

**What traits do urology programs value in elective students? A survey of Canadian selection committee members**Sepehr Niakani<sup>1</sup>, David-Dan Nguyen<sup>2,3</sup>, Mélanie Aubé-Peterkin<sup>4</sup><sup>1</sup>Faculty of Medicine and Health Sciences, McGill University, Montreal, QC, Canada; <sup>2</sup>Division of Urology, Department of Surgery, University of Toronto, Toronto, ON, Canada; <sup>3</sup>Institute of Health Policy, Management and Evaluation, Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada; <sup>4</sup>Division of Urology, Department of Surgery, McGill University Health Center, Montreal, QC, Canada**Cite as:** Niakani S, Nguyen D-D, Aubé-Peterkin M. What traits do urology programs value in elective students? A survey of Canadian selection committee members. *Can Urol Assoc J* 2025 October 27; Epub ahead of print. <http://dx.doi.org/10.5489/cuaj.9303>

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**ABSTRACT****Introduction:** Electives strongly influence residency selection. While the CanMEDS framework outlines core competencies, the specific traits most valued by urology programs during electives remain unclear.**Methods:** We surveyed selection committee members in Canadian urology residency programs. Using the CanMEDS framework, we developed 21 competencies and designed a best-worst scaling survey where respondents selected the most and least important items from 21 question sets. A hierarchical Bayes model was used to calculate probability scores to rank each item and CanMEDS role. Scores reflect the likelihood of being chosen as most important.**Results:** Thirteen respondents completed the survey (34% response rate). Traits related to professionalism, initiative, and reliability ranked highest. Specifically, “Demonstrating appropriate behavior through honesty, integrity, punctuality, and respect” (12.4% [95% confidence interval (CI) 11.9, 13.0]) and “Seeking out responsibilities by helping with rounds, doing consults, and organizing patient handover and discharge” (9.7% [8.5, 10.9]) were top-ranked. In contrast, “Incorporating evidence on health disparities in urology when presenting cases or research findings” (0.1% [0.0, 0.2]) and “Discussing barriers to care, such as cost and access, and proposing solutions during rounds when appropriate” (0.0% [0.0, 0.1]) were lowest-ranked. Among CanMEDS roles, Professional (9.9%) and Leader (8.1%) ranked highest, while Health Advocate (0.2%) and Scholar (1.8%) ranked lowest.**KEY MESSAGES**

- Professionalism, initiative, and reliability are the most valued traits in urology electives.
- Health advocacy and research engagement are perceived as less important.
- Programs prioritize traits that support daily clinical care.
- Short electives may limit chances to show advocacy or scholarly work.

**Conclusions:** Canadian urology programs prioritize professionalism, initiative, and reliability during electives. In contrast, scholarly and advocacy competencies are viewed as less critical, possibly due to the short duration and clinical focus of electives. Our findings can guide students and programs in aligning expectations during urology electives.

## INTRODUCTION

Clerkship marks a critical period for medical students during which they can gain a better understanding of specialties and acquire important skills. Simultaneously, it provides students with the opportunity to complete electives in specialties of their choosing. Electives are educational but also play an important role in resident matching.

A survey of Canadian urology program directors and committee members revealed that performance during an elective at the respondent's institution is the most important selection criterion for choosing prospective trainees.<sup>1</sup> Similar studies across other specialties have shown comparable results, underscoring the importance of excelling during an elective at one's desired institution.<sup>2-4</sup> While the CanMEDS<sup>5</sup> and the United States Accreditation Council for Graduate Medical Education (ACGME)<sup>6</sup> frameworks identify and ensure the achievement of core competencies, what constitutes strong performance during an elective is often undefined. There is limited empirical evidence on which competencies, traits, and skills are most valued by programs when selecting residents. Most students instead rely on an informal or hidden curriculum (i.e., unwritten expectations and norms) which may perpetuate inequities in how performance is perceived and evaluated.

Accordingly, the current study aims to characterize the desirable attributes and skills of medical students as assessed by the selection committee members. To that end, we surveyed program directors, staff urologists, and residents involved in selection committees of Canadian urology programs using the Best-Worst Scaling (BWS) method. We aimed to quantify the relative importance of select traits and skills developed from the CanMEDS framework<sup>5</sup>. To our knowledge, this is the first study to systematically quantify how individual competencies are valued in urology electives.

## METHODS

### Survey development

Using the CanMEDS framework<sup>5</sup>, we generated a list of items representing traits and skills deemed important for students completing urology electives. The items were developed in both English and French to ensure accessibility for participants across Canada, including those affiliated with French-speaking institutions. Three items were developed per each CanMEDS role (Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional), resulting in 21 total survey items. The items were reviewed with feedback from experts in the field to improve clarity, relevance, and wording. The approval of the Research Ethics Board at McGill University was obtained.

### Survey design

We constructed our survey using the Lighthouse Studio Software (version 9.15, Sawtooth Software Inc., Provo, UT, USA). We employed an Object Case BWS method, where respondents

were tasked with selecting the most important and least important options from several sets of questions.<sup>7</sup> To design the survey, a balanced incomplete block design (BIBD) was used to ensure that each item appeared a consistent number of times across the survey, that all item pairs co-occurred equally, and that each item occupied different positions within the question sets in a balanced manner to minimize positional bias.<sup>7-10</sup> A BIBD consists of a finite set of survey options ( $v$ ), multiple sets of survey questions ( $b$ ), and a fixed number of options per question ( $k$ ). Each option appears ( $r$ ) times across the sets of questions, and options co-occur with each other ( $\lambda$ ) times.<sup>8</sup> These parameters are governed by the following equations, which satisfy the conditions for a BIBD:  $bk = vr$  and  $\lambda(v - 1) = r(k - 1)$ .<sup>7,8</sup> In our study, we had 21 total options ( $v$ ) – i.e., traits and skills, 21 questions ( $b$ ), 5 options per question ( $k$ ), and each option was repeated 5 times ( $r$ ) and paired once ( $\lambda$ ) the survey.<sup>8,9</sup> A sample question set is shown in Figure 1.

### Survey dissemination

Once the survey was constructed and finalized, it was pilot-tested by the authors to evaluate its ease of use and completion time. In February 2025, the survey link was distributed via e-mail to Canadian urology program assistants, who were asked to forward it to their respective program directors and residency selection committee members. Two reminder emails were subsequently sent. After the second reminder, no substantial increase in responses was observed, and the survey was closed in March following a reasonable period to allow for additional participation.

### Data analysis

A counting analysis was first performed to determine the total number of times each item was presented to respondents, as well as the number of times it was selected as best and worst. Only traits selected as most important ('best') or least important ('worst') were used in the scoring. That is, intermediate positions were not scored, in line with BWS methodology which focuses on the relative strength of preferences. The difference between best and worst counts was calculated to obtain a final best-minus-worst score.<sup>8,11</sup> A positive score indicates that an item was selected more frequently as most important than least important, and a negative score indicates the opposite.<sup>11</sup> Although this method offers a simple summary of group-level preferences for each item, it does not adjust for variation in item exposure or account for respondent-level differences.<sup>12</sup> We used a Hierarchical Bayes (HB) analysis, which generates individual-level probability scores that are robust to imbalances in experimental design.<sup>12</sup> We generated an overall rank list using HB probability scores and their 95% credible intervals (CI).<sup>1</sup> The scores were scaled to sum to 100 across all items and represent the likelihood of the item being chosen as the most important. That is, an item with a score of 10 is twice as preferred as an item with a score of 5. Items were further grouped into their corresponding CanMEDS roles and ranked according to their average HB probability scores to quantify the relative emphasis of each role.

All data are listed as probability scores in percentages along with 95% credible intervals in brackets unless otherwise stated. Data analyses were performed via the Lighthouse Studio Software (version 9.15, Sawtooth Software Inc., Provo, UT, USA).

## RESULTS

### Respondent characteristics

The survey was distributed to all 14 urology programs across Canada. A total of 38 respondents attempted the survey, of whom 13 (34%) provided complete responses and were included in the

final analysis; partial responses were excluded. The 13 respondents included for analysis comprised eight urology program directors, four academic staff urologists, and one resident. The respondents took on average 20 minutes (standard deviation: 21 minutes; range: 6 to 84 minutes) to complete the survey.

### Competency ranking

Each of the 21 survey items was shown a total of 65 times across all respondents – i.e., each respondent encountered the same item 5 times across the 21 survey questions. The likelihood of being perceived as most important for each item – i.e., HB probability score – is demonstrated in Table 1, with the top three being “Demonstrating appropriate behaviour through honesty, integrity, punctuality, and respect” (12.4% [11.9, 13.0] – i.e., 12.4% likelihood of being selected as most important), “Seeking out responsibilities by helping with rounds, doing consults, and organizing patient hand-over and discharge” (9.7% [8.5, 10.9]), and “Exhibiting reliability and independence in performing clinical duties (e.g., consults, clinics, etc.) to support the team” (9.6% [7.9, 11.3]). In contrast, “Effective presentation skills during journal clubs and grand rounds to communicate research findings” (0.3% [0.0, 0.7]), “Incorporating evidence on health disparities in urology when presenting cases or research findings” (0.1% [0.0, 0.2]), and “Discussing barriers to care, such as cost and access, and proposing solutions during rounds when appropriate” (0.0% [0.0, 0.1]) were ranked the lowest. The credible intervals around the scores were generally narrow, indicating a moderate level of agreement among respondents.

### Perceived importance of CanMEDS roles

In terms of CanMEDS roles, Professional and Leader were ranked the highest (9.9% [8.9, 10.8] and 8.1% [7.2, 9.1], respectively; Table 2). These roles included items that consistently ranked highly in Table 1, suggesting a shared emphasis among respondents on reliability, initiative, and professionalism. In contrast, Scholar and Health Advocate received the lowest scores (1.8% [1.1, 2.5] and 0.2% [0.0, 0.3], respectively). Those roles with the lowest scores had relatively narrow credible intervals, indicating a high level of consensus among respondents about their limited importance.

## DISCUSSION

Despite the known importance of completing electives by medical students in their preferred specialty<sup>1-4</sup>, the competencies and traits that are most valued by programs are often assumed and not explicitly stated. Accordingly, the aim of the current study was to interrogate the relative importance of select competencies based on the CanMEDS framework<sup>5</sup> as rated by the selection committee members in Canadian urology programs. We demonstrate that professionalism, initiative, and reliability are consistently prioritized over research engagement and health advocacy during urology electives.

### Competency ranking

To our knowledge, our study is the first to quantify the relative importance of traits and skills for medical students undertaking electives in urology or otherwise. Overall, traits pertaining to professionalism, taking initiative, reliability, and teamwork were ranked highest (Table 1). The lowest rankings belonged to traits associated with advocacy and scholarly activities. There was relatively more agreement between the respondents regarding the low scores of advocacy and scholarly competencies. These findings may reflect the limited duration of electives, which can constrain students' ability to demonstrate competencies such as research engagement or health

advocacy. Similarly, Drum *et al.* identified professionalism, leadership, and teamwork as key values in resident selection in internal medicine.<sup>13</sup> Those values were more predictive of favourable applicant rankings than standardized licensing exam scores.<sup>13</sup> Additionally, a recent study by Wu *et al.* illustrated that urology program directors in the United States valued professionalism more than research output or community involvement.<sup>14</sup> Furthermore, qualities related to professionalism, initiative, and reliability may be perceived as more intrinsic and less amenable to formal teaching, while advocacy and scholarly traits can be learned over time. Intuitively, candidates with demonstrated professionalism, leadership, and collaboration might be less likely to cause interpersonal conflict, making them more appealing to programs. This interpretation is in part supported by literature suggesting that lapses in professionalism among medical students and doctors were often the product of disruptive behaviour or communication failures<sup>15</sup>, and that high emotional intelligence and effective communication improves team dynamics in healthcare.<sup>16</sup> Therefore, traits such as professionalism, collaboration, and initiative may be essential for effective team functioning, which likely explains why they are especially sought after by residency programs

To better understand how these broader patterns manifested at the item level, we examined the rankings and credible intervals of individual competencies. The first item “Demonstrating appropriate behaviour through honesty, integrity, punctuality, and respect” had the highest overall ranking (12.4% [11.9, 13.0]) and a narrow credible interval (1.14), suggesting a near-universal consensus regarding its importance amongst the respondents compared to the other top traits. Also, “Basic surgical proficiency (e.g., suturing, catheterization, etc.)” received a moderate importance score (4.2% [2.4, 6.1]), ranking below several interpersonal and initiative-based competencies. The limited procedural autonomy granted to clerks in addition to the highly technical nature of urological procedures (e.g., robotic-assisted surgeries, endoscopic techniques) can in part explain that result. Moreover, this finding supports the notion that surgical proficiency is considered a teachable skill, whereas traits like professionalism and initiative are viewed as more intrinsic and difficult to instill; therefore, they carry greater evaluative weight during electives. Prior research also suggests that limited operative autonomy and the technical complexity of procedures reduce opportunities for students to demonstrate surgical proficiency during electives. For example, a study comparing performance in surgical rotations showed that clinical and academic competencies are favoured and prioritized over technical skills.<sup>17</sup> Moreover, “Preparing thoroughly for clinical duties by learning about the patients and procedures in advance” ranked higher than surgical proficiency (8.4% [6.5, 10.2]). This result may suggest that students who take initiative by reading about cases can be better prepared to contribute meaningfully in the operating room through, for example, aiding in the completion of relevant documentation (e.g., operative notes, postoperative orders, admission orders) and assisting as appropriate. In doing so, they can demonstrate engagement and value to the team, even with limited opportunities for hands-on participation.

### CanMEDS roles ranking

The overall CanMEDS ranking is illustrated in Table 2. Similar to the findings above, the Professional and Leader were the top two roles with relatively narrow credible intervals, highlighting a preference for students who demonstrate initiative and take ownership of clinical responsibilities. Both Collaborator and Medical Expert received comparable scores indicating similar yet important preferences for building rapport, resolving conflicts, medical knowledge, and surgical acumen. The communicator domain, however, yielded mixed results. “Effective

documentation of clinical encounters (e.g., consults, progress notes, discharge summaries) and their presentation to the medical team” was scored moderately (4.5% [2.6, 6.3]), whereas “Efficiently managing the flow of patient encounters (e.g., interviewing, obtaining consent, collecting collateral information)” and “Interpreting and communicating the results of diagnostic and screening tests” were scored much lower (1.9% [0.7, 3.1] and 0.9% [0.5, 1.3], respectively). This result may reflect the limited scope for clerks to participate in nuanced patient conversations or logical tasks that are often handled by residents and staff. Nevertheless, the latter two may present as areas of focus for students who wish to elevate their performance and contribute to the team at a more meaningful level. Lastly, Scholar and Health Advocate were the lowest-ranked roles and had relatively narrow credible intervals. This finding suggests that there was strong agreement between the respondents that competencies related to those roles are not prioritized during electives. This result is supported by previous survey findings from Canadian urology programs, where research-related components of the residency application, such as publications, presentations, and graduate degrees, were ranked lower in importance than clinical performance.<sup>1</sup> As discussed above, limited elective duration and a lack of authority for clerks may not allow students to engage deeply with health advocacy or academic scholarship in a short-term placement. Similar trends were observed in other health disciplines, where research involvement and advocacy-related activities were consistently rated lower by program directors.<sup>15</sup>

### Strengths and limitations

This study is the first to quantify the relative importance of specific competencies in medical students undergoing urology electives using a validated and structured framework like CanMEDS.<sup>5</sup> The BWS methodology and HB estimation modelling allowed for robust and nuanced estimation of item importance at the individual level while minimizing respondent fatigue. Additionally, the survey was developed in both English and French and distributed nationwide to enable the inclusion of both anglophone and francophone programs.

Despite the mentioned strengths, our study has several limitations. Our sample size was small with 13 complete responses, which limits the generalizability of our findings. Although 38 individuals accessed the survey yielding a 34% response rate, it is difficult to determine how many individuals were invited, as distribution was handled indirectly via program assistants and directors. The relatively low response rate suggests that the survey's complexity or length may have hindered participation. This possibility reflects a potential source of selection bias, as individuals who are more engaged with medical education or supportive of structured evaluation methods may have been more likely to complete the survey, potentially influencing the distribution of responses. Nevertheless, we believe that the risk of systematic bias (i.e., non-response bias) was low in our study. For instance, it would be unlikely for non-responders to have placed significantly greater evaluative weight on research and advocacy competencies compared to those who completed the survey.

Furthermore, the respondent pool did not include a balanced distribution of selection committee members or programs, which may further limit the generalizability of findings, as the preferences of program directors, staff urologists, and residents might differ. We also did not collect parameters such as geographic region, gender, years in practice, or equity-deserving characteristics, which limits our ability to perform subgroup analyses. Future studies with larger samples could explore whether perceived trait importance varies across those characteristics.

While BWS reduces central tendency and agreement biases, responses may still be influenced by social desirability, particularly for traits like professionalism, which are widely

endorsed in academic culture. This tendency could lead to respondents selecting traits that are perceived as institutionally valued, rather than those they personally prioritize. Moreover, BWS does not distinguish between valuing the presence of a trait versus avoiding its absence (i.e., the 'red flag' phenomenon). For example, the high ranking of professionalism could stem from either its strong positive valuation or from concerns over its absence. Future qualitative studies could help clarify such nuances.

Finally, the cross-sectional design may not capture evolving preferences in medical education. A longitudinal approach could explore whether selection priorities change as curricula or training needs evolve.

## CONCLUSIONS

Together, our findings suggest that Canadian urology programs place greater value on traits related to professionalism, initiative, reliability, and collaboration during elective rotations. In contrast, competencies associated with scholarly activity and health advocacy are perceived as less important, likely due to short elective duration and limited opportunity for meaningful engagement in these domains. By shedding light on these implicit evaluative preferences, our study offers medical students clearer guidance on how to prepare for and navigate electives not only in urology, but across other specialties. Importantly, these insights may also help programs move toward a more transparent and structured approach to student assessment, thereby demystifying elements of the hidden curriculum. Future studies using qualitative methods such as focus groups or interviews with selection committee members could contextualize why certain traits were prioritized over others. Additionally, similar quantitative studies in other specialties may elucidate whether the observed results are unique to urology or broadly applicable across other specialties.

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## FIGURES AND TABLES

**Figure 1.** Sample BWS question set. Each question contained 5 items, and respondents were asked to choose the best and the worst item. The Lighthouse Studio software automatically generated multiple versions of the survey to ensure a balanced item presentation across respondents. Each respondent completed 21 questions, with each question displaying 5 of the 21 total items, such that all items were shown an equal number of times to each respondent. While every respondent was exposed to all 21 items, the specific combinations and positions of items varied across question sets and respondents. This design ensured the conditions of a BIBD were satisfied, where not all possible item pairings were shown to each respondent, but each item appeared an equal number of times and in varied positions. This allowed for efficient estimation while minimizing the cognitive burden of comparing all possible item pairs.

Please select the most important and least important items in the question set below:

(1 of 21)

Most Important		Least Important
<input type="radio"/>	Effectively managing time by balancing clinical duties (e.g., preparing for rounds and timely completion of tasks)	<input type="radio"/>
<input type="radio"/>	Basic surgical proficiency (e.g., suturing, catheterization, etc.)	<input type="radio"/>
<input type="radio"/>	Effective presentation skills during journal clubs and grand rounds to communicate research findings	<input type="radio"/>
<input type="radio"/>	Advising patients on modifiable risk factors that impact their urological health and treatment outcomes	<input type="radio"/>
<input type="radio"/>	Interpreting and communicating the results of diagnostic and screening tests	<input type="radio"/>

Click the 'Next' button to continue...

<b>Table 1. Overall ranking of desirable traits and skills sorted by probability scores</b>		
<b>Traits and skills</b>	<b>HB probability score (%) [95% CI]</b>	<b>CanMEDS role</b>
Demonstrating appropriate behaviour through honesty, integrity, punctuality, and respect	12.4 [11.9, 13.0]	Professional
Seeking out responsibilities by helping with rounds, doing consults, and organizing patient handover and discharge	9.7 [8.5, 10.9]	Leader
Exhibiting reliability and independence in performing clinical duties (e.g., consults, clinics, etc.) to support the team	9.6 [7.9, 11.3]	Leader
Building positive relationships with the urology team to foster collaborative care	9.0 [7.3, 10.8]	Collaborator
Exhibiting self-awareness by recognizing personal limitations and seeking guidance	8.8 [6.6, 11]	Professional
Preparing thoroughly for clinical duties by learning about the patients and procedures in advance	8.4 [6.5, 10.2]	Professional
Resolving conflicts and differences in a respectful and collaborative manner	6.4 [4.4, 8.4]	Collaborator
Proficiency in history taking, performing physical exams, and proposing appropriate investigations relevant to urological conditions	6.3 [3.9, 8.8]	Medical Expert
Effectively managing time by balancing clinical duties (e.g., preparing for rounds and timely completion of tasks)	5.1 [3.2, 7.1]	Leader
Appropriate clinical and biomedical knowledge of urological conditions	4.9 [2.9, 6.9]	Medical Expert
Effective documentation of clinical encounters (e.g., consults, progress notes, discharge summaries) and their presentation to the medical team	4.5 [2.6, 6.3]	Communicator
Seeking regular feedback from supervisors and peers to identify areas of improvement	4.4 [2.3, 6.5]	Scholar

Basic surgical proficiency (e.g., suturing, catheterization, etc.)	4.2 [2.4, 6.1]	Medical Expert
Collaborating with allied healthcare professionals (e.g., social workers, dietitians) to meet patients' comprehensive needs	2.1 [0.1, 4.0]	Collaborator
Efficiently managing the flow of patient encounters (e.g., interviewing, obtaining consent, collecting collateral information)	1.9 [0.7, 3.1]	Communicator
Interpreting and communicating the results of diagnostic and screening tests	0.9 [0.5, 1.3]	Communicator
Engaging in urological research to further the understanding of the field	0.7 [0.1, 1.3]	Scholar
Advising patients on modifiable risk factors that impact their urological health and treatment outcomes	0.4 [0.0, 0.8]	Health Advocate
Effective presentation skills during journal clubs and grand rounds to communicate research findings	0.3 [0.0, 0.7]	Scholar
Incorporating evidence on health disparities in urology when presenting cases or research findings	0.1 [0.0, 0.2]	Health Advocate
Discussing barriers to care, such as cost and access, and proposing solutions during rounds when appropriate	0.0 [0.0, 0.1]	Health Advocate

CI: confidence interval.

CanMEDS role	HB probability score (%) [95% CI]
Professional	9.9 [8.9, 10.8]
Leader	8.1 [7.2, 9.1]
Collaborator	5.8 [4.7, 6.9]
Medical Expert	5.2 [3.9, 6.4]
Communicator	2.4 [1.7, 3.2]
Scholar	1.8 [1.1, 2.5]
Health Advocate	0.2 [0.0, 0.3]

CI: confidence interval.