

The Relationship Between Medical School–Based Pathology Departments and Affiliated Forensic Pathology Training Sites

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Abstract

Medical school–based pathology departments were surveyed in order to evaluate their relationship with sites providing forensic pathology training. Of 59 departments surveyed, 49 (83%) responded. Most (88%) respondents indicated that training occurs at an affiliated medical examiner/coroner office, and 78% indicated that the facility is 10 miles or less from the academic health center. The majority (61%) of respondents require 4 weeks of forensic pathology training for their residents while the others require none (3); 6, 8, or 12 weeks (2 each); and 16 weeks (3, with two having integrated forensic and medical autopsies). The majority (81%) send one resident at a time to the forensic pathology training site, and almost always (92%) the experience is dedicated to forensic pathology without mixing with other training. Two-thirds of respondents send between 1 and 5 residents per year for training. Prior autopsy experience is required by 79% of departments. Medical student rotations in forensic pathology are available to 86% of reporting departments. Almost 3 quarters of respondents indicated that a forensic pathology fellowship is available through the training site with 83% being funded by the training site. About half of departments indicated that they provide some financial support to the site. Of reporting departments, 71% indicated that they give faculty appointments to forensic pathologists at the training site, with 3 quarters being voluntary appointments. Affiliated forensic pathology training sites are a valuable asset although 6 respondents report offering such training either totally or partially within the pathology department itself.

Keywords

forensic pathology, pathology department, medical students, relationship, residents

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Introduction

Although academic health centers (AHC) are at the forefront of patient care and medical education in the United States, their success is significantly enhanced by affiliations with external institutions. This may be particularly true for those institutions and departments that are medical school based because it is conceivable that they may lack the resources, opportunities, and flexibility of community-based entities. In prior publications, this author has demonstrated the positive impact of affiliated Veterans Affairs Healthcare Systems¹ and children's hospitals² on medical school–based pathology departments. An equally significant external partner is the office of the medical

examiner/coroner, which serves as a major forensic pathology training site for most academic pathology departments. In fact, an argument can be made that, because of its narrow and unique focus, it may be even more important than other affiliates that

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provide and augment training of a more general nature. In addition, the importance of this training is underscored by the increasing shortage of board-certified forensic pathologists^{3,4} because exposure of residents to such training might stimulate some to pursue forensic pathology as a career. Finally, forensic autopsies are used by many pathology residency programs in order to fulfill the American Board of Pathology autopsy requirement for candidates to become eligible to take the certification examination in Anatomic Pathology, Anatomic and Clinical Pathology, or Anatomic Pathology/Neuropathology.^{5,6}

This study was undertaken in order to evaluate the relationship between medical school-based departments of pathology and their respective forensic pathology training sites. It was not intended to evaluate the status and quality of forensic pathology training in these departments. It should be noted that neither the American Board of Pathology⁵ nor the Accreditation Council for Graduate Medical Education⁷ sets any parameters (including required length of time) for residency training in forensic pathology, and thus another goal of this study was to determine the profile (including the length) of resident training in forensic pathology required by different medical school-based pathology departments.

Methods

Allopathic school of medicine were identified from a publicly available list.⁸ Osteopathic schools were not included because most do not have pathology residency programs affiliated with them. The name of each school was then queried online along with the term "forensic pathology." Those schools identified as having an association with forensic pathology in this manner were then further queried to document that forensic pathology training is indeed a component of that institution's department of pathology residency program. Separately, a list of forensic pathology fellowships was reviewed,⁹ and fellowship affiliations with schools of medicine were identified. The resulting 2 lists were cross-checked for concurrence. A survey was then prepared and e-mailed to the chair and the administrator of each thusly identified medical school department of pathology using contact information available through the Association of Pathology Chairs membership directory. Because the survey intent was to evaluate the relationship between medical school-based pathology departments (as was the case in the author's 2 prior studies^{1,2}) pathology departments located in affiliated, but not medical school based, AHCs were excluded. A 4-week turnaround time for e-mailed response was suggested, and 2 reminders were sent prior to the deadline date. The survey was not administered anonymously in order to provide the ability to follow-up with respondents as needed for clarification regarding their responses. The survey consisted of a series of multiple-choice questions with opportunity to provide narrative comments for each. Respondents were told to leave blank any questions that they could not answer (Supplemental Table 1). Because this study was survey based and because it dealt with autopsy-related training, the University of California, San Diego Human Research Protections Program

deemed it to be exempt from formal review by the Institutional Review Board.

Results

Response Rates

The above methodology yielded 57 schools of medicine offering forensic pathology training. Because the Harvard Medical School has 3 medical centers offering pathology residency training, there was a total of 59 pathology departments queried. Of the 59 departments, 49 responded (83% response rate). A list of responding institutions is provided in Table 1. Each department verified that the forensic pathology training site identified in the survey cover letter was correct before answering the survey questions. It should be noted that 2 departments each have 2 forensic pathology training sites and that 1 forensic pathology training site is used by 5 different academic departments, another site is used by 3 different academic departments, and yet another site is used by 2 different academic departments.

Location of Forensic Pathology Training

As noted in Table 2, the vast majority of departments (88% of 49 respondents) reported that the forensic pathology training is located at the forensic pathology facility itself (medical examiner or coroner office) and that in more than 3 quarters of instances (78% of 50 responses) the facility is within 10 miles of the AHC. That said, 6 respondents indicated that forensic pathology training is embedded either totally or partially within the academic department itself.

Profile of Forensic Pathology Training

The mean length of forensic pathology training is 4.8 weeks (standard deviation, 3.7 weeks; median, 4.0 weeks; range, 0-16 weeks; 49 responses) of required training (Table 2). Most of the time (61% of 49 responses) the rotation is 4 weeks. In almost all instances (92% of 48 responses), the training is dedicated (ie, not mixed with other pathology training), and only one resident at a time is on the rotation (81% of 47 responses). In most cases (67% of 48 responses), the departments send 1 to 5 residents per year to the forensic pathology training site, and 79% of 48 respondents indicated that prior autopsy training is required before the rotation. The academic department provides financial support to the forensic pathology training site in nearly half of the cases (47% of 45 responses). A forensic pathology fellowship is reported to be available for 72% of the 50 respondents with most (52% of 31 responses) having a single fellowship slot per year. The forensic pathology training site funds the fellowship most of the time (83% of 29 responses). Medical student elective rotations are available in 86% of the facilities (42 responses total).

Table 1. Institutions Providing Information About Their Forensic Pathology Training Programs (N = 49).

Albert Einstein College of Medicine	University of California, Davis School of Medicine
Baylor College of Medicine	University of California, Irvine School of Medicine
Beth Israel Deaconess Hospital, Harvard Medical School	University of California, San Diego School of Medicine
Boston University School of Medicine	University of Cincinnati College of Medicine
Brigham & Women's Hospital, Harvard Medical School	University of Connecticut School of Medicine
Brody School of Medicine at East Carolina University	University of Kansas School of Medicine
Case Western Reserve University School of Medicine	University of Louisville School of Medicine
Emory University School of Medicine	University of Maryland School of Medicine
Georgetown University School of Medicine	University of Michigan Medical School
Howard University College of Medicine	University of Missouri–Columbia School of Medicine
Icahn School of Medicine at Mount Sinai	University of New Mexico School of Medicine
Indiana University School of Medicine	University of North Carolina School of Medicine
Keck School of Medicine of University of Southern California	University of Oklahoma College of Medicine
Lewis Katz School of Medicine, Temple University	University of South Florida Morsani College of Medicine
Massachusetts General Hospital, Harvard Medical School	University of Tennessee College of Medicine
Medical College of Wisconsin	University of Texas Medical Branch School of Medicine
Medical University of South Carolina	University of Texas San Antonio Joe R. and Teresa Lozano Long School of Medicine
New York University Grossman School of Medicine	University of Texas Southwestern Medical School at Dallas
Oakland University William Beaumont School of Medicine	University of Utah School of Medicine
Ohio State University College of Medicine	University of Virginia School of Medicine
Perelman School of Medicine at the University of Pennsylvania	University of Washington School of Medicine
Sidney Kimmel Medical College at Thomas Jefferson University	West Virginia University School of Medicine
State University of New York Upstate Medical University	Yale School of Medicine
Stony Brook University School of Medicine	
Tufts University School of Medicine	
University of Arizona College of Medicine–Phoenix	

Forensic Pathologists

Most of the time (71% of 45 responses) the forensic pathologists are provided with academic appointments by the pathology department, and 3 fourths of those are nonsalaried voluntary appointments (Table 2). Only rarely (18% of 45 responses) is the chief of forensic pathology given a leadership position in the academic department.

Discussion

Medical school–based departments are enriched by affiliations with external entities that enhance the missions of the department (eg, Veterans Affairs healthcare systems and children's hospitals).^{1,2} Affiliations with medical examiner/coroner offices are unique due to the fact that the training experience they provide is offered in no other environment, making these affiliations particularly important to the pathology department's educational mission. The importance of these training sites may be further amplified by the shortage of forensic pathologists.^{3,4} Historically, there has been some confusion about forensic pathology training required in pathology residency program because neither the Accreditation Council on Graduate Medical Education⁷ nor the American Board of Pathology⁵ has indicated a minimum threshold of time for such training, leading to variability in requirements across residency programs, some of which use forensic pathology rotations to augment the American Board of Pathology autopsy

requirement for eligibility for primary certification in Anatomic Pathology.⁶

As with any study, the present one had certain limitations. Being survey based, it represents the proverbial “snapshot in time.” Thus, it is conceivable, if not probable, that the findings might be different in the future. Indeed, the lowering of the American Board of Pathology autopsy requirement from 50 to 30 for board-certification eligibility may have impact on utilization of forensic pathology training sites. It is also possible that some departments of pathology whose school of medicine did not appear with the “forensic pathology” search term and/or was not cross-referenced with the forensic pathology fellowship directory listing might have been omitted. This possibility would yield an underestimation of forensic pathology programs surveyed. Finally, the fact that the survey responses were not provided anonymously could have biased the study. Despite these limitations, however, useful information was gleaned from this study.

Similar to the report of Spencer et al,¹⁰ which was a survey-based study of pathology residency program directors, that included both medical school–based and community-based pathology departments, and that focused on education and curriculum, the present study indicates that the vast majority of respondents (88%, this study; 83%, Spencer et al¹⁰) use the medical/examiner office for forensic pathology training, that 4 weeks is the most common length of rotation (61%, this study; 64%, Spencer et al¹⁰), that a few departments require

Table 2. Survey Results.

Location of Forensic Pathology Training: (49 responses)
Affiliated medical examiner/coroner office (88%)
Embedded within the academic department (6%)
Both the department and the medical examiner/coroner office (6%)
Geographic Separation (Miles): (50 responses)*
<5 (60%)
5-10 (18%)
11-20 (10%)
>20 (12%)
Weeks of Required Forensic Pathology Training for Residents: (49 responses)
4 weeks (61%)
2 weeks (15%)
16 weeks (6%) [†]
0 weeks (6%)
6 weeks (4%)
8 weeks (4%)
12 weeks (4%) [‡]
Mean 4.8 weeks
Standard deviation 3.7 weeks
Median 4.0 weeks
Range 0-16 weeks
Nature of Forensic Pathology Training for Residents: (48 responses)
Dedicated (92%)
Mixed with other pathology training (8%)
Number of Residents at a Time on Forensic Pathology Rotation: (47 responses)
One (81%)
Either one or two (15%)
Two (4%)
Number of Residents per Year on Forensic Pathology Rotation: (48 responses)
1-5 (67%)
5-10 (31%)
>10 (2%)
Prior Autopsy Experience Required: (48 responses)
Yes (79%)
No (21%) [§]
Institution or Department Provides Financial Support to the Training Site: (45 responses)
No (53%)
Yes (47%)
Forensic Pathology Fellowship Available: (50 responses)*
Yes (72%)
No (28%)
Number of Forensic Pathology Fellowship Positions Available: (31 responses)
One (52%)
Two (29%)
Four (16%)
Six (3%)
Source of Funding for Forensic Pathology Fellowship Program: (29 responses)
Forensic pathology training site (83%)
Both the forensic pathology training site and department (7%)
Other (organ donation program, office of graduate medical education) (7%)
Department (3%)

Table 2. (continued)

Medical Student Elective Rotations at Forensic Pathology Training Site: (42 responses)
Yes (86%)
No (14%)
Academic Appointments for Forensic Pathologists: (45 responses)
Yes (71%) (75% are nonsalaried voluntary appointments; 25% are salaried)
No (29%)
Department Leadership Position for Chief of Forensic Pathology: (45 responses)
No (82%)
Yes (18%)

*Of the 49 respondents, one has two different training sites, thus providing 50 responses.

[†]Two of these have a combined forensic/medical autopsy service and the third is changing to a 3 weeks required forensic rotation with an 8 week forensic pathology elective experience.

[‡]One of these has a combined forensic/medical autopsy service.

[§]Three respondents said no because the medical and forensic autopsy rotations are integrated.

no forensic pathology training at all (6%, this study; 3%, Spencer et al¹⁰), and that prior autopsy experience is a prerequisite for the forensic pathology rotation (79%, this study; 57%, Spencer et al¹⁰). Unlike the other study, this study includes additional information on medical student rotations, fellowships, faculty appointments, and program funding.

As shown in Table 3, of 98 responses from 45 different respondents, 45% indicated that the forensic pathology rotation is of educational value to the trainees and that it helps to fulfill the American Board of Pathology autopsy requirements (36%). Fewer respondents indicated that the affiliation benefited the department financially and/or through service (10%) and that it provided material for clinical research (9%).

Of the weaknesses described in 22 responses from 17 different respondents (Table 3), half were related to the financial cost to the department, and about one-third (36%) were related to cultural differences between faculty based at the training site and those based in the department (36%). Only 14% indicated that the quality of the educational experience was of some concern.

Miscellaneous comments provided by survey respondents indicate that the forensic pathology resident rotation provides a unique opportunity for residents to gauge their interest in forensic pathology as a career and that it gives them a competitive advantage in an application for fellowship training in that facility. That said, some respondents expressed concern about the frequent need for residents to return to the medical examiner/coroner office in order to complete reports after the rotation had ended. This is particularly problematic in instances in which that facility is distant from the AHC. Additionally, some respondents complained that severe understaffing of the forensic pathology site (perhaps reflecting the shortage of forensic pathologists) impacts the training experience.

(continued)

Table 3. Strengths and Weaknesses of the Affiliation.

Strengths: (98 responses from 45 different respondents)
Educational value for trainees (45%)
Helps to fulfill American Board of Pathology autopsy requirement (36%)
Support to department (financial/service) (10%)
Provides material for clinical research (9%)
Weaknesses: (22 responses from 17 different respondents)
Financial cost to department (50%)
Cultural differences between faculty at training site and in department (36%)
Quality of the educational experience (14%)

It should be reemphasized that the intent of this study was to evaluate the relationship between medical school departments of pathology and their respective forensic pathology training sites. It was not the intent to evaluate the status and quality of such training. That would require a survey of the curriculum as well as outcomes of training (eg, the percent of residents choosing to do forensic pathology fellowships). Such study might be undertaken as a logical next step in evaluating the pathology department–forensic pathology relationship.

In conclusion, the findings in this study support the substantial value of medical examiner/coroner offices in providing forensic pathology experience for both residents and medical students as well as academic enrichment for the medical school–based pathology department.

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Supplemental Material

Supplemental material for this article is available online.

References

1. Bailey DN. The Veteran's Affairs healthcare system and academic pathology departments: evaluation of the relationship. *Acad Pathol.* 2020;7. doi:10.1177/2374289520939265.
2. Bailey DN. Academic pathology departments and associated children's hospitals: an overview of the relationship. *Acad Pathol.* 2020;7. doi:10.1177/2374289520964935.
3. National Commission on Forensic Science 2015. 2015. Increasing the number, retention and quality of board certified forensic pathologists. Accessed April 24, 2021. <https://www.justice.gov/archives/ncfs/page/file/641641/download>
4. Scientific Working Group for Forensic Death Investigation. 2018. Increasing the supply of forensic pathologists in the United States 2018. Accessed May 2, 2021. https://www.nist.gov/system/files/documents/2018/04/24/swgmdi_increasing_the_supply_of_forensic_pathologists_in_the_us.pdf
5. The American Board of Pathology. 2020. Booklet of information. Accessed April 26, 2021. <https://www.abpath.org/index.php/to-become-certified/requirements-for-certification?layout=edit&id=156>
6. Djabourian R, Sathyavagiswaran L, Fishbein MC. Forensic autopsy in a pathology training program. *Arch Pathol Lab Med.* 1998;122:750-751.
7. Accreditation Council for Graduate Medical Education 2020. 2020. ACGME program requirements for graduate medical education in anatomic pathology and clinical pathology. Accessed May 3, 2021. https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/300_Pathology_2020.pdf?ver=2020-06-18-155736-410
8. Liaison Committee on Medical Education. 2021. Directory of LCME accredited medical education programs. Accessed September 18, 2020. <https://lcme.org/directory/>
9. Forensic Pathology Fellowship Directory 2020. 2020. Accessed September 18, 2020. https://pathinfo.fandom.com/wiki/Forensic_Pathology_Fellowship_Directory
10. Spencer A, Ross WK, Domen RE. Forensic pathology education in pathology residency: a survey of current practices, a novel curriculum, and recommendations for the future. *Acad Pathol.* 2017;4. doi:10.1177/2374289517719503