SAINT LOUIS UNIVERSITY SCHOOL OF MEDICINE

FORENSIC PATHOLOGY ROTATION

I. GOALS AND OBJECTIVES

The Resident is expected to learn the general principles pertaining to the acquisition and handling of medicolegal death investigations. The Resident should understand the concepts of cause (immediate and remote), manner and mechanisms of death and how to arrive at their determination. The Resident will be exposed to the preparation for and presentation of expert medical testimony in the courtroom. See appendix also for competency based objectives.

A. Medicolegal Examinations

The Resident should be able to arrive at a reasonable differential diagnosis in cases of sudden unexpected death and in cases of traumatic death. He/she should be able to foresee expected future issues (medicolegal as well as medical) and know what steps to take in order to attempt to resolve them. There should be understanding of the principles of scientific identification (skeletal, dental). He/she should be able to properly perform a medicolegal examination (including evidence retrieval and packaging) and to properly describe and document the findings. He/she should know when and how to perform "non-standard" techniques (posterior neck dissection, air embolism detection, etc.). He/she should be able to formulate an opinion about the functional effects of injuries and natural diseases. He/she should be able to recognize and apply postmortem changes (algor mortis, livor mortis, rigor mortis, decomposition, etc.) to the determination of time of death.

B. Specific Types of Deaths

1. Natural Diseases

The Resident should know what diseases present as sudden death and the mechanisms through which they cause death. He/she should know the expected postmortem findings in these deaths and the scenarios in which certain diseases are likely to present as sudden death (associated with exertion, etc.). He/she should be familiar with "functional" or "physiologic" death (the "negative" autopsy).

2. Children

The Resident should know what natural diseases present as sudden death in children. He/she should be familiar with the evaluation of deaths that may be due to the sudden infant death syndrome. He/she should be able to evaluate possible cases of child abuse/neglect in order to determine cause and manner of death. He/she should also be able to determine how and when specific injuries may have been sustained and correlate these findings with the history offered as to how the child was injured. He/she should be familiar with the evaluation of a child for the "shaken infant" syndrome.
3. Workplace

The Resident should recognize and be able to address issues that arise when death occurs at the workplace.

4. Deaths Due to Injury

The Resident should understand the principles of wound terminology, wound production and the effects of the injuries on the victim. He/she should be able to properly describe and document the presence and absence of specific injuries. He/she should recognize patterned injuries and patterns of injury (defense wounds, hesitation wounds, etc.). There should be understanding of issues specific to particular classes of injuries.

A. Firearms

1. Direction of fire (entrance vs. exit defects, etc.)
2. Range of fire

B. Blunt Force Injuries

1. Types of injuries (abrasions, contusions, lacerations) and their significance (medical and legal)

C. Sharp Injuries

1. Evaluation of cutting and stabbing wounds

D. Electrical Injuries

1. Evaluation of electrical burns and electrocution

E. Injuries to the Central Nervous System

1. Recognize that there are peculiarities to injuries of the CNS and be able to recognize and interpret findings in this area
   a. Coup vs. contrecoup contusions
   b. Intracranial hemorrhages
   c. Injuries to the vertebral arteries

F. Motor Vehicular Deaths

1. Recognize differences in injuries found in pedestrians, drivers and passengers
G. Thermal Injuries

1. Recognize the classification of burns (degree) and post-mortem thermal artifacts
2. Be able to interpret physical and chemical findings to determine if the victim was alive at the onset of fire

H. Asphyxial Deaths

1. Be able to recognize and evaluate different types of mechanical (hanging, strangulation, choking suffocation, traumatic asphyxia) and chemical (carbon dioxide, carbon monoxide, cyanide, etc.) asphyxias. Know under what circumstances the measurement of atmospheric levels of a substance is essential.
2. Recognize the manner of death in unusual asphyxial variants (sexual asphyxia, etc.).

I. Drowning

1. Recognize the usual pattern or circumstances seen in the various drowning scenarios (age, location, etc.) and what underlying factors may play a role in precipitating the drowning.
2. Know the principles used to determine if an individual was alive when he entered the water.
3. Recognize the findings that are caused by immersion in water (including "injuries" created by debris, animals, boats, etc.).
4. Understand the process of formulating the diagnosis of death by drowning.

C. Laboratory Testing

The Resident should know when and what laboratory/toxicology examinations to order and be able to interpret the results of those tests. He/she should know what specimen or combination of specimens to collect and recognize their suitability for testing, as well as their limitations. He/she should understand the mechanisms of death through which various substances exert their lethality. He/she should be familiar with the morphologic changes due to drug/ethanol usage.

He/she should be familiar with the physiology and functional effects of ethanol and be able to interpret ethanol concentrations in various body fluids. He/she should recognize when and what examinations of the vitreous fluid are useful and be able to interpret these tests.
D. Computer

The Resident should become familiar with the computer based narrative of the autopsy gross description used at the City Medical Examiner's Office and the advantages and disadvantages of this type of system in the practice of autopsy pathology.

E. Administration

The Resident should become familiar with the administrative issues in a municipal funded Medical Examiner's office including budgeting constraints, relationship with prosecutorial and law enforcement agencies.

II. DURATION OF THE EXPERIENCE

The Resident spends one month in forensic pathology, with the possibility for further elective rotations in forensic pathology.

III. DUTIES AND RESPONSIBILITIES

During the Resident's rotation in forensic pathology, he/she is expected to participate in all medicolegal examinations occurring at the City Medical Examiner's Office. Residents are also expected to examine slides and review microscopic slides and final case write-ups with the forensic pathologist of record. Residents are also expected to observe expert medical testimony in the courtroom whenever possible during this one month rotation and also to observe death scene investigations whenever possible. Residents are expected to attend University Hospital resident conferences during this rotation. The Resident will be responsible for reporting to the toxicology laboratory for training and instruction on days in which there are no autopsies. The Resident will perform two presentations, one of which must be a case related to a topic in toxicology. Additionally, the Resident will be expected to attend and participate in the monthly journal club held at the Medical Examiner’s Office.

Residents during their senior elective rotation in forensic pathology are expected to participate more actively in the medicolegal investigations occurring at the Medical Examiner's Office, study more cases and confer more frequently with the forensic pathologists and other medicolegal personnel. While the resident may observe and participate in over thirty autopsies while at the Medical Examiner's Office, because of the specialized nature of these cases, only ten can be used for credentialing for the American Board of Pathology as long as the resident performs all aspects of the case, including review of the history, gross and microscopic findings and preparation of the autopsy report.
IV. TEACHING STAFF

Michael Graham, MD, City M.E. Office, 622-4971, 1300 Clark Avenue, St. Louis, MO 63103; Medical School, Caroline 305, 577-2898
Phillip Burch, MD, City M.E. Office, 622-4971, 1300 Clark Avenue, St. Louis, MO 63103
Jane Turner, MD, City M.E. Office, 622-4971, 1300 Clark Avenue, St. Louis MO 63103
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V. RESIDENT SUPERVISION AND EVALUATION

Residents are directly supervised by the attending forensic pathologist in the performance of all forensic autopsies. They are evaluated based on their proficiency in forensic diagnosis and problem solving and their technical skills in forensic autopsy pathology. The standard rotation evaluation form is completed at the end of each Resident's rotation and is discussed with the Resident.

VI. OUTCOME TESTING METHODS

Residency competency following completion of the rotation will be established by performance on the annual ASCP resident in-service examination.
Appendix – Competency based objectives

Goals and Objectives

- Patient Care
  Demonstrate uncompromising respect for human remains and foster this attitude among other personnel.
  Demonstrate suitable diagnostic skills using both gross and microscopic materials from cases showing common accidental, suicidal, and homicidal causes of death.

- Medical Knowledge
  Know the differences between a cause of death, a mechanism of death, and a manner of death.
  Formulate the cause of death including the underlying cause of death, intervening causes of death, if any, and the immediate cause of death, as well as any other conditions contributing to death.
  Demonstrate knowledge of the role of toxicological examination in forensic pathology

- Practice-Based Learning and Improvement
  Learn proper techniques for photography, documentation and collection of samples from clothing and the body surface for use as evidence.
  Learn proper procedures for retrieving projectiles at autopsy to preserve their value as ballistic evidence.
  Learn proper techniques used for sampling fluids and tissues for forensic toxicology.
  Attend and participate in Forensic Pathology Journal Club.

- Interpersonal and Communication Skills
  Screen a chart or interview a caregiver to extract relevant information and to identify cases falling under the jurisdiction of the Medical Examiner.
  Gain familiarity with computer-based autopsy gross description format used at the medical examiner’s office.
  Attend and participate in Forensic Pathology Journal Club.
  Present at forensic pathology conference two times during the rotation, once on a topic related to toxicology.
Anticipate questions and concerns family members may have about the decedent’s death and autopsy.

Observe courtroom testimony.

Communicate effectively with attending, technical and clerical staff at the Medical Examiner’s office.

- Professionalism
  Develop the ability to objectively evaluate anatomic evidence without emotional involvement.
  Show appropriate understanding and application of rules related to confidential information.
  Demonstrate uncompromising respect for human remains and foster this attitude among other personnel.

- Systems-Based Practice
  Understand the authority of a Medical Examiner to claim jurisdiction over an autopsy.
  Understand administrative issues related to the municipally funded medical examiner’s office.
  Gain familiarity with the interactions between the Medical Examiner’s Office and law enforcement, prosecutor’s office and crime lab.

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