State

County

City

Zipcode

FIPS Country Code

FIPS State Code

FIPS City Code

FIPS County Code

Injury at work?

Transportation Injury?

Specify Transportation Injury

Vehicle

Describe how the Injury Occurred

General place of injury:
e.g. restaurant, decedent's home, wooded area



Cause of Injury

Death: New

Image count: 0

Notes count: 0

Decedent Decedent Demographic Decedent Race Ethnic Relative/Informant Disposition Trade Call/Transfer Certifier Cause of Death **Injury Data** Signatures Print Requests Fax Flags Supermic

Injury

Date of Injury

Is this DATE approximate? (Y/N)

Time of Injury

A = AM or P=PM

Is this Time Approximate? (Y/N)

Place of Injury

Address

Apt No

Country

State

County

City

Zipcode

FIPS Country Code

FIPS State Code

FIPS City Code

FIPS County Code

Injury at work?

Transportation Inj.

Describe how the Injury Occurred

Injury at work:
Y – working for pay or compensation (inc at home), traveling on business
N – visitor to job premises, student in school, homemaker, commuting



Cause of Injury

Death: New

Image count: 0

Notes count: 0

Decedent Decedent Demographic Decedent Race Ethnic Relative/Informant Disposition Trade Call/Transfer Certifier Cause of Death **Injury Data** Signatures Print Requests Fax Flags Supermic

Injury

Date of Injury

Is this DATE approximate? (Y/N)

Time of Injury

A = AM or P=PM

Is this Time Approximate? (Y/N)

Place of Injury

Address

Apt No

Country

State

County

City

Zipcode

FIPS Country Code

FIPS State Code

FIPS City Code

FIPS County Code

Injury at work?

Transportation Injury?

Specify Transportation Injury

Vehicle

Describe how the Injury Occurred

Transportation Injury:
Y : driver/operator, passenger, pedestrian,
other (specific)

Cause of Injury

Death: New

Image count: 0

Notes count: 0

Decedent Decedent Demographic Decedent Race Ethnic Relative/Informant Disposition Trade Call/Transfer Certifier Cause of Death **Injury Data** Signatures Print Requests Fax Flags Supermic

Injury

Date of Injury

Is this DATE approximate? (Y/N)

Time of Injury

A = AM or P=PM

Is this Time Approximate? (Y/N)

Place of Injury

Address

Apt No

Country

State

County

City

Zipcode

FIPS Country Code

FIPS State Code

FIPS City Code

FIPS County Code

Injury at work?

Transportation Injury?

Specify Transportation Injury

Vehicle

Describe how the Injury Occurred

How the Injury Occurred:
Narrative form, DO NOT USE PHI



Cause of Injury

1. The CAUSE OF DEATH* was, as follows:

Bullet wound fired
by Little Adamon

(Duration) Yrs. Mos. Ds.

The CAUSE OF DEATH* was, as follows:

Crushed to death by falling
wall at mine - accidental

(Duration) Yrs. Mos. Ds.

The CAUSE OF DEATH* was, as follows:

Falling from trestle at or near the Castle
Inn, Coldova, Alaska - accident

When to report: practical list

- **Injury (includes falls)** or violence
- Cause is completely unclear
- Unexpected or rare complication of therapy/procedure
- Drug intoxication/overdose
- Alcohol overdose
- Patient transferred from jail/prison or other state institution
- Work-related
- During or within 42 days of pregnancy
- You're not sure



Alaska State Medical Examiner's Office (SMEO)

To report: 907-334-2200

- Medical provider reporting helps improve timeliness from event to certification
- HAVRS and Funeral Homes also report
- HAVRS reviews cases and reports when medical providers sign for non-natural causes



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From Certificate to Data



- International Classification of Diseases 10th Rev. (ICD-10)
 - Coded by National Center for Health Statistics (NCHS)
 - E.g. COVID-19 (U07.1)
 - Coded deaths returned to states
 - Underlying cause of death primarily used for rankings



From Certificate to Data

Death Certificate

CAUSE OF DEATH (See instructions and examples)		Approximate interval: Onset to death
<p>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.</p>		
IMMEDIATE CAUSE (Final disease or condition -----> resulting in death)	a. <u>Acute respiratory distress syndrome</u> Due to (or as a consequence of):	2 days
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. <u>Pneumonia</u> Due to (or as a consequence of):	10 days
	c. <u>COVID-19</u> Due to (or as a consequence of):	10 days
	d. _____ Due to (or as a consequence of):	_____
<p>PART II. Enter other <u>significant conditions contributing to death</u> but not resulting in the underlying cause given in PART I</p>		<p>33. WAS AN AUTOPSY PERFORMED? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>34. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>

ICD-10 Coded Data

Literals			ICD-10 Codes		
Line A	Line B	Line C	Underlying Cause	Contributing Cause 1	Contributing Cause 2
ACUTE RESPIRATORY DISTRESS SYNDROME	PNEUMONIA	COVID-19	U071	J189	J80

From Certificate to Data

**Alaska 2025 Mortality
CUMULATIVE Report**
AK25016A.MOR, received 3/18/2025, processed 3/18/2025

YTD Counts		Error Counts	
Statistical Records	730	Validation Cert Count	1
Voided Records	0	Validation Error Count	1
Missing Records	0	Verification Cert Count	0
Alias Records	0	Verification Error Count	0
Previous High Certificate Number	000702		
Low Certificate Number	000001		
High Certificate Number	000730		

Voids & Missing Records Detail
None Found.

Validations Summary

1	Decedent's State of Residence
---	-------------------------------

Verifications Summary
No Verification Errors Found.

Infant Death Linkage Summary

Valid Linkage	2	
Total Infant Deaths	2	
Total Invalid Linkages	0	
Total Valid Linkages	2	100.0%

Infant Death Linkage Detail

2025 Alaska Death Certificate	Match Information Year-State-Birth Cert	Problem	Death Certificate Information	Birth Certificate Information
----------------------------------	--	---------	----------------------------------	----------------------------------

NCHS Checks:

- Record sequence
- Missing data
- Infant birth/death linkage



National Data Systems

- State and Territorial Exchange of Vital Events (STEVE)
- Electronic Verification of Vital Events (EVVE)
- Online Verification System (OVS)
- National Vital Statistics System
 - <https://www.cdc.gov/nchs/nvss/>



Alaska Mortality Dashboard



Alaska Mortality Data by:

- Cause of death
- Sex
- Age group
- Race/Ethnicity
- Region



References



More detailed information and case examples are available from the CDC Physician's Handbook

This training was largely developed by the University of Washington School of Medicine

Wykowski JH, Luks AM, Berger G, Marshall DA. Death Certification: An Interactive Teaching Session. MedEdPORTAL. 2023 Jan 17;19:11296. doi: 10.15766/mep_2374-8265.11296. PMID: 36721497; PMCID: PMC9842806



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- Margaret Young, WCFH





Thank you!!

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