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The Autopsy as a 'Dying' Art

Out of a perceived necessity to understand how and why people die, human beings have performed autopsies for at least two thousand years. In today's day and age, the lay public sometimes concludes that deaths are easily solved, and as such, invasive autopsy is unnecessary. Similarly, some pathologists are entrenched in the notion that the autopsy is a fully evolved process, without much (or any room) for advancement or improvement. To that end, some pathologists perform the same "standard" autopsy again and again, without recognition of the special circumstances of death, or needs of a given case.

What should the criminal defense lawyer know about forensic autopsy pathology in 2018?

Is forensic pathology just murder-ology?

No, it is not. Forensic pathology is a subspecialty of medicine, practiced by physician specialists — *pathologists* — who apply their knowledge of medicine and disease in living *and* deceased individuals, to help solve legal problems. The average forensic pathologist working as the State forensic pathologist (either for a Coroner or as a Medical Examiner) will only see about 10 percent of their practice develop into *bona fide* homicides.

One of the many reasons *real* forensic pathologists are apt to shudder while watching popular television show depictions of their careers is the rather ubiquitous notion that pathologists are working side-by-side with the police, solving crimes. The reality is that most of the time, forensic pathologists are helping to understand why someone has died a sudden natural death, sorting out the mechanics of a car crash, ruling out criminal elements in cases with suicidal violence, and — increasingly commonly — documenting death due to the toxic effects of drugs like opiates.

Becoming the 'town autopsy doctor' is not as easy as you think (or at least it shouldn't be)

Conflation abounds when the terms forensic pathologist, coroner, and medical examiner are thrown around. The terms are not interchangeable. A forensic pathologist is a medical doctor who specialized in the study of human derangements, and who then went on to receive subspecialty training in the medicolegal aspects of disease and injury and their overlap. The process of becoming a forensic pathologist is quite lengthy, usually involving at least nine years of training after college. The completion of each step up the educational ladder is marked by taking (and passing) credentialing examinations in medicine, pathology, and then forensic pathology. Each of these phases is sequentially referred to as core medical training, pathology residency, and forensic pathology fellowship.

Passing pathology and forensic pathology board examinations is colloquially referred to as "being boarded," in *med-speak*. Although prior decades saw scores of practicing forensic pathologists lacking formal training and boards in forensic pathology (and sometimes in basic pathology), this has become decidedly unusual in today's day and age. Arguably, it is so unusual today that such a person should expect his or her credibility as an expert witness to be hotly contested in the courtroom. A

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pathologist offering oral or written evidence to the courts who does not have fellowship training in forensic pathology — and who thus lacks any recognized training in the medicolegal aspects of human disease and injury — may be quite unprepared and even incapable of offering reliable opinions at the level expected by the courts.

I'll see your coroner, and raise you one medical examiner.

One of the topics that frequently raises blood pressures and tensions at national forensic pathology meetings is which system of death investigation is better — Coroner or Medical Examiner. The answer, of course, is quite simple. Neither and both.

Coroners, who are usually elected nonmedical lay officials, employ forensic pathologists to serve as the Coroner's autopsy pathologist. In such a system, Coroners are responsible for collecting all of the information they feel is necessary to determine how and why someone died; that may involve having an autopsy performed by their forensic pathologist.

In those jurisdictions where deaths are investigated by the Medical Examiner, the forensic pathologist may serve the role of both the Coroner and the pathologist. A growing modern view on systems of death investigation is that the Medical Examiner system is better than the Coroner system because of the reality that death investigations are controlled by trained physician forensic pathologists. Whilst there is legitimate credence to this notion, a good Coroner's system is not *de facto* worse than a weak Medical Examiner's system. An appraisal of any system of death investigation requires consideration of many factors, and is well beyond the scope of this short article. Some factors to consider include whether or not the system is accredited by any national or international body. Examples of accrediting agencies for death investigation systems include the National Association of Medical Examiners (NAME) and the International Association of Coroners and Medical Examiners (IACME); autopsy pathology and laboratory services may also choose to apply for accreditation through the College of American Pathologists (CAP); toxicology labs may be accredited by the American Board of Forensic Toxicology (ABFT).

So doc, why did he die?

Forensic pathologists are tasked with many medical responsibilities in each death investigation. Fundamentally, however, they are asked to offer opinions about the cause and manner of death. It is critical that attorneys understand these terms and their implications.

The *cause of death* is the event, or train of events, no matter how brief or prolonged, that ultimately leads to a person's demise. Examples include a gunshot wound of the head, a heart attack due to narrowing of the arteries that supply fresh blood to the heart muscle (atherosclerotic cardiovascular disease), and strangulation.

The *manner of death* is an *opinion* about the circumstances under which an individual met her demise. There are four core manners of death: natural, accident, suicide and homicide. A natural death occurs when the death is entirely the result of natural diseases and the expected complications for the treatments of said diseases. An example is the natural death of a person from a brain tumor. Accidental deaths result from the unintentional consequences of external stressors and factors, such as when a drug addict unintentionally overdoses. For a death to be ruled a suicide, death must have occurred at the hands of the deceased person, usually of his own stated volition, such as when a person ties a noose and hangs himself. A homicide is said to have occurred when an individual dies as the result of the deliberate actions of one or more other persons, such as when one person is beaten, shot, or stabbed. When an assessment of all the available data does not allow for differentiation between the four core manners of death, an undetermined manner of death may be selected.

Fundamental to an understanding of manner of death determination is recognition that it is an *opinion* offered by the Coroner or Medical Examiner, with no legal bearing. This opinion is offered primarily for statistical purposes, as part of a statutory obligation to produce a death certificate describing how and why a person died. The level of certainty required when opining about manner of death is "more likely than not." Obviously, this is well below the expectations held by the criminal justice system, where prosecutions are brought in front of a judge and jury on the evidentiary platform of "beyond a reasonable doubt." The distinction between these two standards can have significant consequences, particularly to juries who may already be confused about the separate but obviously overlapping concepts of the medical definition of homicide, and the legal definitions of manslaughter and murder.

What is an autopsy?

Amongst forensic pathologists, there is surprisingly little coherence of thought in what defines a "complete autopsy." Despite that, an autopsy is generally considered to be the physical examination of a deceased body, involving the removal and dissection of internal organs, in association with the performance of any lab tests determined to be necessary such as toxicology studies and microscopic tissue evaluation. In some cases, an internal examination is deemed perfunctory, and the "autopsy" is limited to an assessment of the external surfaces of the body, with or without toxicology testing. Such examinations are often referred to as "externals" or "view outs," and are frequently performed (1) amongst older adults and elderly individuals who die at home of apparent natural disease; (2) on passengers who die in automobile crashes; and (3) on adults whose deaths are not considered to be criminally suspicious in nature, and whose cause and manner of death seem obvious (such as in some suicide cases). With decreasing numbers of forensic pathologists nationally, and a significantly increasing workload (at least in part due to the opioid epidemic), anecdotes abound about decreased forensic autopsy rates. This means that some deaths that may have previously undergone autopsy now may only receive an external examination.

In general, the physical examination of the body should be considered as only part of the entire investigative dataset. That said, in some cases findings documented at autopsy will overrule findings suggested by the historical elements of the case. For example, the apparently natural classification of an infant's "crib death" is derailed by the autopsy findings of severe internal head trauma. As such, the autopsy should be treated as an important medical procedure, the results of which can have profound consequences for all stakeholders within the criminal and civil justice systems.

Numerous misconceptions exist about the value of autopsies, the role of second opinion autopsies, and the importance (if any) of delayed autopsies. First and foremost, the autopsy — when expertly performed and impeccably recorded — represents a critical piece of the puzzle in a death case. The results of an elegant, flawless autopsy should be treated with respect by all involved parties. The key, of course, is that the autopsy has been both properly and thoroughly performed, and documented in a fashion to allow for independent secondary

review. Given the slow pace at which autopsy reports and photographs are produced and then provided to defense counsel, this results in obvious practical complexities that make it difficult or impossible to raise questions and flag concerns during the original autopsy itself. When given the unusual opportunity to be involved in representing a client who has been or may be accused of causing the death of another person, defense counsel is wise to request the presence of their retained consultant forensic pathologist to act as an observer while the State's autopsy is performed.

Because the timing of such a scenario can be inexorably complex to execute, it is more reasonable and plausible to request that a second autopsy be performed. In some circumstances, attorneys representing the decedent's next of kin will themselves want the second autopsy performed, such as in cases of death in police pursuit/custody. Representing the legal next of kin makes requesting — and thus consenting to — a second autopsy vastly simpler. Contrarily, the attorney representing the person accused of causing the death may have a much more difficult time obtaining consent of the deceased's next of kin for secondary examination. In that scenario, it is appropriate and wise to seek permission directly from the Coroner or Medical Examiner who had the statutory authority to permit the first autopsy. Opposition at that level might be encountered, and it would be sage to seek counsel from a consultant forensic pathologist on how to proceed further. A judicial order granting a second (private) autopsy might be necessary.

Second autopsies are often regarded as of limited value. And while it may be true that a second autopsy infrequently reveals "game changing" new evidence, they can and have resulted in dramatic changes in the way in which a case evolves. As such, it would be unwise to suggest that a second autopsy should not be considered. Just as an attorney may seek retesting of DNA evidence or toxicology specimens, performance of a second autopsy (importantly, with review of any organs or tissues retained at the time of the original autopsy) should be near the top of the list of high value tasks very early in each death case. A second autopsy can be equally as important in civil matters, such as wrongful death cases and medical malpractice deaths.

Sometimes, there is a delay (sometimes significant in length) between the first and second autopsy; there may also be a delay between death and when the independent first autopsy is performed at the request of family members. When delays happen, new confounding factors may impact — sometimes significantly — the forensic pathologist's ability to make observations and make correct conclusions. For example, both decomposition and the artifacts of funeral preparations can greatly impact the appearance of the tissues and organs. That said, a delay should never be the sole factor considered in determining that a first or second autopsy should not be performed. Consultation with a forensic pathologist will be necessary to determine the cost-to-benefit ratio of performing an autopsy in such circumstances.

What is the anatomy of the typical autopsy report?

Wild variation in the *style* of autopsy reports exists within and between death investigation systems. A few jurisdictions produce reports with end-users in mind; others write medically oriented reports directed toward other forensic pathologists. Given the complexity of medical terminology and the science of medicine and pathology themselves, this can raise significant challenges for attorneys. An autopsy report is usually thought of as a narrative summary of the findings of the entire postmortem examination of a body. However, when coming to understand all of the medical evidence in a case, it is best to instead take into consideration all of the medicolegal evidence made available during the entire death investigation, from the scene of death (including the hospital), through to the physical examination of the body, and all laboratory studies.

The body of the autopsy report should be free of opinions and "diagnoses," and instead it should contain objective descriptions of the observations made by the responsible pathologist. In 2018, there is the growing notion that all components of a death investigation, including autopsy, should be independently reviewable. That means the autopsy report is not a stand-alone document. Instead, the autopsy is supplemented by an adequate number of autopsy photographs, microscopic slides, and other laboratory tests that will allow an independent reviewer the ability to form opinions to confirm or refute the opinions of the first pathologist.

In general, all forensic autopsy reports should contain the following data:

- Identifying information.
- Where and when an autopsy was performed, under what authority, and in the presence of which observers.
- Basic descriptions of the external features of the body (the "external examination").
- Postmortem changes (stiffening of the body, temperature changes, blood settling, etc.).
- Evidence of medical intervention (e.g., intravenous catheters).
- Evidence of injury (both external and internal aspects).
- Basic descriptions of the internal features of the body (the "internal examination").

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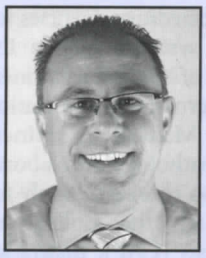

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- Summary of microscopic tissue studies (when performed).
- Summary of other laboratory studies (when performed).
- Summary of X-rays and other imaging data.
- Cause and manner of death statements.

Many jurisdictions also offer forensic pathologists the opportunity to prepare a narrative summary of the case, which includes how and why they reached their conclusions. No uniform standard exists, however, and some jurisdictions expressly object to pathologists writing such conclusions in their reports.

It should not be surprising that the caliber of forensic autopsy reports exists along a spectrum. When the autopsy is properly performed and adequately documented through photography and other means, the quality of the autopsy report borders on being irrelevant. In such a circumstance, the report should be viewed primarily as a tool to help guide the original pathologist in understanding the case, often years after the autopsy was performed. With proper documentation, any other forensic pathologist can review the case — with or without the autopsy report — and confirm or refute the original observations and opinions.

Perhaps the most telling sign that an autopsy has been inadequately reported is *not* the quality of the autopsy report itself, but rather, by the availability of primary data (photographs, microscopic slides, X-rays, etc.) that facilitate secondary review. Defining "adequacy" of this primary data is exceedingly challenging as it cannot be defined in any single unifying, overarching fashion. Rather, a basic rule of thumb for a modern forensic autopsy is that at a minimum, review of the primary evidence (a) allows for confirmation of key diagnostic findings, and (b) ensures that major mimics of the critical findings can be excluded. As a practical example, the review of a case involving death by single gunshot wound of the head should at least include the following:

1. An orientation photo of the head showing the location of the wounds.
2. Close-up photographs of a "cleaned" purported entrance wound in the skin, so as to allow for evaluation of those features used to differentiate between entrance and exit wounds, and to determine the range-of-fire.
3. Close-up photographs of a "cleaned" purported exit wound in the skin (if one exists), so as to allow for evaluation of those features used to differentiate between entrance and exit wounds, and to determine the range-of-fire.
4. A photograph of the location of the retained projectile / fragments (if any).
5. A photograph of the pathway of the projectile through the head/brain, illustrating (as much as possible) which anatomy has been disrupted to cause death.

Get to the point, doc!

The conclusions made by the State's forensic pathologist should embrace the totality of available evidence (including

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the decedent's circumstances of death, medical history, and other factors), and not just evidence from the autopsy itself. The opinions offered by the pathologist — including opinions about the cause and manner of death — should be rooted in the basic principles of medicine, causation and logic; they should be understandable and flow from evidence. In 1956, forensic pathology titan Dr. Alan Moritz stated that one of the classical mistakes in forensic pathology was substituting intuition for scientifically defensible interpretation. The statement is still valid today, and it is therefore critical that the State's forensic pathology experts be able to defend and validate their opinions. Second opinion reviewers, including the original pathologist's own peer reviewers, need not necessarily agree with the opinions of the pathologist. However, the conclusions made by the State's pathologist must always be reasonable. A fair definition of a reasonable conclusion in forensic pathology is one that while not necessarily agreeable or correct, flows logically from the basic principles of medicine, science, pathology, and the law.

Yes, you do need a second opinion.

In his landmark 1956 article, Dr. Moritz offered a profound conclusion about the critical role of the State's forensic pathologist: *"The stakes are too high to play hunches in forensic pathology."*

Despite the 62 years that have passed since Dr. Moritz published his article, some aspects of forensic pathology practice remain entirely opinion-based (and thus based on hunch), and consequently ripe for introduction of error. Yet at the same time, the science of forensic pathology has progressed significantly, and the advent of formal training programs and board certification by examination has weeded out many significant problems. This reality should cause the public to have a general sense of ease with the quality and caliber of death investigations taking place in many places in America. That said, confirmation of the State's opinions about the cause and manner of death is a core and important part of the due diligence process of any defense attorney.

Oftentimes, the cause and manner of death will not be the matter in dispute, and other more complex issues will require an assessment, such as injury timing, post-injury survival periods, or an interpretation of the intersection of natural disease and injury. While performing their statutory functions, most forensic pathologists will not have the time or the opportunity to consider or evaluate these higher level questions, even though they may have tremendous implications for the criminal justice process. Put simply, the answers to complex medicolegal questions are usually beyond the mandate of the forensic pathologist who is employed as Medical Examiner or as the Coroner's pathologist. Yet as the matter approaches trial, the State's expert will be asked to consider many questions of relevance to the State's case. For that reason, it is both fair and appropriate that defense lawyers have access to a forensic pathologist who can make them aware of the strengths and liabilities of the pathologic science that is likely to be brought into the courtroom. ■

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