SCIENTIFIC WORKING GROUP FOR
MEDICOLEGAL DEATH INVESTIGATION

Increasing the Supply of Forensic Pathologists in the United States

Scientific Working Group on Medicolegal Death Investigation (SWGMDI)

Executive Summary

The National Research Council's (NRC) *Strengthening Forensic Science in the United States: A Path Forward* identified a shortage of forensic pathologists in the United States and made recommendations to encourage physicians to enter the subspecialty of forensic pathology (1). This report reviews the reasons for the shortage of forensic pathologists and makes recommendations to increase their supply in the United States. The recommendations are as follows:

- The specialty of forensic pathology and death investigation needs to be made more visible in medical school (as does exposure to general pathology) and pathology residency curricula
- The exposure to autopsy, forensic pathology, and death investigation needs to be improved and made more positive in pathology residency programs, and non-forensic pathology faculty need to be more supportive of forensic pathology as a legitimate medical and academic discipline
- Financial incentives need to be provided to attract medical students and pathology residents into the field of forensic pathology
- The salaries of forensic pathologists need to be made competitive with other medical specialties requiring similar years of training
- State-centered initiatives need to be developed to attract forensic pathologists to selected states
- Forensic pathology training programs need to be increased in number along with an increase in funded forensic pathology fellowship positions
- Forensic pathology training programs need to be proactive in teaching their fellows about the profession and factors such as burnout that may cause dropout from the specialty
- The ACGME requirements for training programs in forensic pathology need to be revised to reflect better the unique aspects of forensic pathology training and practice
- Forensic pathology training programs need to have more formal relationships with medical schools and pathology departments
- Novel mechanisms of death investigation system funding need to be developed

Increasing the Supply of Forensic Pathologist in the United States includes background information and data to support the above recommendations, and expands upon the various recommendations to provide a path forward.

Increasing the Supply of Forensic Pathologists in the United States

A Report and Recommendations
Prepared by the System Infrastructure Committee of the
Scientific Working Group on Medicolegal Death Investigation (SWGMDI)

Introduction

The National Research Council's (NRC) *Strengthening Forensic Science in the United States: A Path Forward* identified a shortage of forensic pathologists in the United States and made recommendations to encourage physicians to enter the subspecialty of forensic pathology (1). This report reviews the reasons for the shortage of forensic pathologists and makes recommendations to increase their supply in the United States.

Methods

The Scientific Working Group on Medicolegal Death Investigation (SWGMDI) System Infrastructure Committee reviewed available literature on forensic pathology training and manpower. The Committee prepared a draft report which was then reviewed, revised, and approved for public comment by the SWGMDI Board of Directors. Following an initial public comment period of 60 days which began June 22, 2012, the comment period was extended an additional 30 days at the request of two pathology organizations. After the comment period ended on September 22, 2012, all comments were reviewed and addressed by the SWGMDI Board of Directors. Appropriate revisions were made to the draft document and the SWGMDI approved this final version for publication on November 29, 2012. The public comments and SWGMDI responses to the comments were summarized in a report which is available on the SWGMDI website at www.swgmdi.org

Background

In order to make recommendations to improve the supply of forensic pathologists, the first question which must be addressed is why there is shortage of forensic pathologists in the United States. There are many reasons, and each of these is discussed below.

Although there are 131 medical schools in the United States, there are only 37 Accreditation Council on Graduate Medical Education (ACGME)-accredited forensic pathology training programs, and many of these have only loose affiliations with medical schools (2,3). One or more medical schools exist in 45 of the states and the District of Columbia, but accredited forensic pathology training programs exist in only 27 states and in Puerto Rico. Thus, for many medical students, there is no direct path for forensic pathology training in the state where the student attended medical school. Of the more than 17,000 medical school graduates each year, only 30 to 40 ultimately become forensic pathologists, although about 600 will train in pathology

(2,3). These facts signify a problem with recruitment of medical students into pathology and especially into forensic pathology.

Most medical schools have little or no exposure to forensic pathology in the medical school curriculum. Forty-three states have accredited training programs in anatomical pathology, which is a pre-requisite for forensic pathology training. However, many of these programs do not offer forensic pathology fellowships, and the exposure to forensic pathology in the basic anatomical pathology training programs may be minimal. In fact, some report that faculty actually discourage forensic pathology as a career (4). Further, many who selected forensic pathology as a career report that they did so because of a very positive autopsy experience in pathology training and/or they had an admirable mentor in forensic pathology. Thus, a lack of exposure to forensic pathology in medical school and basic pathology training (or a bad experience during exposure) creates a situation in which forensic pathology is not recognized by students and residents as a goal worthy of pursuit.

More and more medical schools are moving away from traditional pathology courses. This reduced exposure to pathology may result in fewer medical students selecting pathology as their choice for residency, which is a pre-requisite for going on to forensic pathology.

Another problem is the small number and incomplete funding of ACGME approved forensic pathology fellowship positions. A recent survey showed that among the 37 training programs in the United States, there were a total of 78 approved positions, but only 53 were funded and 42 were filled (5). Thus, there are not only unfunded positions, but funded positions which could be filled, but remain vacant. In recent years, between 30 and 40 board certified forensic pathologists are trained per year in the United States (6). In comparison, there are more than 10,000 residents per year who train in internal medicine and family practice (7). Since 1959, there have been slightly fewer than 2000 people who have trained in forensic pathology, and a total of about 1400 board certified forensic pathologists have been produced since 1959 (8). There are an estimated 500 full-time forensic pathologists in the United States, and projections suggest that 1000 are needed to provide adequate coverage in the United States (9).

Compounding the problems cited above is the fact that ACGME requirements for accredited training programs have become cumbersome, which has discouraged some training program directors' interest in training because of the large time commitment and seemingly excessive documentation requirements imposed upon them (10). In recent years, the number of forensic pathology training programs has decreased (3).

Dropout of forensic pathologists poses another problem. Only two-thirds of forensic pathology fellowship graduates practice forensic pathology full time, and 21% end up not practicing forensic pathology at all (5). Continued exposure to violence, challenging cases with media exposure and confrontation in court, relatively low pay, and recent government cutbacks in employment have each been cited as possible reasons (5). Salaries of forensic pathologists for those who are not chiefs of offices usually range between $100,000 and $200,000 per year, with few Chiefs making more than $200,000 per year, which is much below average physician income even for those in other specialties who have just completed training. For example, in 2010, primary care physicians received total *median* annual compensation of $202,392, and

physicians practicing in other medical specialties received total *median* annual compensation of $356,885 (11). The College of American Pathologists' practice characteristics survey shows that the total income of anatomic and clinical pathologists approaches $344,000 annually when base salary, incentive pay, deferred compensation, and other income are considered (12). Forensic pathologists usually are not involved in practice settings in which there are incentive payments, bonuses, or fees for services paid by health care financing agencies such as Medicare. Forensic pathologists work full time none-the-less, and many are forced to work extra jobs outside of routine business hours and job duties to augment their salary. Salaries should be consummate with industry norms and the risks which are associated with forensic pathology practice.

Rural areas face challenges regarding their ability to board certified forensic pathologists in all areas of the country. Many jurisdictions do not have the mortality rate or tax base to justify fully and fund a forensic pathology position (13). What this means is that some areas of the country cannot attract forensic pathologists, or if forensic pathologists are available, there is only enough work for a part-time effort and the forensic pathologist must travel or serve multiple areas to make a living. This is one reason why the NRC report has recommended the development of regional medical examiner centers, which will be the topic of another SWGMDI report (1).

The salary of forensic pathology fellows varies considerably. Especially in training programs with tight medical school affiliations, salaries may be geared to Post Graduate Year (PGY) level which translates to a $50,000 to $60,000 annual salary for a PGY 5 or PGY 6 trainee. Other programs have broken away from the PGY levels and have raised salaries to approximately $100,000, a salary that is still not greatly attractive for a physician already having three or four years of residency training. Further, without medical school support, many government based medical examiner offices lack funds to pay satisfactory salaries, which precludes the establishment of a training program. Finally, recent federal deficit reduction proposals have suggested major cuts in the Medicare subsidies for teaching hospitals and residency programs, which would further aggravate the problem.

The national autopsy rate is now miserably low at about 8.5%, with only about 4.3% of disease-caused deaths undergoing autopsy (14). Many hospitals have basically abandoned the use of hospital autopsies as a method for assessing the quality of medical care and evaluation of possible adverse outcomes. This trend has continually worsened since the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) dropped its requirement for hospitals to maintain a minimum autopsy rate of 20%. As a result, the majority of autopsies performed on patients who die in hospitals are now being performed by forensic pathologists within the medicolegal death investigation system on such cases as post-traumatic deaths, post-surgical deaths, and other unusual or unexplained deaths, which occur in the hospital. Information obtained by such autopsies is useful for trauma death audits, medical care quality review, and other purposes, which can benefit the hospital and its caregivers, but healthcare system funding to support the contribution of the medicolegal death investigation system is virtually non-existent. Further, many forensic pathologists are now testifying in more civil litigation resulting from such cases which pulls them further from primary forensic pathology practice.

There are no current incentives to encourage medical students to embark on a career in forensic pathology. There are no medical student or other loan forgiveness programs specific to the field of forensic pathology. In contrast, some law school graduates qualify for loan forgiveness if they work for certain government entities such as the district attorney's office. Perhaps an analogous program could be developed for forensic pathologists, most of whom eventually work for government entities.

Some have suggested that physician- or pathology assistants could help fill the existing void of forensic pathologists in some areas. However, the National Association of Medical Examiners has developed a position paper which limits the use of such professionals in the practice of forensic pathology (15).

The NRC forensic sciences report makes recommendations that all persons who practice in the forensic sciences and offer testimony be certified in their discipline. Achieving that goal will require the production of more board certified forensic pathologists.

Finally, forensic pathologists are charged with investigating deaths involving possible terrorism, biohazards, emerging infectious diseases which result in unexplained death, mass fatality incidents, disaster-related deaths, and other types of deaths which could involve national security, public health, or public safety issues. The forensic pathologists involved in such death investigations need to be adequately trained, board certified, and available in sufficient numbers to do quality work in all areas of the country.

Meeting the Needs (Recommendations)

1. The specialty of forensic pathology and death investigation needs to be made more visible in medical school (as does exposure to general pathology) and pathology residency curricula.

The College of American Pathologist's (CAP) Forensic Pathology Committee and the National Association of Medical Examiner's (NAME) Forensic Pathology Training Committee should develop a course on forensic pathology and medicolegal death investigation. This could be an on-line resource that medical schools could use in the classroom or require students to take and pass during their second year in medical school. The course would cover issues related to obtaining permission for hospital autopsies, general requirements for reporting cases to the medical examiner/coroner, medicolegal death investigation systems, introduction to the death certificate and completing it properly, the training path required to enter anatomic pathology and subsequently forensic pathology, and the types of jobs which are available to forensic pathologists. Specific forensic pathology subject matter would not be included. The Association of Pathology Chairs' (APC) Undergraduate Medical Educators Section (UMEDS) could assist with the development and promulgation of the course, and has already taken a first step by developing a Forensic Interest Group. The American Association of Medical Colleges (AAMC) should not only endorse this project but should require medical schools to include this course in their curricula. The AAMC should also rethink its reduction in formal pathology course and lab work and reinstitute such exposure in medical school because pathology is a primary basis for understanding disease and injury relevant to all medical specialties. Further, the AAMC and organizations like NAME should work together on developing a forensic pathology mentoring

program for medical students to introduce them to the field and encourage their pursuit of forensic pathology. One such program might be for medical students to use interesting forensic pathology cases as a basis for writing a case report for presentation or publication. The same approach could be used with pathology residents.

New medical schools are opening to increase production of primary care physicians to serve areas in need. Perhaps such schools could also emphasize forensic pathology to foster the production of additional forensic pathologists to serve areas in need.

Finally, recruitment into medical school, pathology, and forensic pathology needs to begin at the undergraduate level. Strategies should be developed to target college students in way that will attract them into the medical field with an early interest in pursuing forensic pathology as a career.

2. The exposure to autopsy, forensic pathology, and death investigation needs to be improved and made more positive in pathology residency programs, and non-forensic pathology faculty need to be more supportive of forensic pathology as a legitimate medical and academic discipline.

The ACGME requires that anatomic pathology training programs provide exposure to forensic pathology. This requirement should be enforced. Pathology residency programs should ensure that their residents spend at least one month in a medical examiner/coroner office assisting forensic pathologists in the performance of medicolegal autopsies. The pathology department should provide a stipend to the mentors/forensic pathologists for their services if they are not on the regular pathology department faculty. If there are no such opportunities locally, formal arrangements should be made with a medicolegal office to provide such a rotation. Pathology departments should ensure that the pathologists given responsibility for the supervision of the autopsy service do indeed have autopsy skills and are interested in autopsy performance and reporting. The same course developed for medical students should be available to pathology residents. In addition, the CAP and the NAME should develop an on-line tutorial in forensic pathology subject matter and the Association of Pathology Chairs should endorse its use and require pathology training programs to require it in their curriculum, in addition to any forensic pathology training or lectures provided by the pathology department. The specific locations available for forensic pathology training should also be provided in this course. The Association of Pathology Chairs (APC) needs to encourage faculty to be supportive of residents who are considering forensic pathology as a career. The ACGME and Residency Review Committee (RRC) for pathology needs to enforce its requirement to have meaningful exposure to forensic pathology during pathology residency. At present, the forensic pathology rotation is often used simply as a way for pathology residents to attain the 50 autopsies required for anatomic pathology board qualification, and in some settings, this reason may be the only one that the forensic pathology rotation exists. Without these rotations, pathology residencies would not be able to operate, and the APC needs to recognize this fact and appropriately support the forensic pathology service and faculty. The Association of Pathology Chairs has recently established a Forensic Interest Group to begin addressing some of these issues.

3. Financial incentives need to be provided to attract medical students and pathology residents into the field of forensic pathology.

The American Association of Medical Colleges, in conjunction with the 131 medical schools, should develop a medical school loan forgiveness program for medical students who enter pathology and forensic pathology. Loans should be deferred for a period of 10 years following completion of forensic pathology training, and if the student remains in forensic pathology practice, his/her loan would be forgiven. Each medical school would provide one medical student position per year for the loan-forgiveness program. The AAMC and Medical School Deans should seek federal support for this program, perhaps through proposed legislation such as the Leahy Bill regarding the forensic sciences. More affordable loans should also be made available in addition to any loan forgiveness programs.

4. The salaries of forensic pathologists need to be made competitive with other medical specialties requiring similar years of training.

The CAP and NAME should develop relationships and liaison with the National Association of Counties (NACo), The National Governor's Association (NGA), and the National Conference of State Legislatures (NCSL) to educate them on the important roles played by forensic pathologists and medicolegal death investigation systems regarding issues related to public health, vital statistics, criminal justice, the civil courts, public safety, homeland security, the medical profession, and the wide scope of state and federal agencies and programs which rely upon information generated through death investigations. At the same time, these organizations need to be educated on the difficulties in recruiting forensic pathologists into the field, a major factor being low salaries for persons with medical degrees and advanced postgraduate training.

The numerous federal agencies which rely upon death investigation information, including but not limited to CDC, NIOSH, NHTSA, NCHS, FDA, CPSC, SAMHSA, NIJ, NIH, NDMS, NSF, FEMA, DHS, DoD, and NTSB[1] should collectively develop a comprehensive plan to assist states and local jurisdictions in the funding of their forensic pathology positions. For example, NIH might shift some funding and support away from novel research and toward practical aspects of forensic pathology practice which could facilitate research.

Medical Examiner and Coroner Offices should forge relationships with medical schools who could offer stipends and other benefits to forensic pathologists who are involved in medical student and pathology resident training. The ACGME, Medicare, and medical school Graduate Medical Education (GME) Departments should work to ensure that funding of forensic pathologist positions in forensic pathology training programs have salaries which will attract well qualified individuals who also have teaching skills.

[1] Centers for Disease Control and Prevention (CDC), National Institute of Occupational Safety and Health (NIOSH), National Highway Traffic Safety Administration (NHTSA), National Center for Health Statistics (NCHS), Food and Drug Administration (FDA), Consumer Product Safety Commission (CPSC), Substance Abuse and Mental Health Services Administration (SAMHSA), National Institute of Justice (NIJ), National Institutes of Health (NIH), National Disaster Medical Services (NDMS), National Science Foundation (NSF), Federal Emergency Management Agency (FEMA), Department of Homeland Security (DHS), Department of Defense (DoD), National Transportation Safety Board (NTSB).

Finally, forensic pathology fellowships should not be tied to PGY level. Rather, salaries should be increased to attract pathology residents into the field. The state and federal governments should provide stipends which could augment fellow salary funding provided by medical schools, with strings attached to the funding to keep the fellow in forensic pathology practice, perhaps even within the state which provided the funding directly or with federal assistance.

5. State-centered initiatives need to be developed to attract forensic pathologists to selected states.

Some states lack medical schools, pathology training programs, forensic pathology training programs, and an adequate number of fully qualified forensic pathologists working in the state. Such states should develop an incentive program to attract forensic pathologists to the state. For example, in a state which lacks a medical school, the state might provide a medical school scholarship to a person from the state who wishes to go to medical school (in another state) but who wishes to return to the state to practice forensic pathology. In nearly half the states, a medical student who ultimately wishes to train in forensic pathology would have to leave the state to do so. If forensic pathology training programs cannot be developed in the states which lack them, then an alternative needs to be developed to attract people to forensic pathology training and eventual practice back in the state from whence the trainee came.

Efforts to improve and modernize the physical facilities at medicolegal death investigation centers may also assist in the recruitment of forensic pathologists and their willingness to remain long-term employees. Another option might be one analogous to primary care practice for which special considerations and incentives to attract physicians to areas which are officially designated as "underserved."

6. Forensic pathology training programs need to be increased in number along with an increase in funded forensic pathology fellowship positions.

An excellent starting point would be federal assistance to fund the 25 ACGME-accredited forensic pathology training positions which currently lack funding. At a salary of $60,000 per year, including salaries and benefits, this would require approximately $2,100,000 per year. To make forensic pathology fellowship training positions more attractive, if federal support were provided to increase the salary of all 78 forensic pathology training positions to $100,000, approximately $5,180,000 would be needed per year to augment the salaries already provided by state and local governments and medical schools.

Medicolegal offices which could qualify for, but lack a forensic pathology training program should be provided with state and federal incentive funds for developing a program, especially in states which currently lack a forensic pathology training program or sufficient number of forensic pathologists. Because of the one-year recruitment and training cycle which does not correlate with most state and federal fiscal years, such assistance should not be provided though routine grant mechanisms. Rather, funding should be provided through longer term arrangements outside of the usual grant process and should be for multiple years.

7. Forensic pathology training programs need to be proactive in teaching their fellows about the profession and factors such as burnout that may cause dropout from the specialty.

Because the number of forensic pathology training positions is small and there is a shortage of forensic pathologists, forensic pathology training program directors should ensure that their interviewing of potential trainees thoroughly evaluates the candidate's intent to practice forensic pathology and, if so, to what extent (full-time, part-time, not at all?). Further, candidates and incumbent trainees should be educated on the various factors which tend to cause dropout from the specialty (5). If trainees are educated on how to deal with these issues, burnout and dropout may be lessened, which will help keep the forensic pathology work force at a maximum.

8. The ACGME requirements for training programs in forensic pathology need to be revised to better reflect the unique aspects of forensic pathology training and practice.

The ACGME and Residency Review Committee (RRC) should revisit forensic pathology training requirements. These organizations need to understand that forensic pathology is somewhat unique, the qualities needed to practice successfully differ from many other specialties, and that the patient-care focused requirements are not particularly applicable to the discipline (8). Training needs to be focused primarily on learning forensic pathology subject matter and the skills needed to conduct medicolegal postmortem examinations and investigations. Requirements regarding the six basic competency areas should, for the most part, have already been monitored and evaluated during their pre-requisite training in basic pathology. During the training year, direct observation and supervision should enable supervisors to determine which trainees are capable of independent practice and which ones are not. Documentation and evaluations methods currently required by the ACGME should be optional methods and the fellowship year should only need to focus on subject matter and needed skills.

9. Forensic pathology training programs need to have more formal relationships with medical schools and pathology departments.

Forensic pathologists are sometimes "orphans" who have no academic parent. Especially in medicolegal legal offices that do, or want to, have forensic pathology fellowship training programs, there needs to be a formal arrangement between the medical examiner/coroner office and a medical school and pathology department. In exchange for having pathology residents and medical students rotate through a medical examiner or coroner office, medical schools should fund forensic pathology training positions, and they should provide stipends to compensate the forensic pathology staff who supervise the trainees. These should be formal arrangements with well-defined terms and conditions. The medical schools and pathology departments should provide support services to the medical examiner/coroner office, such as consultations with experts, peer-support, research support and assistance, and specialized laboratory and diagnostic services that the medical examiner or coroner office lacks. Academic relationships can further the professionalism and professional development of the forensic pathologist.

The SWGMDI is preparing another document which addresses the relationships between pathology departments and medical examiner/coroner offices, with recommendations concerning financial support and other factors (16).

Although formal relationships with medical schools and pathology departments is beneficial to support forensic pathology practice, consideration should be given to revising the training path for forensic pathologists and looking at other models. The American Board of Pathology (ABP), ACGME, and RRC need to study this possibility.

Forensic pathology training programs affiliated with academic pathology departments need to take advantage of the graduate medical education office at the respective institution to assist in the management of forensic pathology fellowship programs. The time commitment is great and training centers without such affiliation and support may have difficulty in managing their training program, which is one reason that formal affiliations with academic pathology departments can be beneficial.

10. *Novel mechanisms of death investigation system funding need to be developed.*

As an example of novel funding mechanisms, the JCAHO should work with medical care funding sources and hospitals to ensure that hospitals whose patients are autopsied by the medicolegal death investigation system provide funding to the death investigation system for these services. In essence, there needs to be a return to the former practice of using the autopsy as a quality review procedure regarding medical care for selected types of cases such a post-trauma deaths, possible medical misadventures or adverse outcomes, and in selected cases of persons whose health care is paid for by Medicare. Insurance companies should also financially contribute to the medicolegal death investigation system. It is in their best interest to have autopsies performed in quality settings by qualified personnel.

Local or regional shortages of forensic pathologists should be made known in local media to encourage government authorities and legislators to act on remedying the shortage by providing adequate funding and support to correct the problem.

Summary

The SWGMDI has analyzed the shortage of forensic pathologists, provided background information on the problem, and has offered ten recommendations which could help to increase the supply of forensic pathologists in the United States.

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