Death Certification Procedures

Cynthia Porterfield, D.O.
Forensic Pathologist

Well Sam, it's been six years since we presented at the Southwest Conference of Medicine. Just when we all learned how to fill out the d.c., they went electronic on us! Those Bas@#rs.

The Medical Examiner's Office and Death Certification

• History and background
• What cases fall under the jurisdiction of the M.E. office and how to report one
• Role of the autopsy in medical practice
• Death Certification Procedures
• Review old death certificates
Tucson ME Office
(Forensic Science Center)

pre 1989- 190 W. Pennington

1989-present  Forensic Science Center
@ 2825 E District  (adjacent to Kino Hospital)
Tucson ME Office
(Forensic Science Center)

Pre 1975- Coroner system

09/12/75- M.E. system
(ARS 11-591 through 11-600)

Modern day ME system
• Evolution from coroner system
• Medical Examiner (Forensic Pathologist)-
  pathologist with specialized training in
  forensic medicine
• centralized multidisciplinary approach to
  cause and manner of death determination

FSC-Why do we exist?
• ARS 11-591
• investigate sudden, unexpected, and
  unnatural deaths
• “diagnostician of dispossessed”
• “family physician to the bereaved”
• surveillance of public health trends
  — autopsy approx. 10% of deaths in county
  — certify the cause and manner of death
FSC—Who we are

- Forensic pathologists (6)
  - MD/DO, path residency, forensic fellowship
- Medicolegal investigators
- Pathologist assistants
- Forensic Field Agents
- Transcriptionists, admin, clerical

FSC—What we do

- Forensic examinations/autopsies
- Medicolegal inquiries
- Testify in court
- Live patient consultation
- Review/approve cremations
FSC - What we do

- help decide whether death is a medical examiner case
- assist community docs with death certification
- teach (hospitals, medical schools, etc...)
- County morgue

Pima County ME Office

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Autopsy</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1705</td>
<td>1153</td>
<td>552</td>
</tr>
<tr>
<td>2009</td>
<td>1852</td>
<td>1301</td>
<td>551</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>2001</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>819</td>
<td></td>
</tr>
<tr>
<td>Accident</td>
<td>663</td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Homicide</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Undetermined</td>
<td>131</td>
<td></td>
</tr>
</tbody>
</table>
Senator Robert Kennedy

President Grover Cleveland
**autopsy**

&omicron;"täp-E
Greek: autopsia--act of seeing with one's own eyes
1: an examination of a body after death to determine the cause of death or the character and extent of changes produced by disease

**Forensic**
- Latin *forensis* public, forensic, from *forum*
- Belonging to, used in, or suitable to courts of judicature or to public discussion and debate
- Argumentative, rhetorical
- Relating to or dealing with the application of scientific knowledge to legal problems
The Decline of the Autopsy

Hospital autopsy rates have declined from approx. 50% in the 1950's to around 5% today.

The Decline of the Autopsy

Why?

- Belief that everything is already known about patient
- Belief that more autopsies will mean more malpractice claims/litigation
- JCAHO
- Cost
- Remuneration issues (pathologists)
- Time lag in information sharing

Value of Autopsy

- Abundant data support fact that the percentage of autopsies revealing missed major clinical diagnoses has not changed in the last 100 years (10-20%) — if not missed, and with appropriate therapy would prolong survival --- Class I errors
- Autopsy is best endpoint for certain clinical studies
- Improves accuracy in death certification
Comparison of Clinical Diagnoses in Critically Ill Patients and Subsequent Autopsy Findings, Mayo Clinic Proceedings, 75(6), June 2000, pp. 562-567
Roosen et al.

- Retrospective study of MICU patients in Belgium
- Autopsy rate 93%
- 100 patients
- 16% of case had class I errors
- Most frequent missed diagnoses included fungal infection, cardiac tamponade, abdominal hemorrhage, and MI
- Concluded autopsy an important tool for education and quality control

Forensic autopsy

- focuses on cause and manner of death
- establish all facts which may have any bearing on any criminal or civil litigation
- heavily reliant on scene investigation
- different from a hospital autopsy
  - consent not necessary
What constitutes a Medical Examiner Case

Arizona Medical Examiner Law

Arizona Revised Statutes 11-593

“Any person having knowledge of the death of a human being including a fetal death under any of the following circumstances:..."
What cases need to be reported to the M.E.?

1. Death when not under the current care of a physician for a *potentially fatal illness* or when an attending physician is unavailable to sign the death certificate.

“Current care of a physician”

Does not have time restriction; does not mean patient was seen recently; generally an ongoing physician-patient relationship where the physician has rendered medical care to the deceased at any time.

What cases need to be reported to the M.E.?

2. Death resulting from violence
3. Death occurring suddenly when in apparent good health
4. Death occurring in a prison
5. Death of a prisoner
6. Death occurring in a suspicious, unnatural manner
What cases need to be reported to the M.E.?

7. Death from disease or accident believed to be related to the deceased's occupation or employment
8. Death believed to present a public health hazard
9. Death occurring during anesthetic or surgical procedures

ARS 11.594

- A death “during a surgical procedure or while under anesthesia”. Death will be reviewed over the phone and may or may not be accepted.

“24-hour rule”

there is no 24-hour rule
Arizona Medical Examiner Law

Failure to report a medical examiner case is a class 2 misdemeanor

President Benjamin Harrison
President Theodore Roosevelt

Reporting a ME Case

- Call to law enforcement
- Call to hospital administration
Reporting a ME Case

• Call to ME office
  – MD/DO or RN
• If case is accepted, tell family deceased is a ME case
  – Do not tell them that an autopsy is going to be performed!

Once jurisdiction has been accepted

• The body is brought in.
• The investigator speaks with law enforcement, family and possibly treating physician.
• The case is presented to the pathologist.
• The pathologist makes a decision as to the type of procedure, an external examination or a full autopsy.

Who gets an autopsy?

• Homicides
• “Fresh” MVAs
• Suicide GSWs with projectiles to recover
• Deaths in prison
• Sudden, unexpected, and unnatural deaths (medical opinion NOT lay opinion)
• Occasional family requests
Who doesn’t get an autopsy?

- Deaths with adequate medical information available to explain demise
  - If death at home, scene not suspicious
- Non-homicide religious objections
- “Old” MVAs
- Suicide GSWs with no projectiles to recover
- Cases of non-ME jurisdiction where a hospital autopsy is more appropriate
External Examination

• No incisions made
• Body is examined for external evidence of injury or disease
• Toxicology occasionally drawn
• DC generated based on history
• Body released
• Report generated

Jack Benny

[Image of Jack Benny]
HIPAA

• §164.512 Uses and disclosures for which consent, an authorization, or opportunity to agree or object is not required.

Subsection (g)1 states:

• Coroners and medical examiners. A covered entity may disclose protected health information to a coroner or medical examiner for the purpose of identifying a deceased person, determining a cause of death, or other duties as authorized by law...
Death certification

Article from Santa Barbara News-Press (Sep 2009)

• Medical experts want Congress to establish autopsy standards
• Experts generally agree that nearly a third of the nation’s deaths had the wrong cause reported on their death certificates, although some believe the error rate is more than 50%

• Critics of the current death certificate system have many other ideas for improvements, starting with making training on death certificate completion mandatory for all medical students
Dr Keyvan Ravakhah, head of medicine at Huron Hospital, a unit of the Cleveland Clinic

- “every physician who anticipates signing a death should be mandated to go to training, sit for an exam and become board certified in death certificate completion, so that it’s not an uneducated guess.

Dr. Elizabeth Burton, chief of the autopsy lab at Baylor Medical Center in Dallas

- “Hospitals should have a couple of physicians with that certification on staff, paid just like other specialists, for completing a proper death certificate for any patient who dies.

- 1/3 of death certificates are incorrect
- “one of the things we proposed..., there should be a hospital death review panel that would review all the charts and reports and conduct a ‘virtual autopsy’ and reach a consensus on the cause of death.
• The registration of deaths is a State function supported by individual State laws and regulations.
• Each State has a contract with NCHS that allows the Federal Government to use information from the State records to produce national vital statistics.

The Death Certificate
Which of the following are true concerning death certificates?
A) Document that legally binds the signer to prove the cause of death (if questioned)
B) Document that must be signed by the physician of record (i.e., not a covering physician or emergency room physician)
C) Document that must be signed by an attending physician (i.e., not a resident)
D) Document that reflects an opinion

The Death Certificate is an Opinion Statement
Death Certification - Purposes

• Legal document certifying someone has died
• Vital statistics

Death Certification Paradox

You don’t have to know what killed them to certify the cause of death.

Reasonable degree of medical certainty
(more probable than not)

NOT

Beyond a reasonable doubt
(100% certainty)
Who can sign?

- Any licensed physicians in ANY specialty
- Interns and residents (licensed)
- Tribal authorities
- Nurse practitioners
- Medical examiners

Who cannot sign?

- Physician assistance
- Nurses
- Midwives

Rule of thumb on signing DC

If you’re going to attend to them and bill them when they were alive, you’re responsible for their DC when they die.
AZ Administrative Code

R9-19-301.A.-- The physician...shall complete and sign the medical certification of cause of death promptly so that funeral arrangements may be made.

AZ Administrative Code

R9-19-301.B.-- When a physician cannot certify within 72 hours as to the cause of death (e.g., pending hospital autopsy), the physician shall enter “pending further examination” on the DC and sign it.

A supplemental DC with a COD shall be submitted within ten days.

Vital Records Laws

• The Arizona Legislature struck and replaced all of the state’s vital records statutes in 2004
• Requires a Medical Examiner to complete the cause-of-death within 72 hours or enter “Pending” and sign the death certificate.
• Requires a funeral director to file a completed death certificate with the local registrar or state registrar within 7 days of the date he takes possession of the remains.
• Physical signatures are no longer required on death certificates
• Allows for electronic signatures

What is EDR
• Electronic filing of death certificates
• On-Line collaboration among multiple death registration system users
• User-friendly death record data entry screens
  – Fact-of-Death data entry
  – Cause-of-Death data entry
• Built-in instructions and on-line help

What is EDR
• Internet accessibility
• Electronic authentication
  – User IDs/passwords
  – Personal Identification Numbers (PINs)
  – Biometrics
Who benefits from an EDRS?

- Physicians, medical examiners and coroners
- Institutions
  - Hospitals
  - Nursing Homes
  - Hospice
- Funeral directors
- Local and state registrars

Who benefits from an EDRS?

- Federal, state and local agencies
- Public health researchers
- Families

Benefits of an EDRS

- Greater efficiency - participants interact electronically
- Improved timeliness of death registration
- Higher quality data via real-time edits
  - Reduces errors in and rejection of death certificates
  - Promotes uniformity in demographic and cause-of-death statistics.
Benefits of an EDRS

• Increases security and fraud prevention
• Supports partial electronic/paper death registration
• Capability to report fact-of-death to SSA with increased accuracy and timeliness
  – Verified Social Security numbers

Benefits of an EDRS

• Capability to report cause-of-death with increased accuracy and timeliness
  – Integral part of patient care
  – Uniformity in cause-of-death statistics
  – Improves the cause-of-death data for electronic disease surveillance systems

Benefits of an EDRS

• Electronic referrals to Medical Examiners/Coroners by
  – Physicians
  – Funeral directors
  – Health departments
  – Key terms (fall, laceration, hypothermia)
• Electronic submission of supplemental cause-of-death
Benefits of EDRS

• Electronic cremation approvals
• Printing of the Burial Permit at the Funeral Homes
• Electronic trade calls between Funeral Homes
• Ordering of certified copies

• Death Certification in Arizona went “on line” in 2009

Nat King Cole
Mortality Statistics from DC

• assess the general health of the population
• allocate medical services, funding, and other resources
  – indicate areas in which medical research may have the greatest impact on reducing mortality

Mortality Statistics from DC

• examine medical problems which may be found among specific groups of people
• evaluate prenatal care services and obstetrical programs and study the causes of adverse pregnancy outcomes in the case of fetal deaths

Mortality statistics

The government is very keen on amassing statistics. They collect them, add them, raise them to the nth power, take the cube root and prepare wonderful diagrams. But you must never forget that every one of these figures comes in the first instance from the village watchman, who just puts down what he **** well pleases.

Josiah Charles Stamp
1st Baron of Shortlands
1880-1941
Death Certification

• not taught in medical school
• “skill” usually passed down from resident to intern
• policies and practices in US are non-uniform
  – style vs. substance

Cause of Death

The disease or injury responsible for initiating the lethal sequence of events. A competent cause of death should be etiologically specific
Underlying or Proximate Cause of Death
That which in a natural and continuous sequence, unbroken by any efficient intervening cause, produce the fatality, and without which the end result would not have occurred.

Must be etiologically specific

Acceptable causes of death
- Diabetes mellitus
- Alcoholic cirrhosis
- Hepatitis C cirrhosis
- Coronary atherosclerosis
- Atherosclerotic cardiovascular disease
- Hypertensive cardiovascular disease

Mechanism of Death
The altered physiology and biochemistry whereby the cause exerts its lethal effects
Causes of death needing more information

- Abscess
- Abdominal hemorrhage
- Adhesions
- Adult respiratory distress syndrome
- Altered mental status
- Anemia
- Anoxic encephalopathy
- Arrhythmia
- Ascites
- Aspiration
- Bacteremia
- Bedridden
- Biliary obstruction
- Bowel obstruction

- Brain stem herniation
- Carcinogenesis
- Carcinomatosis
- Cardiac arrest
- Cardiac dysrhythmia
- Cardiomyopathy
- Cardiopulmonary arrest
- Cellulitis
- Cerebral edema
- Cerebrovascular accident
- Cerebellar tonsillar herniation
- Chronic bedridden state
- Cirrhosis
- Coagulopathy

- Compression fracture
- Congestive heart failure
- Convulsions
- Decubiti
- Dehydration
- Diarrhea
- Disseminated intravascular coagulopathy
- Dysrhythmia
- End-stage liver disease
- End-stage renal disease
- Exsanguination
- Failure to thrive
- Fracture
- Gangrene
### Causes of death needing more information

- Gastrointestinal hemorrhage
- Heart failure
- Hemothorax
- Hepatic failure
- Hepatitis
- Hepatorenal syndrome
- Hyperglycemia
- Hyperkalemia
- Hypovolemic shock
- Hyponatremia
- Hypotension
- Immunosuppression
- Increase intracranial pressure
- Intracranial hemorrhage

- Malnutrition
- Metabolic encephalopathy
- Multisystem organ failure
- Myocardial infarction
- Necrotizing soft-tissue infection
- Pancytopenia
- Paralysis
- Perforated gallbladder
- Perforated bowel
- Peritonitis
- Pleural effusions
- Pneumonia

- Pulmonary arrest
- Pulmonary edema
- Pulmonary embolism
- Pulmonary insufficiency
- Renal failure
- Respiratory arrest
- Seizures
- Sepsis
- Septic shock
- Shock
- Starvation
- Subdural hematoma
- Subarachnoid hemorrhage
- Sudden death
- Thrombocytopenia
Causes of death needing more information

- Uncal herniation
- Urinary tract infection
- Ventricular fibrillation
- Ventricular tachycardia
- Volume depletion

AZ Administrative Code

- R9-19-301
- Part I of DC shall contain the disease sequence which directly resulted in the person’s death
- Part II of DC shall contain conditions contributing to the death, but not resulting in the underlying cause (Not a place for unusual or incidental findings)

Manner of Death

explanation of how the cause arose
Manner of Death

natural
accident
suicide
homicide
undetermined

Manner of Death

Natural death:
dead caused exclusively (100%) by
disease or predictable outcomes of
diagnostic or therapeutic procedures

Common mistakes in death
  certification

• No underlying cause
• Underlying cause and mechanism of death in
  reverse order
• Inappropriate use of Part II
• Use of the words “probable” or “presumed” are appropriate to indicate that the description provided is not completely certain.

Your goal while certifying a death should be...

• to give the government something to throw their money at
  – if you can’t start a charitable foundation based on your cause of death, you’re likely not certifying the death correctly

President Franklin Delano Roosevelt
James Dean
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data 1</td>
<td>Data 2</td>
<td>Data 3</td>
</tr>
<tr>
<td>Data 4</td>
<td>Data 5</td>
<td>Data 6</td>
</tr>
<tr>
<td>Data 7</td>
<td>Data 8</td>
<td>Data 9</td>
</tr>
<tr>
<td>Data 10</td>
<td>Data 11</td>
<td>Data 12</td>
</tr>
</tbody>
</table>

Notes:
- Column 1 notes
- Column 2 notes
- Column 3 notes

Table continued...
“Things” to remember

• Write legibly
• Avoid abbreviations

Supplements

• If you need to change a pending or change the original cause of death:
  – Funeral home will bring hard copy
  – Only original doctor can sign supplemental
Lines 5,6,7,8 shall contain the disease sequence which led to death

Line 9 shall contain conditions contributing to the death, but no resulting in the underlying cause

• You should be able to give a brief history of the patient by looking at the death certificate.
• A cause of death of renal failure doesn’t tell you anything about what disease the patient had.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Part A: Was condition contributing to death?</th>
<th>Part B: Cause of death was exacerbation or consequence of condition?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arteriosclerotic Cardiovascular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper GI bleed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastric carcinoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esophageal varices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cirrhosis of liver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic alcoholism</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Need more information!!!**
### Complications of chronic alcoholism

<table>
<thead>
<tr>
<th>Arteriosclerotic Cardiovascular Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoxic encephalopathy complicating probable myocardial infarction</td>
</tr>
</tbody>
</table>
Cirrhosis
Hepatitis C Infection
Gallstone pancreatitis with sepsis
Ruptured aortic dissection
Marfan Syndrome
<table>
<thead>
<tr>
<th>Condition</th>
<th>Other Significant Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertensive Cardiovascular Disease</td>
<td></td>
</tr>
<tr>
<td>Pulmonary Emphysema</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal pneumonia with sepsis</td>
<td></td>
</tr>
<tr>
<td>Chronic alcoholism</td>
<td></td>
</tr>
<tr>
<td>Cervical Cancer</td>
<td></td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td></td>
</tr>
</tbody>
</table>

**PART A:** Other significant conditions contributing to death but not resulting in the underlying cause given in Part 1

- Cervical Cancer
- Chronic Obstructive Pulmonary Disease

**PART B:** Other significant conditions contributing to death but not resulting in the underlying cause given in Part 1

- Hypertensive Cardiovascular Disease
- Pulmonary Emphysema
- Pneumococcal pneumonia with sepsis
- Chronic alcoholism
Aortic Stenosis

Pulmonary Emphysema

Arteriosclerotic cardiovascular disease

Dilated cardiomyopathy, unclear etiology
<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Common Cause</th>
<th>Underlying Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary Emphysema</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Cardiac arrest</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Cardiac dysrhythmia</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Congestive heart failure: diabetes mellitus</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Bladder cancer</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Metastatic bladder cancer</td>
<td>Cause of death</td>
<td>Underlying cause</td>
</tr>
<tr>
<td>Pneumonia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progressive spinocerebellar degeneration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due to Opioid/Narcotic Intoxication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Myocardial infarction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary artery disease</td>
</tr>
<tr>
<td>Due to Opioid/Narcotic Intoxication</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

| Chronic Alcoholism                            |

<table>
<thead>
<tr>
<th>Pulmonary Emphysema</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertensive Cardiovascular Disease</td>
</tr>
<tr>
<td>Due to Opioid/Narcotic Intoxication</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>
Parkinson's Disease

Chronic Pancreatitis

Breast Cancer

Dementia, unclear etiology

ME CASE !!!
Web sites for death certification

- Physicians Handbook:  
  [www.cdc.gov/nchs/data/misc/hb_cod.pdf](http://www.cdc.gov/nchs/data/misc/hb_cod.pdf)
- Instructions for completing COD Section  
  [www.cdc.gov/nchs/data/dvs/cod.pdf](http://www.cdc.gov/nchs/data/dvs/cod.pdf)
- Completing an Arizona Death Certificate  
  [www.azbn.gov/documents/death_certificates/Medical%20Cause%20of%20Death.pdf](http://www.azbn.gov/documents/death_certificates/Medical%20Cause%20of%20Death.pdf)

Web sites for death certification

- Reporting surgical deaths  
- Fetal Deaths  
  [www.azbn.gov/documents/death_certificates/Fetal%20Field%20to%20Remember.pdf](http://www.azbn.gov/documents/death_certificates/Fetal%20Field%20to%20Remember.pdf)
Web sites for death certification

- Death certification problems
- Writing COD statements
  [www.cdc.gov/nchs/nvss/writing_cod_statements.htm](http://www.cdc.gov/nchs/nvss/writing_cod_statements.htm)

Web sites for death certification

- Reporting Elder Abuse
- Reporting Child Abuse

Vital Records Office

- Audrey Rogers  243-7914
- Luana Pallanes  243-7916
Questions/Comments?

Please call Forensic Science Center @ 243-8600