

Diversifying Graduate Medical Education & the Urology Workforce:
Re-imagining our Structures, Policies, Practices, Norms & Values

Efe C. Ghanney Simons MD ,
Associate Professor of Surgery (Urology) Simone Thavaseelan MD ,
Christopher Saigal MD, MPH , Tracy Downs MD

PII: S0090-4295(21)00554-9
DOI: <https://doi.org/10.1016/j.urology.2021.06.011>
Reference: URL 23006

To appear in: *Urology*

Received date: 1 April 2021
Revised date: 8 June 2021
Accepted date: 12 June 2021

Please cite this article as: Efe C. Ghanney Simons MD , Associate Professor of Surgery (Urology) Simone Thavaseelan MD , Christopher Saigal MD, MPH , Tracy Downs MD , Diversifying Graduate Medical Education & the Urology Workforce: Re-imagining our Structures, Policies, Practices, Norms & Values, *Urology* (2021), doi: <https://doi.org/10.1016/j.urology.2021.06.011>



This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Diversifying Graduate Medical Education & the Urology Workforce: Re-imagining our Structures, Policies, Practices, Norms & Values

Authors: Efe C. Ghanney Simons, MD;¹ Simone Thavaseelan, MD;^{2,‡} Christopher Saigal, MD, MPH;¹ Tracy Downs, MD^{3,4}

Author Affiliation:

1. David Geffen School of Medicine (DGSOM) at the University of California, Los Angeles (UCLA)
2. Warren Alpert School of Medicine of Brown University
3. University of Wisconsin School of Medicine and Public Health
4. R Frank Jones Urological Society

Corresponding Author: Simone Thavaseelan, MD

Conflict of Interest: The authors have no disclosures relevant to this work

Author: Efe C. Ghanney Simons, MD

Affiliation David Geffen School of Medicine (DGSOM) at the University of California, Los Angeles (UCLA)

Address: 10833 Le Conte Avenue, Box 951738, Los Angeles, CA 90095-1738;

E-mail address: Eghanney@mednet.ucla.edu; efe.c.ghanney@gmail.com

All correspondence should be directed to:

‡ Contact Author: Simone Thavaseelan, MD

Affiliation: Associate Professor of Surgery (Urology), Warren Alpert

Medical School of Brown University

Address: 2 Dudley Street, Suite 174, Providence, Rhode Island, 02905

Telephone: 1-401-444-8570

Fax: 1-401-444-6947

E-mail address: SThavaseelan@Lifespan.org

Author: Christopher Saigal, MD, MPH

Affiliation: David Geffen School of Medicine (DGSOM) at the University of California, Los Angeles (UCLA)

E-mail address: CSaigal@mednet.ucla.edu

Author: Tracy Downs, MD

Affiliation: University of Wisconsin School of Medicine and Public Health

E-mail address: downs@urology.wisc.edu

Key words: racial disparities, equity, implicit bias, IMG

ABSTRACT

This article offers a framework for critically examining the structures, policies, norms, practices, and values that shape the Urology Match as a foundation for interventions to improve diversity, equity, inclusion and justice in the workforce. Points of leverage for transformational change in the urology workforce diversification include modifying the structure of the urology application process, optimizing reviewer factors, addressing URiM applicant experience, providing resources to applicants, and evaluating selection criteria. To achieve an inclusive diverse urology workforce, we must change *policy and practice*, expand what we include *in the norm*, which will translate into increased *value* ascribed to a more varied cohort of applicants, leading to the establishment of *structures* that accommodate true diversity.

Word count = 115

Diversity. Equity. Inclusion. Representation. Justice. These words have been increasingly prominent in our national discourse. In 2020, the COVID-19 pandemic caused the world to slow down. It slowed down enough to bear witness to several high-profile killings of people of color. Moreover, the pandemic highlighted and exacerbated striking disparities in morbidity and mortality rates across race and ethnicity in the US. This set the backdrop for an overdue and urgent discussion on how each of us, as stewards of the resources we have at our disposal, can become part of the solution to racial inequity in our own respective microcosms. We wish to address one aspect of the conundrum: racial disparities within the Urology workforce. In this paper, we will (1) provide current racial/ethnic demographics of the urologic workforce, (2) discuss the benefits of diversity in the context of urology, (3) describe a value proposition for tracking metrics relevant to your diversity goals and finally (4) describe a framework that may be employed by urologists in any setting to not only assess their investment in diversity but also to create an action plan moving forward. We will use the urology match as a model for this.

In 2019, the United States census indicated that 5.6%, 12%, 18% and 60% of the population were Asian, Black/African-American, Latinx/Hispanic and White,

respectively.¹ However that same year, the American Urological Association (AUA) census revealed that Asian, Black/African-American, Latinx/Hispanic and White practicing urologists accounted for 12%, 2.0%, 3.9% and 85% of our workforce, respectively.² An examination of the composition of our trainee population does not foreshadow an evolution of our workforce that would mirror the racial/ethnic makeup of our nation, given that 21%, 3.1%, 5.7% and 68% of our urology residents identify as Asian, Black/African-American, Latinx/Hispanic and White respectively.³ (Table 1) It was with this discordance in mind that the Association of American Medical Colleges (AAMC) coined the term Under-Represented in *Medicine* (URiM), not to be mistaken for Under-Represented *Minorities*. The former refers to disproportionally low presence of a particular racial/ethnic group in the health professions in comparison to the general population while the latter refers to a population not represented in that region at large.⁴

Table 1. 2019 American Urological Association (AUA) Census Data and United States 2019 Census Data

The tacit implication for creating terms that distinguish between diversity, and diversity in the context of the regional population, is that the lack of representation in an environment where there is a supply, is indicative of inequity and possibly bias. A significant body of research makes a compelling case for the benefits of diversity in the physician workforce. For patients, these include better access to care for minority populations, particularly given that URiM providers are more likely to practice in underserved communities, better communication between providers and patients, improved patient-centered decision-making and higher patient satisfaction.⁵⁻⁷ Additionally, diversity in the physician-scientist population may increase both diversity and engagement among research participants, as well as quality of care, since researcher and physician demographics have the potential to impact research and patient outcomes by (1) ingroup versus outgroup effects, (2) stereotype and implicit bias effects, and (3) priming and social tuning effects.⁸ Institutions that are intentional about diverse representation of faculty thereby provide role-modeling and race-conscious mentorship for their URiM trainees as well as decrease stereotype threat and imposter syndrome for those physicians-in-training.⁹⁻¹⁶ In fact, according to the AAMC medical student graduation questionnaire from 2003 and 2004, medical students at institutions with higher proportions of URiM students were more likely to report confidence in caring for minority populations and more likely to endorse strong positive attitudes regarding

the provision of equitable access to care.¹⁷ While diversity has tangible benefits for our patient, trainee, practicing physician and research participant populations, it is not exclusively an altruistic deed. Diverse teams outperform non-diverse groups, focus more on facts, and are more innovative.^{18,19} Indeed companies with more diverse executive teams have been shown to be superior financial performers.²⁰

If diversity would afford the field of urology such benefit, why then have we not yet achieved it? To that question, we put forth two key points. First, a problem not named and identified is a problem destined to remain without solution. To our knowledge, up until 2019, data regarding race/ethnicity was only captured by the American Urological Association (AUA) census. The limitation of these data is exemplified by the fact that while the 2019 AUA census reported the participation of 415 urology residents, the Accreditation Council for Graduate Medical Education (ACGME) has 1734 active urology residents listed.^{3,21} This potential response bias poses a problem for all demographics of interest. For example, when urologic professional societies realized there was a gender disparity issue, they became intentional about recording gender meticulously in forums such as the Urology Match, overseen by the Society of Academic Urologists (SAU) and administered by the American Urological Association (AUA) as well as during the

licensing process by the American Board of Urology (ABU). This fastidious record keeping of gender permits the urology community to ascertain representation of our urology applicants, trainees, practicing physicians and sub-specialists, in ways that permit assessment of trends over time, such as the increase in women practicing urologists from 1.2% in 1995 to 9.9% in 2020.^{22,23} Furthermore, tracking demographic data of our workforce enables the continual assessment of the impact of interventions, thus ensuring quality improvement in our recruitment and retention efforts.

The second reason for the persistent lack of diversity within our ranks lies in an under-appreciation or perhaps a lack of appraisal of that which binds us as the urology community. These are structures, policies, practices, norms, values and outcomes that we organize around by virtue of being urologists or urologists-in-training. An attempt to fix the proverbial leaky pipeline, without a close examination of all its nuts and bolts, is destined to result in meagre gains. It is possible that the lack of significant increase in URiM representation in the trainee population despite the well-intentioned, yet uncoordinated, initiatives that have arisen around the country has been in part due to this lack of structural appraisal. Tantamount to this concept, is the recognition that each and every one of us is an

active agent capable of creating an imprint on the urology ecosystem. To illustrate this point, we will hereby focus solely on the Urology Match, recognizing that this framework can be applied to other areas of our specialty such as residency training, departmental organization and professional society leadership (e.g. AUA, ABU, SAU, AUA sections).

Outcomes

In order to incorporate diversity, equity and inclusion in the Urology Match process, let us begin by defining what our *desired outcomes* are. They may include having representation in gender, race/ethnicity, and sexual orientation that reflect the patient population we serve. They may also include aiming to match urology residency applicants who meet certain criteria deemed desirable by the professional society as a whole (e.g., demonstrates clinical competence) or those characteristics sought after by individual programs (e.g., seeks career in translational research). In reviewing the applications of potential future urologists, training programs need to first determine which outcomes are considered those of success for a urologist: in-training, post-training, related to self-improvement,

performance and patient outcomes. It is after this fundamental step of selecting outcomes/goals that factors predictive of the desired outcomes may be defined. Urology training programs that are transparent about their match wish-list provide applicants the opportunity to make an informed decision, which may decrease the volume of applications per applicant, and are more likely to attract the applicants they consider a good fit. Of utmost importance is a system of measurement of the proposed outcome. If it is diversity we seek in the Urology Match, what would the desired outcome look like? How can it be quantified? What system is in place to investigate if and how the measured outcome deviates from the expected? A quality improvement model such as the Institute for Healthcare Improvement's Model for Improvement may be adapted for continual assessment. Alongside these assessments, can be accountability measures and corrective actions to deter complacency. Much like is done for morbidity and mortality (M&M) conferences for adverse patient outcomes, we can attend to underperformance in our diversity goals with surgical precision. Based on Dr Camara P Jones' framework we will analyze the Urology Match in terms of (1) structure: the who, what, when and where of decision making; (2) policies: the written how of decision making; (3) practices and norms: the unwritten how of decision making; and (4) values: the why of decision making (Table 2).

Structure

In the Urology Match process, this component includes: (1) all the stake holders (e.g. applicants of all backgrounds, diversity of reviewers), (2) the choice to have an early match process separate from all other specialties, (3) the organization of centralized interviews at one location as is the case in Canada versus virtual interviews as occurred in the 2020 interview season, (4) structural, cultural and implicit bias training offered to all reviewers and interviewers (or a lack thereof), and (5) whether or not to cap the number of applications (Figure 1). What implications are there in the Urology Match structure that prohibit our professed desired outcome of diversity in the Urology Match results? How are we changing any one of the factors that shape the Urology Match, illustrated in Figure 1, in such a way that would increase the likelihood of recruitment of those historically excluded from urology? For example, if we deem the number of matched URiM urology applicants to be below our desired outcome, how then are we as urology departments and professional societies changing our structures to incorporate things such as: intentional urology faculty involvement in preclinical undergraduate medical education (UME) to facilitate early exposure for all students; active recruitment of students from historically black colleges and universities that start in the early preclinical years; active trainee and faculty involvement in urology interest groups, collaborating with student cultural and

gender affinity groups; creation of structured research opportunities with an intentional focus on yielding academic products for the Urology Match; establishment of available and accessible funds to mitigate the financial burden of the urology sub-internship, application and interview processes, particularly for those who identify as First Generation and Low Income (FGLI), to name a few? As the USMLE Step I exam becomes pass-fail, UME may see a shortening in pre-clinical education. How are organizations such as the AUA Medical education committee, AUA sections and individual urology departments/divisions positioning themselves to advocate for mandatory urology exposure during the surgical clerkship to ensure early equitable access to urology for all students?

Figure 1. Factors that impact the Urology Match Process.

Policies

This refers to the written *how* of a process and gives power to structure. In fact, in a well-run structure, policies supersede behavioral, social and economic factors of a structure. Policies are typically undergirded by models and assumptions that are data-driven, however, the models are dependent on an appreciation of the context

of *all* stakeholders. Take for example, in the 2020 – 2021 urology application cycle, the SAU mandated that urology sub-internships and interviews occur virtually.²⁴ This policy had implications for cost of the application process, applicant confidence in assessing program fit, ability to obtain letters of recommendation, among other things. The impact of these may be experienced differentially by different groups (e.g. DO students, International Medical Graduates [IMGs]).²⁵ What policies does our Urology Match process have that facilitate or inhibit our desired outcome for diversity in the match? Perhaps an even more enlightening question is *what policies do we not have in place to mitigate against unintentional exclusion of certain populations in our field?* A 2014 survey of urology program directors revealed that letters of recommendation and USMLE scores are the two most important factors in selecting a urology applicant to interview and to rank to match.²⁶ That same study also showed that program director's gave favorable consideration to doing a sub-internship at their institution (87%), to being a student at their institution (62%), to being a child of an academic urologist (47%), to URiM status (37%) and to gender identity (25%). Keeping this in mind, what is the equity implication of a free-for-all system of acquisition of away rotations – rotations that provide access to letters of recommendation and access to student-appropriate research, for some and not for others? Who does a

lack of codified policy disadvantage the most? Our policies are a reflection of the values of our professional society.

Practices & Norms

Whereas practices are behaviors that we in urology engage in, our norms are the behaviors we deem the unspoken standard, thus presenting a code of conduct that ascribe value to those who adhere to them. Deviators of the norm are considered exceptions, not the rule, and being labelled the exception creates a platform to justify differential value placement. Returning to our working example, during the Urology Match process, increasingly, the number of research products of an applicant continues to rise, setting new norms. In a review of all 257 applicants to a single urology residency program during the 2014-2015 match cycle, 79% reported manuscripts however 5% of applicants were found to have misrepresented publications, ranging from reporting non-existent manuscripts, to listing themselves as a higher rank author.²⁷ The perception that applicants with only one or two publications may not be viewed as favorably as their counterparts who have more, may drive such dishonest actions. The ability for a medical student to produce a publication is contingent on several factors including access to structured mentorship, funding and limited competing interests such as the need to

work to support one's household. In our appraisal of applicants, to what extent do we incorporate the distance travelled by each applicant that may inform their deviation from the norm? How do we account for the urology applicant who hails from a medical school without a urology department or division but was able to obtain one 2nd author paper?

In discussing norms, we would be remiss to not describe concepts encapsulating experiences of those who fall outside the norm: Microaggression, Stereotype Threat, Tokenism, Imposter Syndrome and Homophily.²⁸ Consider the following questions:

- What assumptions are made about women and/or URiM urology applicant's academic and surgical performance prior to them having a chance to demonstrate their ability? How do our actions towards them reflect these assumptions? (*Microaggression*)
- What roles do the women and/or URiM urology faculty at your institution hold? Are they more or less likely to be at your academic centers vs. Veteran's Affairs/community hospitals? What are the implications for a urology applicant who identifies as a woman or URiM yet has ambitions that

differ from that of faculty of concordant gender and/or race? (*Stereotype threat*)

- What roles do you presume the women and URiM urology applicants would assume if they were to match at your institution? Are there same assumptions of all applicants? (*Tokenism; Minority Tax; Majority Subsidy*)
- What does representation look like in your leadership ranks, in the portraits that line your hallways and on your websites? Do those images tell a story of who belongs and more importantly, who does not? (*Imposter Syndrome*)
- When having conversation with a group of applicants, what topics are discussed and who is excluded as a result? Is time spent engaging with those with different life experiences? Whose voices are not heard and how does the silence affect your perception of an applicant's fit? (*Homophily* - an anticipation of "potential barriers to socializing with others."²⁸)

When norms are violated, it results in intentional or unintentional penalties, (i.e. decrease in value), such as the applicant from the school without a urology department, or without a certain number of publications or without the "standard test score," not successfully matching. Even more concerning are the consequences of insidious norms that have no bearing on the Urology Match process itself, yet

factor into our perception of “fit”, “vibe” or “connection,” which can lead to lower rankings. There is an increasing body of literature demonstrating that “fit”, particularly but not exclusively, in the context of race, ethnicity and socioeconomics, influences both residency program and applicant ranking decision-making.^{29,30} When individuals or groups are valued less, it provides logical justification for incorporating them less into the structures and therefore policies of that system or process. With respect to the Urology Match, how do we accommodate those who come from institutions with no urology department, who require a visa to work, who have young children while in training, or who have a significant other also partaking in the match? How do we accommodate applicants for whom English is not their first language, however fluently speak the languages of our patient population?

Table 2. Definitions and Examples of Terms involving the Urology Match Process

Value

In our quest for diversity as an outcome of the Urology Match, an appraisal of the *value of the factors* influencing the Urology Match process *and* an appraisal of the

value of the outcome is necessary. It is important to recognize here that value only carries meaning in relation to another.

This is to ask the question, in comparison to all the other outcomes desired, how much do we value diversity? Is this consistent with how much we profess to value diversity, as evidenced by the ever-proliferating diversity statements populating the websites of urology residency programs? The answers to these questions will inform how we prioritize next steps and resources, importantly, funding, institutional support, protected time for those engaged in this endeavour and visibility of work done with commensurate recognition by way of publications and promotions.

In considering the value of factors influencing the match process, let us inspect the evaluation of standardized tests. While there are ferocious arguments for and against its use in medical education, in this commentary, we will limit discussion to three key points. First, understanding the purpose for which a test was created and critically appraising its interpretation is tantamount prior to determining the utilization of scores. Second, we must consider whether a test used in screening applicants has demonstrated reliably its ability to predict for desired outcomes established by the urology community, i.e. does a high USMLE Step score

correlate to superior clinical performance as a urologist or improved patient outcomes for that provider? Third, it is important to recognize how our perception of applicants are influenced by their test scores (Figure 2a) and how that perception changes in relation to other accomplishments (Figure 2b). How would a culture of *inclusive excellence* guide the evaluation of an applicant with a 270 on the USMLE Step 1 exam, three publications and no advocacy and mentorship engagements evaluated in juxtaposition to the applicant who scored a 235, had one publication and built a regional pipeline program from the ground up (Figure 3)?³¹

Figure 2a. If y-axis represents value of a urology applicant then the X-axis represents test score. Figure 2b. The 2 curves represent two factors such as test scores and research

A system that makes the subjective decision to *overemphasize* academic performance metrics (grades, standardized tests, letters of recommendations, class ranking, research productivity), metrics that have only been associated with socioeconomic status and test performance on future standardized tests, is likely to

systematically exclude women, URiM and those who identify as first generation and low income (FGLI).^{32,33,42–45,34–41} In over-simplified terms, insidious discrimination often occurs under the guise of using ostensibly “objective factors” to screen applicants in order to reduce the burden of reviewing an overwhelmingly large volume of applications, in lieu of addressing the root cause of that volume: lack of transparency of the urology application process and a lack of limits on the number of applications permitted.⁴⁶ High quality collaborative medical education research, rooted in equity-mindedness, is needed to evaluate if and how outcomes for standardized tests (USMLE Step exams, In-service exams, Licensing Board exams) vary across groups so those differences are not overlooked, and to ascertain the predictive validity of these tests on established desired outcomes in order to delineate appropriate use of standardized tests in the Urology Match (Figure 3).^{31,47}

Figure 3. Key Definitions as defined by the Association of American Colleges & Universities and the Center for Urban Education

So we return to this: how does *our* current value system permit or hamper the desired outcome of diversifying our workforce?

In conclusion, in order to achieve our exemplar Urology Match outcome - an inclusive diverse urology workforce – we must expand what we include *in the norm*, which will in turn translate into increased value ascribed to a larger cohort of applicants, leading to the establishment of structures that accommodate this varied group, which ultimately elevates standards for not some but *all* stakeholders. We are all *active* players in this process of diversifying the urological workforce. The question facing organized urology is, “will we do our part to examine our systems and make the necessary, albeit difficult, changes required to obtain the desired outcome we profess?” Our answer to this question will shed light on the strength of our desire for diversity in our workforce.

“Not everything that is faced can be changed, but nothing can be changed
until it is faced.”

-James Baldwin

REFERENCES

1. United States Census Bureau. Accessed January 17, 2021. <https://data.census.gov/cedsci/table?q=United States&g=0100000US&tid=ACSDP1Y2017.DP05&tp=false&hidePreview=true>
2. American Urological Association. The State of the Urology Workforce and Practice in the United States. Published online 2019:5. <https://www.auanet.org/common/pdf/research/census/State-Urology-Workforce-Practice-US.pdf>.
3. Association AU. Urologists in training, residents and fellows in the United States. 2019;(June). https://www.auanet.org/common/pdf/research/census/2019_Resident_and_Fellow_Census_Book.pdf
4. Underrepresented in Medicine Definition | AAMC. Accessed January 17, 2021. <https://www.aamc.org/what-we-do/diversity-inclusion/underrepresented-in-medicine>
5. Cooper LA, Roter DL, Johnson RL, Ford DE, Steinwachs DM, Powe NR. Patient-centered communication, ratings of care, and concordance of patient and physician race. *Ann Intern Med*. 2003;139(11):907-915. doi:10.7326/0003-4819-139-11-200312020-00009
6. Cooper-Patrick L, Gallo JJ, Gonzales JJ, et al. Race, gender, and partnership in the patient-physician relationship. *JAMA*. 1999;282(6):583-589. doi:10.1001/jama.282.6.583
7. M K. The role of black and Hispanic physicians in providing health care for underserved populations. *N Engl J Med*. 334:1305-1310.
8. Does S, Ellemers N, Dovidio JF, et al. Implications of research staff demographics for psychological science. *Am Psychol*. 2018;73(5):639-650. doi:10.1037/amp0000199
9. Bucklin BA, Valley M, Welch C, Tran ZV, Lowenstein SR. Predictors of early faculty attrition at one Academic Medical Center. *BMC Med Educ*.

2014;14(1). doi:10.1186/1472-6920-14-27

10. Lowenstein SR, Fernandez G, Crane LA. Medical school faculty discontent: Prevalence and predictors of intent to leave academic careers. *BMC Med Educ.* 2007;7. doi:10.1186/1472-6920-7-37
11. Wong RL, Sullivan MC, Yeo HL, Roman SA, Bell RH, Sosa JA. Race and surgical residency: Results from a national survey of 4339 US general surgery residents. *Ann Surg.* 2013;257(4):782-787. doi:10.1097/SLA.0b013e318269d2d0
12. Pololi LH, Krupat E, Civian JT, Ash AS, Brennan RT. Why are a quarter of faculty considering leaving academic medicine? A study of their perceptions of institutional culture and intentions to leave at 26 representative U.S. medical schools. *Acad Med.* 2012;87(7):859-869. doi:10.1097/ACM.0b013e3182582b18
13. Pololi L, Cooper LA, Carr P. Race, disadvantage and faculty experiences in academic medicine. *J Gen Intern Med.* 2010;25(12):1363-1369. doi:10.1007/s11606-010-1478-7
14. Grubbs V. Diversity, Equity, and Inclusion That Matter. *N Engl J Med.* 2020;383(4):e25. doi:10.1056/nejmpv2022639
15. Blackstock U. Why black doctors like me are leaving academic medicine - STAT. Stat news. Accessed January 17, 2021. <https://www.statnews.com/2020/01/16/black-doctors-leaving-faculty-positions-academic-medical-centers/>
16. Cropsey KL, Masho SW, Shiang R, Sikka V, Kornstein SG, Hampton CL. Why do faculty leave? Reasons for attrition of women and minority faculty from a medical school: Four-year results. *J Women's Heal.* 2008;17(7):1111-1118. doi:10.1089/jwh.2007.0582
17. Saha S, Guiton G, Wimmers PF, Wilkerson LA. Student body racial and ethnic composition and diversity-related outcomes in US medical schools. *JAMA - J Am Med Assoc.* 2008;300(10):1135-1145. doi:10.1001/jama.300.10.1135
18. Why Diverse Teams Are Smarter. Accessed February 2, 2021. <https://hbr.org/2016/11/why-diverse-teams-are-smarter>

19. Diversity presentation by Scott Page. Accessed February 2, 2021. <https://www.skidmore.edu/diversity/init1/scott-page.php>
20. Is there a payoff from top-team diversity? | McKinsey. Accessed February 2, 2021. <https://www.mckinsey.com/business-functions/organization/our-insights/is-there-a-payoff-from-top-team-diversity#>
21. ACGME Data Resource Book. Accessed February 2, 2021. <https://www.acgme.org/About-Us/Publications-and-Resources/Graduate-Medical-Education-Data-Resource-Book>
22. Halpern JA, Lee UJ, Wolff EM, et al. Women in Urology Residency, 1978-2013: A Critical Look at Gender Representation in Our Specialty. *Urology*. 2016;92:20-25. doi:10.1016/j.urology.2015.12.092
23. Grimsby GM, Wolter CE. The journey of women in urology: The perspective of a female urology resident. *Urology*. 2013;81(1):3-6. doi:10.1016/j.urology.2012.07.050
24. Society of Academic Urologists | 2021 Residency Match Changes. Accessed February 2, 2021. <https://sauweb.org/match-program/changes.aspx>
25. Urology and Specialty Matches - American Urological Association. Accessed February 14, 2021. <https://www.auanet.org/education/auauniversity/for-residents/urology-and-specialty-matches>
26. Weissbart SJ, Stock JA, Wein AJ. Program Directors' Criteria for Selection into Urology Residency. *Urology*. 2015;85(4):731-736. doi:10.1016/j.urology.2014.12.041
27. Pak JS, Pagano MJ, Cooper KL, Mckiernan JM, Badalato GM. Education Prevalence of Research Publication Misrepresentation Among Urology Residency Applicants and Its Effect on Match Success. Published online 2016. doi:10.1016/j.urology.2016.08.055
28. Ellis J, Otugo O, Landry A, Landry A. Interviewed while Black. *N Engl J Med*. 2020;383(25):2401-2404. doi:10.1056/nejmp2023999
29. Wong D, Kuprasertkul A, Khouri RK, Ganesan V, Kenigsberg AP, Lemack GE. Assessing the Female and Underrepresented Minority Medical Student

- Experience in the Urology Match: Where Do We Fall Short? *Urology*. 2021;147:57-63. doi:10.1016/j.urology.2020.08.076
30. Ku MC, Li YE, Prober C, Valantine H, Girod SC. Decisions, decisions: How program diversity influences residency program choice. *J Am Coll Surg*. 2011;213(2):294-305. doi:10.1016/j.jamcollsurg.2011.04.026
 31. Association of American Colleges & Universities. Board Statement on Diversity, Equity, and Inclusive Excellence. Published 2013. Accessed March 17, 2021. <https://www.aacu.org/about/statements/2013/diversity>
 32. Thompson RH, Lohse CM, Husmann DA, Leibovich BC, Gettman MT. Predictors of a Successful Urology Resident Using Medical Student Application Materials. *Urology*. 2017;108:22-28. doi:10.1016/j.urology.2017.06.046
 33. Jones RF, Thomae-Forgues M. Validity of the MCAT in predicting performance in the first two years of medical school. *J Med Educ*. 1984;59(6):455-464. doi:10.1097/00001888-198406000-00001
 34. Leger K. Characteristics of MCAT examinees: 1996. Published online 1997.
 35. Huff KL, Koenig JA, Treptau MM, Sircei SG. Validity of MCAT scores for predicting clerkship performance of medical students grouped by sex and Ethnicity. *Acad Med*. 1999;74(10):s41-s44. doi:10.1097/00001888-199910000-00035
 36. Veloski JJ, Callahan CA, Xu G, Hojat M, Nash DB. Prediction of students' performances on licensing examinations using age, race, sex, undergraduate GPAs, and MCAT scores. *Acad Med*. 2000;75(10 SUPPL.). doi:10.1097/00001888-200010001-00009
 37. Boatright D, Ross D, O'Connor P, Moore E, Nunez-Smith M. Racial disparities in medical student membership in the alpha omega alpha honor society. *JAMA Intern Med*. 2017;177(5):659-665. doi:10.1001/jamainternmed.2016.9623
 38. Glaser K, Hojat M, Veloski JJ, Blacklow RS, Goepp CE. Science, Verbal, or Quantitative Skills: Which is the Most Important Predictor of Physician Competence? *Educ Psychol Meas*. 1992;52(2):395-406. doi:10.1177/0013164492052002015

39. Mitchell K, Haynes R, Koenig J. Assessing the validity of the updated medical college admission test. *Acad Med*. 1994;69(5):394-401. doi:10.1097/00001888-199405000-00017
40. Case S SDBD. Performance of men and women on NBME Part I and Part II: the more things change.... *Acad Med*. 68(suppl):S25-S27.
41. Wiley A, Koenig JA. The validity of the medical college admission test for predicting performance in the first two years of medical school. *Acad Med*. 1996;71(10):s83-s85. doi:10.1097/00001888-199610000-00052
42. Koenig JA, Sireci SG, Wiley A. Evaluating the predictive validity of MCAT scores across diverse applicant groups. *Acad Med*. 1998;73(10):1095-1106. doi:10.1097/00001888-199810000-00021
43. Julian ER. Validity of the medical college admission test for predicting medical school performance. *Acad Med*. 2005;80(10):910-917. doi:10.1097/00001888-200510000-00010
44. Dawson B, Iwamoto CK, Ross LP, Nungester RJ, Swanson DB, Volle RL. Performance on the National Board of Medical Examiners Part I Examination by Men and Women of Different Race and Ethnicity. *JAMA J Am Med Assoc*. 1994;272(9):674-679. doi:10.1001/jama.1994.03520090038016
45. Flowers K. Characteristics of MCAT examinees: 1994–1995. Published online 1996.
46. Chisholm LP, Drolet BC. USMLE Step 1 Scoring Changes and the Urology Residency Application Process: Program Directors' Perspectives. *Urology*. 2020;145:79-82. doi:10.1016/j.urology.2020.08.033
47. Equity Mindedness | Center for Urban Education | USC. Accessed March 24, 2021. <https://cue.usc.edu/about/equity/equity-mindedness/>

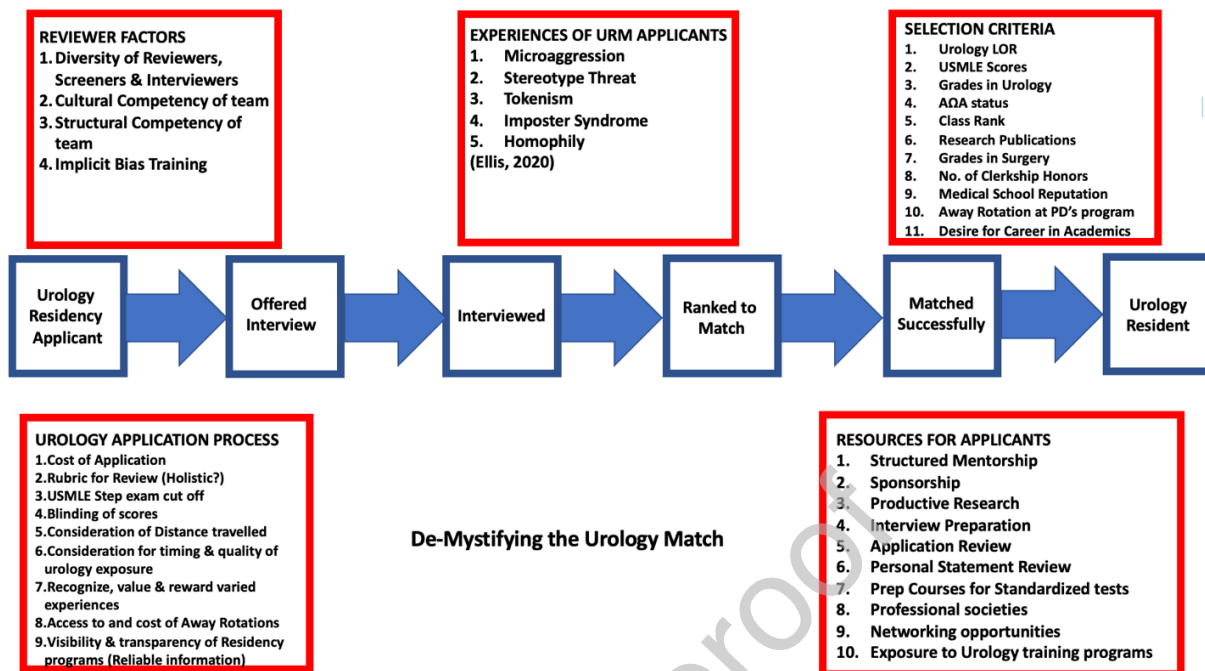


Figure 1. Factors that impact the Urology Match Process.



Figure 2a. If y-axis represents value of a urology applicant then the X-axis represents test score. Figure 2b. The 2 curves represent two factors such as test scores and research

Equity-Mindedness: “the perspective or mode of thinking exhibited by practitioners who call attention to patterns or inequity in student outcomes. These practitioners are willing to take personal and institutional responsibility for the success of their students, and critically reassess their own practices. It also requires that practitioners are race-conscious and aware of the social and historical context of exclusionary practices in American Higher Education.”

-Center for Urban Education

Inclusive Excellence: “define student success not exclusively as degree attainment, but also as the achievement of the primary goals of liberal education: broad and in-depth knowledge, the capacity to integrate and apply learning to new situations, and the intellectual creativity and resilience to face challenges.

We must be vigilant to ensure not only that all students have access to such an education, but also that they have an equitable opportunity to demonstrate what they have learned. A high-quality education must be documented by robust assessment. At the institutional level, we need to provide effective evidence-based pedagogies and inclusive program designs. We must build on students' talents and capacities—focusing on the assets that all students bring to college rather than on perceived deficits.”

-Association of American Colleges & Universities: Board Statement on Diversity, Equity, and Inclusive Excellence

Figure 3. Key Definitions as defined by the Association of American Colleges & Universities and the Center for Urban Education

	Urology Resident (%)	Urology Fellow (%)	Urology Practicing Physician (%)	US Population (%)
Asian	21.4	28.9	11.7	5.6
Black/African American	3.1	6.2	2.0	12.4
Latinx/Hispanic	5.7	5.2	3.9	18.4
White	67.5	59.8	84.7	60.0

Table 1. 2019 American Urological Association (AUA) Census Data and United States 2019 Census Data

Table 2. Definitions and Examples of Terms involving the Urology Match Process

Term	Definition	Example in the Urology Match	Potential Change in Residency Recruitment and Selection
Structures*	The <i>who</i> , <i>what</i> , <i>when</i> , and <i>where</i> of decision making	Although 99% of medical schools had mandatory urology clerkships in 1956, by 2013, only 5% of medical schools offered a mandatory urology rotation. That number is likely lower today.	<p>-Medical schools could consider introducing students to the wide array of specialties as early as at the start of medical school so all students have the same awareness of available paths and their associated resources.</p> <p>-If mandatory clerkships for less visible specialties are no longer a viable option, in addition to our current opt-in model for urology exposure, where the medical student must choose to join a urology interest group or to enroll in a urology elective, medical schools may explore other mandatory but lower time commitment methods of exposure such as holding career panels for, not some, but all specialties, as part of medical school orientation or preclinical curriculum.</p> <p>-Urology professional societies and individual urology training programs could consider engaging pre-med undergraduate and K12 student organizations with intentional involvement of URiM students.</p>

			-Urology clinical educators can play a more active role in the preclinical years of UME training, including joint programming between urology interest groups and student groups like ANAMS, LMSA and SNMA.
Policies*	The <i>written</i> <i>how</i> of decision making	Absence of policies regarding access to urology clerkships and research for medical students who come from institutions with no home urology residency training program.	-Urology professional societies and individual urology training programs could consider creating urology rotations and structured research opportunities for all medical students from schools with no urology residency programs. This ensures that one's medical school does not define their access to the field of urology.
Practices*	The <i>unwritten</i> <i>how</i> of decision making	Increasingly, research productivity has become an unspoken requirement of the urology match.	<p>- Urology professional societies and individual urology training programs could consider expanding funding mechanisms for medical student urology research, including funding for dedicated research year experience.</p> <p>-Consider identifying a faculty member to be assigned to each medical student engaged in urology research to (i) ensure feasible research goals are set and met and (ii) to foster mentorship and sponsorship during the urology match.</p>

Norms*	The <i>unwritten</i> how it should be of decision making		-Recognizing that not every urologist intends to pursue a career in academic medicine and not every urology training program has robust research infrastructure, residency programs with less emphasis on research could clearly communicate to applicants that a lack of research at the time of application does not exclude candidacy. This could accommodate applicants who discover urology later in their clinical years and prevent the need for a research year and its associated prohibitive costs.
Values*	The <i>why</i> of decision making	The use of a USMLE Step 1 score (and potentially Step 2 CK score in the near future) as a cut off for offering interviews to applicants thereby signaling that a higher score represents higher value.	<p>-If the graduate medical community would like to use a standardized test score as a cut-off, rigorous evaluation should be conducted to determine if and how these scores vary across student groups and to determine exactly what successful trainee/patient outcome this test score predicts for.</p> <p>- Standardize and mandate transparency of urology applicant requirements and urology training program characteristics so applicants can make informed targeted realistic choices about where they apply.</p> <p>-Once full disclosure of the expectations of urology residency programs has been established, consider limiting the number of programs an applicant may apply to, in order to reduce the burden of application review by urology</p>

			program directors and to enable the use of a holistic review process, which takes into account and values non-numeric aspects of the applicant's dossier. This also has the benefit of reducing cost for all applicants.
Outcomes	The product of all of the above	Persistently low representation of URiM in the Urology Match	<div>-Urology professional societies and individual urology training programs could consider clearly defining which outcomes are markers of success for a urologist in training, post-training, related to self-improvement, performance and patient outcomes.</div> <div>-Once desired outcomes are established, factors predictive of the desired outcomes may be defined.</div> <div>-Establish a system of measurement and quality improvement of the proposed outcome.</div>
*Dr Camara Jones provides these definitions at a Roundtable on Black Men and Black Women in Science, Engineering and Medicine.			
ANAMS=Association of Native American Medical Students; GME=Graduate Medical Education; LMSA=Latino Medical Student Association (LMSA); SNMA=Student National Medical Association; UME=Undergraduate Medical Education; URiM=Under-Represented in Medicine			