



W24 Forensic Postmortem Radiology: Crossing the Border Between Radiology and Pathology

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Learning Overview: After attending this workshop, attendees will: (1) learn the basics in how to get started in the field of forensic radiology, (2) understand the current state of the art and levels of evidence in forensic radiology, (3) learn about applications to assist forensic pathologists and practitioners in medical death investigations, and (4) finally, will be made aware of potential resources available to interested practitioners.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing attendees with expertise from around the world on the use of best practices and the evidence base of forensic postmortem radiology.

It has been nearly ten years since the publication of the National Academy of Sciences Report calling for the strengthening of the forensic sciences. In their report, the National Academy of Sciences stated the critical role that imaging plays in the documentation of findings sufficient for courts, for providing the opportunity for review by outside experts, as well as for allowing for reevaluation of evidence as medical knowledge advances. Since then, forensic radiology and imaging has grown significantly as a field around the world.

The “virtual autopsy” or “virtopsy” utilizes Multislice Computed Tomography (MSCT) or Postmortem CT (PMCT) and Magnetic Resonance Imaging (MRI) combined with 3D imaging technology to create vivid images of the interior of the human body. CT scanning and MRI have been shown to present better visual pictures of some injuries, reduce the number of autopsies conducted to rule out occult injury, and document the extent of injury in accidents in greater detail. The advantages of the virtopsy are that it is not invasive or destructive to tissues and can provide clear pictures of skeletal and soft tissue injury. It also provides some information when there is a religious objection to autopsy. Additionally, virtopsy has the potential to detect internal bleeding, bullet paths, bone and bullet fragmentation, fracture patterns, brain contusion, and gas embolism, as well as occult fractures that are technically difficult to demonstrate during the traditional autopsy.

In the United States, only a few Medical Examiner’s (ME’s)/coroner’s offices (approximately 13) have access to this advanced medical imaging at this time and very few have the budget to purchase the expensive equipment or to build a suitable facility with staff to maintain it. The current public health crisis of opioid deaths is stretching an already strained ME’s system with regard to autopsy caps set by the National Association of Medical Examiners (NAME) standards. Postmortem medical imaging can play a critical role in easing these demands for full autopsy on offices through triage screening from PMCT.

Within the past year, the National Institute of Justice (NIJ) has fully supported forensic imaging as a supplement to the traditional autopsy and as a triage and long-term evidence documentation tool. NIJ efforts have attempted to bring field standards from around the world and establish major research areas of need in order to help facilitate the field’s growth in the United States since it lags behind other countries in the field. Additionally, the post-AAFS 2018 attendee survey indicated in several places the desire of members for more information on assisting forensic pathology workloads with the use of CT scans/documentation of trauma via imaging, even going as far as suggesting modifying of NAME guidelines to accomplish this. With the field well established in practice outside the United States, lessons learned from experts will help those interested in incorporating these technologies into their facility’s everyday practice. Exposure to emerging technologies in the field will also help practitioners be exposed to potential applications that will alleviate their workflow in an already overtaxed death investigation system.

This workshop will show how to start a program, give an overview of the current state of forensic imaging in the world, and demonstrate how future technologies may impact the field of forensics.

Forensic Pathology, Forensic Radiology, Postmortem Computed Tomography