

Career Resources

Career development resource: urology★

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Abstract. Urology has always been seen as being on the cutting edge of technology and this has been especially prevalent in the past 10 to 15 years with a move to robotic surgery, increased use of laser technology, and stem cell research leading to organ regeneration. Urology has a number of subspecialties including pediatrics, urologic oncology, renal transplantation, male infertility and andrology, calculi, female urology, neurourology, and trauma and reconstruction. Urologists have a wide array of practice options ranging from performing major oncologic procedures with extensive reconstruction to having an office-based practice and performing endoscopic cases with everything else in between. Subspecialization is becoming increasingly more organized and regulated.

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Urology is the surgical specialty that is concerned with the diagnosis and treatment of diseases of the genitourinary tract, including the adrenal glands, and the male reproductive organs. The American Urologic Association (AUA) has recognized 7 subspecialty areas in urology including pediatric urology, urologic oncology, renal transplantation, male infertility, calculi, female urology (urinary incontinence and pelvic outlet relaxation disorders), and neurourology (voiding disorders, urodynamic evaluation of patients, and erectile dysfunction or impotence). Other subspecialty areas are urologic trauma and reconstruction.

The urologic surgeon has a wide variety of practice options ranging from general urology to a variety of subspecialty options. A urologist with a fellowship in oncology may focus on complex extirpative procedures and reconstruction requiring a hospital-based practice, a high level of skill, and significant technological support. Other urologists may focus on outpatient and office urology and perform

relatively uncomplicated endoscopic procedures. Most urologists have a very general practice and perform a wide variety of surgical cases both in terms of complexity and disease state.

Urology is different from many other surgical specialties in that the diseases that urologists treat and the interventions provided require lengthy, even lifelong, follow-up evaluation. Urologists generally establish long-term relationships with their patients. In urology there is overlap with other specialties including general surgery, internal medicine, gynecology, and pediatrics.

Urology has helped to lead innovation in areas such as stem cell research leading to organ regeneration. Urologists have been leaders in minimally invasive surgery from the advent of the cystoscope. Ureteroscopy, shock wave lithotripsy, percutaneous renal surgery, laser technology, laparoscopy, and now robotics all allow for procedures to be performed in a less-invasive manner. Increasingly more urologic procedures are being performed in outpatient, ambulatory care settings.

Urologists use a variety of imaging modalities including fluoroscopy and ultrasound in both diagnosis and treatment. Knowledge of cross-sectional imaging tech-

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niques (computerized tomography and magnetic resonance) and nuclear medicine are also very important in the practice of urology.

Medical Students

Students in only 17% of medical schools currently receive didactic training in urology, which limits many students' exposure to urology. For the student who is interested in urology the first step is to obtain the advice of a faculty urologist. Students may do an elective early in their third year to ensure that their interests match with urology. Once a student has decided on urology a subinternship is done late in the third year or early in the fourth year. During the subinternship the student is expected to act like an intern in which they follow ward patients, observe, and/or assist in the operating room, attend clinic, and often prepare a presentation for urology conference. The successful student finishes the rotation with an honors grade and outstanding letters of reference from faculty members including one from the department Chairperson.

Urology is a competitive field and successful applicants to the urology match have high United States Medical Licensing Examination (USMLE) scores, high grades in medical school, excellent references, research experience, and are good citizens who have volunteered or have shown good leadership skills.

Medical students apply for urology residency positions through Electronic Residency Application Service. The urology match is performed by the AUA with the match completed in January. Medical students also may need to apply for their year of general surgery training through the National Resident Match Program. It is wise to check with each individual program as well as the AUA urology match site <http://www.auanet.org/content/residency/residency-match.cfm#general> for the most current information.

Residency Requirements

Urology residency typically is 5 years long, consisting of 1 year of general surgery followed by 4 years of urology. In the past, many programs have required 2 years of general surgery but now most programs require only 1 year. The year of general surgery training is developed by the program director of the general surgery residency program with required input and approval of the respective urology program director. A requirement of the Urology Residency Review Committee of the Accreditation Council for Graduate Medical Education (ACGME) is that this year will consist of a minimum of 3 months in general surgery, as well as a minimum of 3 months in critical care, vascular surgery, or trauma, and additional clinical assignments that prepare residents for urology. Urology programs must consist of a

minimum of 48 months of clinical urology education. A number of programs have added an additional year, which is often a research year, making the total residency 6 years in duration. The list of urology programs is on the AUA web site (<http://www.auanet.org/eforms/programs>) and includes the duration of the programs.

Fellowships

Fellowships are offered, post-residency, in the 9 subspecialty areas of urology listed earlier. There is overlap between these areas so that there are fellowships that teach both female urology and neurourology and there are other fellowships that focus on both male infertility and erectile dysfunction. Reconstructive urology is included in some female urology or neurourology fellowships and other times is combined with a trauma fellowship. Increasingly, specialization also occurs by technique so that a urologist may complete a laparoscopy or robotic fellowship and focus their practice not on a group of diseases such as oncology or stones but instead on a group of diseases that are treated using a specific surgical technique such as laparoscopy or robotics. Fellowships generally range from 1 to 3 years.

Fellowships may be approved or accredited. Approved fellowships are fellowships that fulfill certain criteria and that are reviewed and approved by a subspecialty society such as the Society of Urodynamics and Female Urology, the Society of Urologic Oncologists, or the Endourological Society.

Accredited fellowships are those approved by the ACGME, as is the case with pediatric urology, or the American Board of Obstetrics and Gynecology in the case of female pelvic medicine and reconstructive surgery, previously known as female urology. Certification presently is available only in pediatric urology but eventually will be available in female pelvic medicine and reconstructive surgery. To obtain certification in pediatric urology applicants must have completed an accredited fellowship, possess an unrestricted general certificate in urology, practice a minimum of 75% pediatric urology, and pass the pediatric subspecialty certification examination.

Board Certification

The American Board of Urology certifies urologists who have completed an ACGME or Canadian Royal College of Physicians and Surgeons accredited residency program and who have met the board's professional standing and examination criteria. A qualifying (written) examination is taken usually at the completion of residency and a certifying (oral) examination is given after at least 18 months of clinical practice. A urologist is expected to have core competencies in all domains of urology including but not limited to pediatric urology, endourology, female urology, andrology,

oncology, urolithiasis, and general urology. The American Board of Urology also evaluates and conducts examinations for subspecialty certification, recertification, and ongoing maintenance of certification.

Urology Research Opportunities and Funding

The AUA Foundation sponsors a variety of research grants for medical students, residents, urologists, and scientists. Their largest program, the Research Scholars Program, focuses on young investigators. Twenty percent of these scholars have gone on to receive National Institutes of Health or other extramural funding.

The Foundation also partners with the National Institute of Diabetes and Digestive and Kidney Diseases and the National Cancer Institute to offer a Surgeon-Scientist Award.

Professional Societies for Urology

Until the early 1900s, urology was in the realm of general surgery. The AUA, formed in 1902, is the premier professional society for urologic surgeons. They support an annual 5-day meeting every spring. Students and residents are encouraged to attend this meeting to meet urologists from all over the world and enjoy the outstanding educational program.

The AUA is divided into 8 geographic sections including the Northeastern, New England, New York, Mid-Atlantic, Southeastern, South Central, North Central, and Western sections. Each section of the AUA is a professional society that provides educational and other services to AUA members in that region. Membership in a section is mandatory to maintain AUA membership and vice versa. All sections hold an annual scientific meeting and other educational meetings. Resident and medical student participation is strongly encouraged at the section level with different sections promoting this through travel grants, prize essay contests, quiz bowls, and social activities aimed at residents.

The AUA has a Medical Student Task Force that has published a medical student curriculum that is easily accessed on the AUA web site (<http://www.auanet.org/content/education-and-meetings/med-stu-curriculum.cfm>).

The AUA web site also houses the core curriculum, which is a reference guide that details the knowledge necessary to deliver quality urologic care. This is available only to AUA members and has online links to textbooks, articles, and AUA products such as videos and guidelines.

The Society of Women in Urology serves as an important international professional organization to foster the careers of women in urology. There is a mentorship program for residents and early career women urologists and ongoing high-quality educational programs at national meetings. The networking opportunities provided by the Society of Women in Urology continue to be of value to women at various points in their careers.

Journals

The *Journal of Urology* is the official journal of the AUA. Other widely read urologic journals include *Urology*, *British Journal of Urology International*, and *European Urology*. Many of the urologic subspecialties also have their own journals.

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General Resources

What is urology: information for medical students and prospective urology residents. <http://www.auanet.org/content/residency/what-is-urology.cfm#what>.

American Urological Association. <http://www.auanet.org>. Kerfoot BP, Turek PJ. What every graduating medical student should know about urology: the stakeholder viewpoint. *Urology* 2008;71:549–53.

Urology Match website. <http://urologymatch.com/>.

American Board of Urology. <http://www.abu.org/>.

American Urological Association Foundation. <http://www.urologyhealth.org/researchpage.asp>.