

**Narrative: Two Forensic Pathology Fellowships at the
Connecticut Office of Chief Medical Examiner**

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Strengthening the Medical Examiner-Coroner System,

Purpose Area 1: Forensic Pathology Fellowships

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Program Narrative:

Statement of the Problem:

Forensic pathology (FP) is a subspecialty of medicine in which sudden, unexpected, and violent deaths are investigated, typically by autopsy, for the purpose of providing critical information and evidence for the criminal justice and public health systems. These investigations also serve the interests of families and treating physicians by providing feedback to correlate with clinical diagnoses as well as determining causes of death.

Forensic pathologists are a key component of the medicolegal death investigation system. In order to become a forensic pathologist, one must complete a pathology residency program and a FP fellowship as well as pass a national examination to become recognized as an expert (board-certified) in forensic pathology. There currently is a shortage of forensic pathologists in the United States. The National Institute of Standards and Technology's (NIST) National Commission on Forensic Science and the National Research Council of the National Academies have detailed this shortage and issued recommendations to increase the recruitment and retention of forensic pathologists.^{1,2} It is estimated that over 1,200 board-certified FP's are needed to meet the national burden of forensic autopsies, yet there are only approximately 500-600 board-certified, practicing full-time forensic pathologists in the U.S.²

We are aware of the effects of the current opioid crisis and COVID-19 pandemic on the current ME/C system; these have further high-lighted and worsened the FP shortage.³ These lead to challenges of offices facing backlogs and reporting delays due to staff shortages with increasing death investigations. New forensic pathologists are needed. Improved training and increased funding of coroner and medical examiner offices would improve timely services in general as well as facilitate more accurate and timely identification of drugs involved in

overdose deaths and novel infections.⁴

The National Association of Medical Examiners (NAME), the professional medical organization of forensic pathologists and medicolegal death investigators which accredits medical examiner offices, recommends that no pathologist perform over 250 autopsies per year. In 2021, there were over 100,000 accidental drug intoxication deaths in the U.S. (which represents a doubling over ten years).⁵ Approximately 400 of the practicing forensic pathologists in the U.S. would be needed just to handle these intoxication deaths. This staffing shortage combined with increasing autopsy numbers has caused medical and coroner offices to struggle to keep up with complete and timely investigations and to maintain accreditation. There are numerous unfilled FP job positions (see <https://name.memberclicks.net/job-openings>) due in large part to the low numbers of current and new forensic pathologists.

Numerous jurisdictions in the United States lack access to board-certified forensic pathologists, reducing the number and quality of forensic autopsies that are performed which directly affects the timeliness and quality of medicolegal death investigations. This may cause problems in public health (e.g., poor death certification, misclassified deaths), public safety (e.g., missed emerging intoxicants and infections, consumer product safety problems), and criminal justice (e.g., missed homicides, wrongful verdicts). Accordingly, this grant application focuses on a forensic pathology fellowship in Connecticut in an area of the country that has only one other such program. By training new forensic pathologists, we will help strengthen the ME/C system and improve services by helping to increase the number of board-certified forensic pathologists.

The impact of funding and staffing with the CT OCME's program will be to give us the opportunity to continue our FP fellowship program which will help increase the number of

FP fellowship positions in the country as well as the northeastern region. These positions are not funded in our agency's two-year budget cycle. Therefore, this grant would be credited with maintaining our FP program, a core mission of the grant.

The CT OCME has more than adequate case volume, supervision, and educational opportunities to train as many as three FP fellows at a time, potentially resulting in three, new full-time practicing forensic pathologists to be introduced into the workforce each year (we have requested and received approval for two at this time). This funding is an investment that can yield many qualified forensic pathologists over the years to come and strengthen the death investigation and criminal justice systems. Both these systems will be improved by having more qualified forensic pathologists available to perform these medicolegal death investigations.

Project Design and Implementation:

The strategy to address these needs is for the Connecticut Office of the Chief Medical Examiner (CT OCME) to train new FP fellows to help increase the FP workforce. The CT OCME is a NAME-accredited agency that has been approved by the Accreditation Council for Graduate Medical Education (ACGME) for a forensic pathology fellowship program with two fellowship positions. Our program meets all, and exceeds some, ACGME requirements. As both of these positions are unfunded, the Connecticut Office of the Chief Medical Examiner seeks grant funding for our forensic pathology program. A \$300,000 grant would help us meet the salary, benefits, and loan repayments for two fellowship positions and the administrative costs of the training program. The reasonable salaries are in line with current PGY-Resident pay scales at the UCONN Health Center and are therefore cost effective. Our agency

administrator and the UCONN financial officer work together on the budget.

There are few forensic pathology fellowships in the northeastern United States and each year highly qualified candidates cannot find a position in this geographic area due to a lack of available positions. There is only one FP fellowship program (Massachusetts) in the New England states. Funding of our fellowships will allow for additional applicants to continue their training in the northeastern US. We will fill these new positions by recruiting nationwide with a strong focus on the large pool of pathology residents in the northeastern U.S. and those pathology residents that regularly rotate with us as part of their graduate pathology residency training. Connecticut has three pathology residency programs (Yale, Hartford Hospital, and Danbury Medical Center) graduating up to 10 residents each year. Currently, there are three residents in these programs interested in pursuing FP.

The selection of the candidates generally occurs in September/October one to two years prior to the start of the fellowship. We seek candidates with excellent autopsy skills and general competency as physicians as well as strong communication/presentation and interpersonal skills, compassion, and dedication to the field. Acceptance decisions are made thereafter by a collaborative graduate medical education committee of medical examiners. The Connecticut program will be participating in the NRMP Match program for positions starting in July 2024.

The feasibility of our plan is demonstrated by creating a plan that the ACGME approved for our fellowship as well as already having accepted fellows for 2022 and 2023. Our first set of fellows started on July 1, 2021. This funding was made possible due to this grant program and these filled positions demonstrate the effectiveness of our recruitment and advertising strategies.

Our medical examiners and investigators are accustomed to teaching. We lecture at medical and graduate schools which provides trainees an introduction to forensic medicine early in their curriculum. We have academic relationships with all three medical schools in Connecticut which allows students to have elective rotations at the CT OCME which may fuel interest in forensics early in their training. During their rotations, the medical students not only observe autopsies and attend conferences, but they also have the opportunity to accompany senior medical examiners to criminal trials to observe their expert testimony. These types of experiences elicit interest in forensic pathology. As a result, some of these medical students choose pathology as a medical specialty.

Furthermore, all three of Connecticut's postgraduate pathology residency programs require their residents to rotate at our office. It is not uncommon for a pathology resident to "discover" forensic pathology during the month, change career plans, and apply to an FP fellowship program. The CT OCME exposes high school, college, and medical students and pathology residents to forensic medicine, which serves as an excellent long term recruitment platform. We also participate in a training program for pathologist assistant students from Quinnipiac University. Overall, the agency is accustomed and geared toward teaching and education. The FP fellows would be exposed to anthropology, criminalistics, neuropathology, cardiac pathology, toxicology, and crime scene investigations. The specific strengths of the CT OCME FP training program include:

Size and Supervision:

The agency will train one to two fellows per year. With nine experienced senior forensic pathologists on staff, this would be a high FP to trainee ratios (4.5:1) and exceeds ACGME requirements.⁶ This allows the fellows to receive the full attention of the staff. Much of FP

training involves individual case discussions and taking the time to review all aspects of the case. The fellows will have multiple opportunities and sources for questions and teaching.

Autopsy volume and variety:

A pitfall of any program is a lack of exposure to a broad range of cases. Our State-wide experience in a single centralized facility allows for a caseload which is large, diverse, and convenient for fellows.⁷ Connecticut has both metropolitan and rural areas that allow for a broad exposure to a variety of death investigations. The fellows have the first choice of any death with appropriate, graduated supervision to ensure a productive and appropriate experience and a broad exposure to cases. On average, the CT OCME investigates and certifies more than 4,000 deaths annually, and the medical examiners physically examine more than 3,600 decedents. Of these, approximately 3,200 decedents are autopsied. Annually, the agency averages approximately 140 homicides, over 2,000 accidental deaths including over 1,400 drug intoxications, and nearly 400 suicides. We investigate, on average, one infant death per week and experience the full range of trauma-related deaths including blunt, sharp, gunshot, environmental, asphyxial, and chemical. These numbers are comparable to or exceed most metropolitan-only training programs.

Our autopsy volume easily accommodates the ACGME recommendation that a fellow performs between 200-250 autopsies per year. Since all OCME deaths come through a single facility that covers the entire State, the fellows have the opportunity to perform autopsies on any of these cases and is not limited by case dispersal to other offices or traveling to other offices. In addition, the entire nine board-certified, full-time, forensic pathology staff all work in the same facility. The fellow's office will be among these other MEs which allows for easy interactions, bonding, and teaching. Having the fellows in one location with all of the senior

staff, allow for excellent continuity of teaching and recognition of the progression of skills and knowledge. The fellows do not rotate to another office with a separate staff for autopsies which may cause disjointed training.

Ancillary support and training:

Fellows will regularly benefit from the input of a part-time, board-certified forensic anthropologist and other consultants. We have neuropathology and pediatric pathology consultants from Yale and cardiovascular pathology consultations from the Jesse Edwards Heart Registry. The cardiac pathologist and neuropathologist both come to our office on a monthly basis to do cases. An on-site histology lab and an American Board of Forensic Toxicology accredited laboratory facilitates excellent turnaround times with forensic toxicologists who are readily available for consultation on difficult interpretations. Fellows have a regular opportunity to participate in any of the more than 1,900 scene investigations performed annually by the OCME's full-time, medicolegal death investigators. This fellowship training is further augmented by dedicated rotations in toxicology, forensic anthropology, crime scene investigation, neuropathology, and forensic biology (DNA lab).

Exposure to the Criminal Justice System and Testimony: The jurisdiction of the CT OCME encompasses the entire state including over 169 police departments, 13 States' Attorney jurisdictions, and State Police and State Major Crime investigative teams. Fellows rotate with the CT crime lab and mobile crime scene unit. They handle direct inquiries from attorneys on their cases. During the year, fellows have ample opportunity to get indirect trial preparation and testimony experience by observing senior medical examiners (MEs) and are responsible for

testifying on their own cases. The fellows will rotate on-call with the MEs to learn case triage/jurisdiction decision making and issues surrounding tissue/organ donations.

Other Exposure:

During the fellowship, the fellows will attend local conferences, a national forensic science meeting, and regular conferences held by the Poison Control Center (Department of Health). The fellows also are expected to begin their own basic forensic pathology lecture series for visiting residents and students, as well as prepare a journal club and two presentations during the latter half of the fellowship year. The fellows will participate in a QA project which is part of NAME-accreditation.

Capabilities and Competencies:

Currently, the standard for quality in death investigation for medical examiner offices is accreditation by NAME which attests that an office has a functional governing code, adequate staff, equipment, training, and a suitable physical facility and produces a forensically documented accurate, credible death investigation product.¹ The Connecticut Office of the Chief Medical Examiner (CT OCME) is a NAME-accredited agency which signifies that our office performs sound and timely death investigations which instills confidence in the police departments, attorneys, and the families we serve. All of the MEs are board-certified in forensic pathology and some have additional training and/or board certification in neuropathology and pediatric, renal, and oncological pathology.

The Chief Medical Examiner, who also is the forensic pathology program director, is Dr. James Gill. Dr. Gill has served or is serving on a variety of professional medical and

governmental forensic groups including the American Board of Pathology's Test Development and Advisory Committee on Forensic Pathology, the chair of Forensic Pathology Committee of the College of American Pathologists, the Board of Directors of NAME and a past president of NAME, and the editorial boards of several forensic pathology journals. He also served as a member of NIST's Organization of Scientific Area Committee (OSAC) on the Medicolegal Death Investigation subcommittee of the Crime Scene/Death Investigation Scientific Area Committee.

The daily work of the fellows will be supervised by up to 9 senior MEs with forensic pathology experience ranging from 4 to 24 years; many of them hold academic teaching appointments at medical schools including Yale, the University of Connecticut, and Quinnipiac University (Frank H. Netter School of Medicine). Our fellowship program coordinator, who has a master's degree in public health, oversees all administrative aspects of the residency rotations and the fellowship year, allowing for a smooth transition for the matriculating fellows, but also for the senior MEs and the fellows to focus exclusively on training.

Our program is under the Graduate Medical Education program of the UCONN Health Center which supplies us with further support and human resources benefits.

Plan for Collecting the Data Required for this Solicitation's Performance Measures:

As the fellowship is overseen by the ACGME which requires strict reporting and evaluations, we will similarly be able to meet the reporting requirements of the grant. Dr. Gill, along with Dwayne Gordon, administers the paperwork to maintain ACGME accreditation and monitors its required documentation throughout the training year. The OCME will provide data for the grant on the number of applicants to the fellowship position, number of active trainees

and graduates, and the number of participants who completed forensic pathology fellowship training under the funding of the NIJ's "Strengthening the Medical Examiner-Coroner System" program.

Statistics regarding the number of deaths investigated and autopsied, with a breakdown by manner of death, is routinely tracked as part of normal OCME management and can be provided for any specified time period prior to award start date (e.g., six months prior to start date) and throughout the duration of the project at each reporting period. This includes the total number of deaths investigated and decedents autopsied by the fellow funded by the award and the total number of deaths investigated and autopsied by the OCME during any specific reporting period as well as during the entire project. Monthly, we routinely track the number of deaths investigated by the agency and the number and type of deaths investigated by each FP (e.g., number of homicides per FP). From this data, percentages can easily be calculated and submitted. The OCME employs a forensic pathology fellowship coordinator and an IT specialist who can easily collect and collate all of this data for our electronic case management system. The average number of days to produce a final autopsy report also is routinely tracked as part of normal OCME management and can be provided for any specified medical examiner and time period prior to award start date and throughout the duration of the project. Quarterly financial reports and semi-annual reports of the work performed under the reward will be prepared by the forensic pathology fellowship coordinator. If requested, an annual audit report can be prepared by the same. Board examination success rates will be tracked.

In conclusion, if the CT OCME obtains funding, we will be able to continue our FP fellowship to help increase the number of participants in the fellowship program in a geographic area that has a shortage of FP programs. Given that the applicant pool in our region typically

outstrips the available local fellowship positions, grant funding will allow for a new fellowship position in an underserved area to improve the marked shortage of Forensic Pathologists.

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