H87 Jay Dix Day Memorial Lecture Series

Michael A. Graham, MD, Saint Louis University School of Medicine, Division of Forensic Pathology, 3556 Caroline, Rm C305, St. Louis, MO 63104; Randy L. Hanzlick, MD, Forensic Pathologist, 124 Lake Forest Trail, Chapin, SC 29036; Joseph A. Prahlow, MD*, Western Michigan University School of Medicine, 300 Portage Street, Kalamazoo, MI 49007; Tracey S. Corey, MD*, Louisville, KY 40207; Jonathan Hayes, MD*, Collier County Medical Examiner's Office, 3838 Domestic Avenue, Naples, FL 34108; and Stephen J. Cina, MD*, 359 Knobcone Drive, Unit 207, Loveland, CO 80538*

After attending this presentation, attendees will better understand how and why deaths related to the topics listed in the lecture series occur. Attendees will learn a systematic approach to the evaluation of such deaths that can easily be implemented in their daily practices.

This presentation will impact the forensic science community by presenting a comprehensive review of what causes and contributes to deaths related to the specific topics covered in this lecture series. Attendees will be able to systematically evaluate deaths in which the specified topics may have played a role that they encounter in their daily practices.

A proper medicolegal death investigation is a multidisciplinary process that often involves non-medical personnel as well as medical professionals. This annual series of lectures is intended to provide the non-forensic pathologist and forensic scientist a comprehensive basic review of selected topics in forensic pathology in order to increase familiarity and understanding and enhance interdiscipline communication.

This year's lecturers will discuss the investigation of deaths due to the use of sedating agents, stimulants, electrocution, and firearm injuries and deaths consequent to asphyxia, sex crimes, and autoeroticism.

Electricity is a ubiquitous entity in our daily lives. Some of it is intentionally generated to provide power and some of it originates as a force of nature (lightning). Interaction between humans and electricity is common and typically has no negative effects; however, under some conditions, this interaction may result in morbidity and/or mortality. Multiple causes, mechanisms, and contributory factors play a role in injury and deaths involving electricity. Understanding and evaluating injuries and deaths in which electricity may have played a role requires a basic knowledge of electricity and how it affects various biological vital functions. Recognition of injuries and deaths caused by electricity is particularly important because of implications regarding the safety of others. This lecture will provide a comprehensive review of these issues.

Firearm injuries constitute a major category of physical injury. Firearm fatalities are a major cause of non-accidental morbidity and mortality in the United States. The appearance of these injuries is affected by the firearm, ammunition, range of fire, victim anatomy, and, in some cases, intervening targets. Multiple factors and mechanisms are involved in injuries and deaths involving firearm injuries. Understanding and evaluating injuries and deaths in which firearm injuries may have played a role requires basic knowledge of injuries caused by firearms, how these injuries are produced, and how to distinguish them from other types of trauma. This lecture will provide a comprehensive review of these issues.

The last three decades have seen an impressive expansion in the range of drugs available for abuse. The psychedelic revolution of the 60s spilled over into the 70s and 80s with the advent of "designer drugs" like ecstasy (MDMA), joined in the 90s and 00s by the increased abuse of psychoactive drugs such as ketamine and GHB, and,

more recently, by the proliferation of powerful derivatives of the analgesic agent fentanyl and other psychoactive agents such as "bath salts." A second pattern of expanded drug use involves the increase in consumption in rural areas poorly served by the traditional distribution network for cocaine and heroin. The heartland of America has seen explosive growth in the use of methamphetamine, whether prescribed, homegrown, or cartel-distributed, and in diversion and abuse of prescription medication. Many of the drugs responsible for causing deaths are abused because of their sedating and/or stimulating properties. These substances are commonly used in characteristic scenarios and have somewhat stereotypical death scenarios. Recognition of the patterns of abuse of these agents helps in assessing the role, if any, of these agents in particular deaths. These two lectures will provide a comprehensive review of both sedative and stimulant agents in the context of investigating deaths.

Human life requires the uptake and utilization of oxygen along with the release of metabolic waste. Failure of these processes leads to asphyxia. There are numerous entities — mechanical and chemical — that can cause asphyxia through a variety of mechanisms, present in a wide range of scenarios, and that can be associated with a broad range of physical findings. Proper evaluation of these deaths requires knowledge of the various entities that can cause asphyxia, mechanisms through which these agents affect physiological function, scenarios under which these deaths occur, and factors that contribute to these deaths. Some violent deaths have a sexual component that may be readily evident in some cases and subtle in others. The recognition and proper investigation of deaths related to felonious activity in which there is a sexual component may help properly identify the true nature of the incident, identify the perpetrator, elucidate the psychopathology involved, and link a particular death to other similar incidents. Inadvertent death is the occasional outcome of solo sexual activity (autoeroticism). Recognition of this entity is important in correctly classifying the death as accidental and excluding the death as being suicidal or homicidal. This lecture will discuss the medicolegal investigation of deaths consequent to asphyxia, sexual crimes. and autoeroticism.

Medicolegal, Death Investigation, Forensic Pathology