Mortality State of the State
The Interface of Forensic Medicine and Public Health

Role and Function of ME

- ME as public health officer
  - Proper certification of death
  - Repository of important epidemiological data
  - Analysis of violence as a medical and public health problem
  - “Family physician to the bereaved” - Adelson

Evolution of the ME System

- Roots in 12th century England
- Coroner’s system brought to the colonies
- 1868 - Maryland legislature authorizes governor to appoint a physician as coroner
- 1877 - Massachusetts supplants coroner with a physician to be known as “Medical Examiner”
- 1915 - NYC abolishes coroner’s office and creates first formal ME system
- 1939 - Maryland establishes first statewide ME system
- 1959 - ABP certifies first class of Forensic Pathologists
- 1986 - New Hampshire establishes statewide ME system
“Reportable” Deaths

• Death resulting from a criminal act, regardless of time interval between incident and death
• Suicide, regardless of time interval between incident and death
• Death resulting from accidental injury, regardless of time interval between incident and death
• Deaths associated with fire or explosion
• Deaths associated with firearms or other mortal weapons
• Death in association with any public or private conveyance
• Illegal abortion or complications thereof
• Death due to poison, illicit drug use or overdose

“Reportable” Deaths

• Exposure to toxic agent during course of employment
• Deaths resulting from agents which constitute a public health or environmental hazard
• Sudden, unexpected death of a person under 60 in apparent good health
• Death unattended by a practicing physician
• Death in legal custody
• Deaths associated with diagnostic or therapeutic procedures, including intra- and perioperative deaths
• Death in which a body is to be cremated

“Reportable” Deaths

• Deaths occurring less than 24 hours after admission to health care facility, save for those known to be terminally ill from natural disease and death is imminent and expected
• Death of a child under 18 save for criteria above
• Death of a child from any cause when death occurs in day care, foster care or child is in custody of or being investigated by DCYF
• Fetal death resulting from trauma after 20 weeks or 550 gm
• Death known to have been improperly certified
“Reportable” Deaths

- Death of any unidentified person regardless of cause or manner
- Discovered buried remains, known or thought to be human
- Decomposed and skeletonized remains
- Suspicious or unusual circumstances surrounding a presumed natural death
- Death of a prominent or controversial person

Medicolegal Death Investigation

- Scene investigation
- Autopsy
  - Gross
  - Microscopical
- Ancillary studies
- Consultation as indicated

A 2013 Snapshot of OCME

- 1424 reported deaths
- 478 autopsy examinations
- Age 0-100 years (mean 57.3)
- 65% male

- Manner of death
  - Natural 37.6%
  - Accident 46.6%
  - Suicide 12.6%
  - Homicide 1.9%
  - Undetermined 1.6%
Natural
N = 535
Age 0-96
Mean age 59
69% male

Other Natural Deaths
- Bronchopneumonia 3
- Therapeutic complications 3
- Dementia, NOS 3
- Dilated cardiomyopathy 3
- Lung cancer 3
- Cerebral aneurysm 2
- Lobar pneumonia 2
- Idiopathic pulmonary fibrosis 2
- Meningitis 2
- Parkinson disease 2

Other Natural Deaths
1 each of...
- Acute pancreatitis
- Addison's disease
- Aortic dissection
- Aortic stenosis
- ARVD
- AVM
- Breast cancer
- Bronchiolitis
- BPD
- Cerebral palsy
- Chorioamnionitis
- Coarctation of aorta
- Colon cancer
- Coronary arteritis
- CVPT
- Cyclic vomiting
- Endocarditis
- Esophageal cancer
Other Natural Deaths
1 each of . . .

- FMD of AV nodal artery
- Gastric cancer
- Hepatitis
- HIV infection
- Laryngeal cancer
- Lymphoma
- Necrotizing esophagitis
- Necrotizing fasciitis
- Perforated duodenal ulcer
- Pericarditis
- Pharyngeal cancer
- Prostate cancer
- **Rectus sheath hematoma**
- Ruptured AAA

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Other Natural Deaths
1 each of . . .

- Senile marasmus
- Sepsis d/t cellulitis
- Sickle cell disease
- Sigmoid volvulus
- **Spontaneous coronary artery dissection**
- Strangulated hernia
- Supranuclear palsy
- Tetralogy of Fallot
- Undetermined natural causes
- Upper gastrointestinal tract hemorrhage of undetermined etiology

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**Accident**

- N = 663
- Age 3 mo - 100
- Mean age 57.9
- 61% male

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Falls
N = 286
Age 25-100
Mean age 76.9
53% female

NH Drug Deaths 1995-2012

Drug Deaths 2000-2012 by Age
Drug Deaths 2000-2012 by Sex

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Leading Agents in NH Drug Deaths

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NH Heroin-Related Deaths 1993-2013

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NH Top 5 2005-2012

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Single Agent Deaths

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Leading Single Agents of Death

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Source of Drug

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Drug Deaths 2000-2012 by Manner

NH Drug Deaths vs. Traffic Deaths 1995-2012
Traffic Deaths

Drivers
- 12 Non-belted
- 28 Belted
- 43 Unknown

Passengers
- 5 Non-belted
- 3 Belted
- 9 Unknown

Motorcyclists
- 12 not wearing helmets
- 7 wearing helmets
- 4 unknown

Other Accidental Deaths
- Airway obstruction 6
- Hypothermia 4
- Drowning 3
- Fire 3
- Therapeutic complication 3
- Occupational 2
- Explosion 2
- Carbon monoxide 2
- Positional asphyxia 2
- One each of...
  - Heat stroke
  - Pulmonary embolism
  - Fat emboli
  - Climbing accident
  - Wound infection
  - Traumatic rupture of varicose vein
  - Positional asphyxia
Suicide
N = 179
Age 14 – 96
Mean age 46.7
77.7% male

Homicide
N = 26
Age 2 – 78
Mean age 41.2
67% male

Undetermined
• N = 22
• Age 23 days - 68
• Mean age 42.4
• 59% male
Organ & Tissue Donation

• Statistics courtesy of New England Organ Bank

Certifying Death

• Legal functions
• Statistical functions
  – Public health
  – Allocation of health care and research dollars
  – Actuarial data
  – Epidemiological trend spotting

Practical Considerations

• Cause of Death
  – Disease
  – Injury
  – Combinations
Etiological Specificity

Dyspeptigenic Certifications

• “Aspiration of gastric content”
• “Pulmonary edema”
• “Mitral incompetence”
• “Bronchopneumonia”

Mechanism of Death

• Pathophysiologic and/or biochemical derangement
• Violent death – often structural
• Natural death – usually functional
Immediate Cause of Death

- May or may not be the proximate cause
- May represent the sequelae of the proximate cause
- Interval to death may be brief or prolonged

Part II

- May be multiple
- Keep it relevant
- Thou shalt not editorialize

The clinical picture should guide the use of “Part II” . . .

Ia Bronchopneumonia
Ib Diabetes mellitus
II ASCVD

Ia Bronchopneumonia
Ib ASCVD
Ic Diabetes mellitus

Ia Bronchopneumonia
Ib ASCVD
II Diabetes mellitus
Manner of Death

- How the death came about
- Natural or violent?
- If violent . . .
  - Accident
  - Homicide
  - Suicide

• Undetermined

The NH Standard Death Certificate

This section is for the ME.