

Royal College surgical objectives of urologic training: A survey of faculty members from Canadian training programs

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Abstract

Introduction: According to the Royal College objectives of training in urology, urologic surgical procedures are divided as category A, B and C. We wanted to determine the level of proficiency required and achieved by urology training faculty for Royal College accreditation.

Methods: We conducted a survey that was sent electronically to all Canadian urology training faculty. Questions focused on demographics (i.e., years of practice, geographic location, subspecialty, access to robotic surgery), operating room contact with residents, opinion on the level of proficiency required from a list of 54 surgical procedures, and whether their most recent graduates attained category A proficiency in these procedures.

Results: The response rate was 43.7% (95/217). Among respondents, 92.6% were full timers, 21.1% practiced urology for less than 5 years and 3.2% for more than 30 years. Responses from Quebec and Ontario formed 69.4% (34.7% each). Of the respondents, 37.9% were uro-oncologists and 75.7% reported having access to robotic surgery. Sixty percent of faculty members operate with R5 residents between 2 to 5 days per month. When respondents were asked which categories should be listed as category A, only 8 procedures received 100% agreement. Also, results varied significantly when analyzed by sub-specialty. For example, almost 50% or more of uro-oncologists believed that radical cystectomy, anterior pelvic exenteration and extended pelvic lymphadenectomy should not be category A. The following procedures had significant disagreement suggesting the need for re-classification: glanular hypospadias repair, boari flap, entero-vesical and vesicovaginal fistulae repair. Overall, more than 80% of faculty reported that their recent graduating residents had achieved category A proficiency, in a subset of procedures. However, more than 50% of all faculty either disagreed or were ambivalent that *all* of their graduating residents were Category A proficient in several procedures.

Conclusions: There is sufficient disagreement among Canadian urology faculty to suggest another revision of the current Royal College list of category A procedures.

Introduction

The Royal College of Physicians and Surgeons of Canada (RCPSC) is the administrative body that certifies specialists who complete an accredited residency program and pass the appropriate exam. In Urology, the determination of surgical competence is based on the the level of competence on a list of specified surgical procedures; the individual post-graduate trainee is assessed by the program director and the training committee. The RCPSC standards categorize the level of surgical proficiency required as category A, B, or C (Appendix A). Category A is the most important for certification as it requires a trainee to have demonstrated "competence to individually perform."¹ The current list of category A procedures contains certain procedures which may be inappropriate based on current urologic practice.

Recently, graduating trainees from Canadian urology programs were surveyed on their perception of category A competence. The authors found that 100% of respondents believed they were deficient in at least one of the category A procedures, while 54% believed they were deficient in at least 10.²

In the same context, we surveyed faculty members from all Canadian urology training programs to assess their perception of the appropriateness of category A RCPSC surgical objectives. We also wanted to determine their perception of their trainees' competence.

Methods

On October 24, 2012, we sent an 11-question survey via email (SurveyMonkey, Inc., Palo Alto, CA) to all Canadian urology training faculty (there are 12 training programs across Canada). They were given 8 weeks to respond (Appendix B).

The first part of the survey (questions 1-5) focused on demographics (years and type of practice, geographic location, sub-specialty and access to robotic surgery). The second part of the survey (questions 6-9) covered the number of post-graduate trainees (PGY4 and 5) in each program, as well as the number of operating days per month of the faculty to urology trainees, in particular exposure to PGY5 trainees. Finally, and based on RCPSC defined categories of surgical proficiency, the third part of the survey (questions 10-11) asked the faculty to examine a list of 54 surgical procedures and assign each procedure either category A, B, or C based on what they thought was most appropriate based on the current Canadian urologic practice environment. Respondents were asked to provide their opinion on a 5-point Likert scale as to whether all of their most recent graduating trainees have achieved category A proficiency. The 54 surgical procedures included all Royal Collage category A procedures plus 2 category B procedures (transrectal ultrasound [TRUS]-guided biopsy of the prostate and simple retropubic prostatectomy), 1 category C procedure (laparoscopic radical prostatectomy) and 3 unassigned procedures (transurethral vaporization or laser resection of the prostate, extended pelvic lymphadenectomy and laparoscopic partial nephrectomy).

Results

The overall response rate was 43.7% (95/217). The vast majority (92.6%) practice urology on a full-time basis (Table 1). Among respondents, most practiced urology between 5 to 30 years. Responses from Quebec and Ontario formed 69.4% of the cohort (34.7% each). The highest proportion of faculty members were uro-oncologists (37.9%) followed by pediatric urologist (14.7%).

The median operating days per month in which the faculty were exposed to any level urology trainee was 5 (range: 0-10), with 80% of respondents operating with any level trainee between 5 to 8 days per month. These values were lower when assessing the faculty exposure to PGY5 train-

Overall response rate	95/217 (43.7%)
Years of practice	
Less than 5 years	20 (21%)
5-14 years	36 (37.9%)
15-30 years	36 (37.9%)
More than 30 years	3 (3.2%)
Clinical practice	
Full time	88 (92.6%)
Part time	7 (7.4%)
Geographic location	
West (BC, AB, SK, MB)	23 (24.3%)
Ontario	33 (34.7%)
Quebec	33 (34.7%)
East (Maritimes)	6 (6.3%)
Subspecialty area	
Urologic oncology	36 (37.9%)
Pediatric urology	14 (14.7%)
Female urology, voiding dysfunction and BPH	13 (13.7%)
Endourology, stone disease	13 (13.7%)
Renal transplantation	8 (8.4%)
Andrology, infertility	3 (3.2%)
General urology	8 (8.4%)
Access to robotic surgery	
Yes	72 (75.7%)
No	23 (24.3%)

BC: British Columbia; AB: Alberta; SK: Saskatchewan; MB: Manitoba; BPH: benign prostatic hyperplasia.

ees specifically, where the median days of exposure was 3 (range: 0-10), with 60% of respondents operating with PGY5 trainees between 2 to 5 days per month.

When analyzing the opinion of respondents as to what should be listed as a category A procedure (Table 2), only 8 basic procedures had 100% agreement, while 18 procedures had more than 80% agreement. Although TRUS-guided prostatic biopsy and simple retropubic prostatectomy are classified as category B procedures, more than half of the respondents (55.8% and 52.6%, respectively) felt that they should be category A.

On the other hand, the faculty reported that several procedures *should not* be category A (Table 3). For example, at

100% Agreement	> 80% Agreement	
1. Cystoscopy	1. Open RP	10. Manipulation of bladder calculi including litholopaxy
2. Ureteric catheterization	2. Open RN	11. Repair of testicular torsion
3. Transurethral biopsy of bladder	3. Open nephroureterectomy	12. Simple orchiectomy
4. TURBT	4. Laparoscopic RN	13. Vasectomy
5. Ureteroscopy, lithotripsy, and extraction of ureteral calculi	5. Limited pelvic lymphadenectomy	14. Spermatocele repair
6. Suprapubic catheter insertion	6. Ileal conduit urinary diversion	15. Biopsy of penile lesions
7. Hydrocele repair	7. Simple nephrectomy	16. Suprapubic cystostomy
8. Radical orchiectomy	8. Sling procedures for SUI	17. Circumcision
	9. TURP	18. Urethral meatotomy, meatoplasty

TURBT: Transurethral resection of bladder tumour; RP: radical prostatectomy; RN: radical nephrectomy; TURP: Transurethral resection of the prostate; SUI: stress urinary incontinence.

Table 3. Respondents opinion of what should not be category A procedure

At least 50% felt that these procedures should be level B	At least 33% felt that these procedures should be level B or C	
1. Anterior pelvic exenteration	1. Radical cystectomy	6. Varicocele repair
2. Repair of vesico-vaginal fistula	2. Extended pelvic lymphadenectomy	7. Testicular biopsy
3. Repair of entero-vesical fistula	3. Laparoscopic nephro-ureterectomy	8. Epididymectomy
4. Endoscopic injection for vesico-ureteric reflux	4. PCNL	9. Pediatric hernia repair
5. Meatal repair for glanular hypospadias	5. Transurethral resection/incision of ureterocele	10. Orchiopexy for inguinal testis
6. Boari flap		
7. Transurethral vaporization or laser resection of the prostate		
8. Laparoscopic or robotic-assisted RP		
9. Laparoscopic or robotic-assisted PN for cancer		

RP: radical prostatectomy; PN: partial nephrectomy; PCNL: percutaneous nephrolithotomy.

least half of the respondents felt that meatal repair for glanular hypospadias (52.6%), anterior pelvic exenteration (55.8%), repair of vesico-vaginal fistula (56.8%), Boari flap (57.9%) and repair of entero-vesical fistula (58.9%) should be category B, and not A procedures. Also, at least one-third of the respondents felt that radical cystectomy (34.7%), varicocele repair and testicular biopsy (34.8%), percutaneous renal surgery (37.9%) and extended pelvic lymphadenectomy (48.4%) should be category B or C, and not A procedures.

When doing the analysis on a sub-specialty basis, faculty responses and results varied. Uro-oncologists felt that the following procedures should not be category A: radical cystectomy (50%), anterior pelvic exenteration (72.2%), laparoscopic or robotic-assisted radical prostatectomy (80.6%) and laparoscopic or robotic-assisted partial nephrectomy (86.1%).

Pediatric-urologists reported that pediatric indirect hernia repair (35.7%), meatal repair of glanular hypospadias (78.6%) and endoscopic injection for vesico-ureteric reflux (78.6%) should not be category A. Endo-urologists reported that percutaneous renal surgery (46.2%) and transurethral vaporization or laser resection of the prostate (76.9%) should be category B or C procedures. Urologists specializing in female urology, benign prostatic hyperplasia and voiding dysfunction reported that vesico-vaginal fistulae repair (61.6%) and transurethral vaporization or laser resection of the prostate (100%) should be category B or C procedures.

Overall, more than 80% of respondents agreed that all of their most recent graduating trainees achieved category A proficiency, in most procedures. However, more than 50% of respondents either disagreed or were ambivalent that *all* of their graduating trainees were category A proficient in several procedures. When analyzing the opinion of the faculty of PGY5 trainees and whether they attained category A proficiency in the 54 procedures (Table 4), only 5 basic procedures had 100% agreement, while another 22 procedures had more than 80% agreement.

In contrast, more than half of the faculty reported that not all of their PGY5 trainees reached category A proficiency in procedures, such as meatal repair for glanular hypospadias (57.9%), repair of vesico-vaginal fistula (60%) and repair of entero-vesical fistula (69.5%). Furthermore, between 25% and 50% of the faculty reported that their PGY5 trainees did not reach category A proficiency in radical cystectomy (24.2%), varicocele repair (30.5%), extended pelvic lymphadenectomy (31.6%), pediatric indirect hernia repair (42.1%), anterior pelvic exenteration (44.2%) and cavernosal shunting procedures for priapism (49.5%). Statistical agreement (Kappa statistic) was used to correlate respondents' opinion of category A procedures and their opinion of post-graduate trainees' proficiency in category A procedures. For most procedures, there was fair-to-good agreement (K: 0.22 - 0.71).

Discussion

To become a certified specialist in urology in Canada, a post-graduate trainee must fulfill multiple requirements set by the RCPSC. The principal requirement is the successful completion of a 5-year RCPSC accredited training program in urology.³

According to these requirements and based on the Canadian Medical Education Directions for Specialists (CanMEDS) competencies,⁴ the RCPSC states that "upon completion of training, a resident is expected to be a competent specialist in urology capable of assuming a consultant's role in the specialty." Also, "residents must acquire the requisite knowledge, skills, and attitudes for effective patient centered care and service to a diverse population."¹

In this context, and especially regarding surgical skills, it is important to mention that urological surgical procedure objectives are categorized by the dual Canadian Urological Association (CUA) Residency Affairs Committee/Royal College Specialty Committee in Urology, into 3 categories; A, B and C, based on the need for independent proficiency

Table 4. Respondents opinion of PGY5 trainees' competence (Agree achieved category A)

100% Agreement	>80% Agreement	
1. Cystoscopy	1. Open RP	12. Simple orchiectomy
2. Ureteric catheterization	2. Open RN	13. Repair of testicular torsion
3. Ureteroscopy, lithotripsy, and extraction of ureteral calculi	3. Open nephroureterectomy	14. Spermatocele repair
4. Transurethral biopsy of bladder	4. Laparoscopic RN	15. Repair of ureteral and bladder trauma
5. TURBT	5. Limited pelvic lymphadenectomy	16. Manipulation of bladder calculi including litholopaxy
	6. Ileal conduit urinary diversion	17. Suprapubic cystostomy
	7. Simple nephrectomy	18. Urethral meatotomy, meatoplasty
	8. Sling procedures for SUI	19. Biopsy of penile lesions
	9. TURP	20. Hydrocele repair
	10. PCNL	21. Suprapubic catheter insertion
	11. Radical orchiectomy	22. Circumcision

TURBT: Transurethral resection of bladder tumour; RP: radical prostatectomy; RN: radical nephrectomy; TURP: Transurethral resection of the prostate; SUI: stress urinary incontinence; PCNL: percutaneous nephrolithotomy.

(Appendix A). These committees are composed of current and past program directors, educational leaders, as well as a community urology representative. Also, surgical procedures and the categorization process are revised annually. The current list of procedures dates from July 2009 and the objectives of training in urology were last updated in June 2012.¹ These training criteria are used in 3 ways: (1) by training program directors and committees to evaluate competence of trainees, (2) for the completion of Final In-Training Evaluation Reports (FITER), and just as importantly, (3) for accreditation surveyors in judging the quality of training provided by a specific program during mandatory RCPSC surveys.

The classification of specific surgical procedures into objectives of training is not common in most surgical training programs. In the United States, there are no specific lists of procedures that are required for competence at graduation in most urology residency programs.⁵ In Canada, of all the surgical specialties, only urology and obstetrics and gynecology apply an A/B/C competency categorization.⁶ It is unclear whether specifying and categorizing surgical procedures is better than a system of general surgical objectives. Nevertheless, there is merit in being as specific as reasonably possible in identifying surgical objectives as this can be beneficial to trainees and faculty. Of course, attempting to be more and more specific in identifying surgical objectives can lead to increased debate regarding relevance, implementation and assessment. Moreover, with the advent of more accurate measurement of trainee exposure to specific procedures via electronic platforms, trainees can be better monitored. This should lead to better overall training as it should allow for real-time measurements and adjustments. Finally, post-graduate training in Canada is evolving to a more competency-based education and this perhaps will result in improved assessments in training.

With recent and rapid advances in medical technology,

the introduction of new surgical methods and equipment, as well as the attention given to surgical outcomes based on increased volume of activity, it has been questioned by some, including the authors, whether the current list of category A procedures is appropriate. Moreover, there is significant risk that a training program can be considered for probation by non-urology surveyors if trainees do not believe they are category A competent. In line with this assertion, the information obtained by an anonymous survey of graduating Canadian urology trainees in 2012 indicates that 54% of them believed that they are not category A competent in several important procedures.²

This distressing finding suggests that some residents in Canada are not obtaining the necessary training for some category A procedures. There are several possible explanations: (1) resident self-evaluation may not correlate with actual competence; (2) training programs do not have the necessary volume or expertise to train certain category A procedures; (3) pressures exerted on the operating room experience (i.e., efficiency, patient safety, outcomes) interfere with adequate training; and (4) some category A procedures are no longer considered relevant to current practice by urology departments.

With respect to previous published surveys conducted on Canadian trainees, there are 2 that assess the laparoscopic experience of recently graduating senior trainees. In the first survey conducted by Fazio and colleagues on 2003-2004 chief residents, only 21% felt that their residency adequately prepared them to perform laparoscopy independently.⁷ In the second survey conducted by Preston and colleagues on 2007-2008 chief residents, about 67.8% felt that their clinical laparoscopic experience was good or above average.⁸

Our results support the contention that some current category A procedures require additional subspecialty training, such as a clinical fellowship. For example, 35% of the surveyed faculty and 50% of those considering themselves

urologic oncologists felt that radical cystectomy should no longer be a category A procedure, with anterior pelvic exenteration being much higher. Interestingly, this was also reflected on the assessment by faculty of their trainees' competence; 24% felt that their PGY5 trainees did not achieve the required proficiency for radical cystectomy. When surveying 2005-2006 senior urology residents, program directors and pediatric urologists of Canada, Mickelson and colleagues found that the latter group perceived their trainees' exposure to pediatric urology as insufficient and their competence as inadequate even for procedures of low to moderate complexity.⁹

Our study presents several major limitations, including a modest response rate, a disproportionately higher rate of participating uro-oncologists, a disproportionately higher response rate from Ontario and Quebec leading to regional biases, and the very subjective nature of some survey questions which contain strong professional and personal biases.

Conclusion

The teaching and training of urology is an evolving and dynamic process. Setting surgical objectives of training is a complex task, and requires frequent reassessment with wide input. Our study demonstrates sufficient disagreement regarding current categorization of category A procedures among surveyed urology faculty to suggest another revision of the current RCPSC list of category A procedures.

Competing interests: Dr. Zakaria, Dr. Haddad, Dr. Dragomir and Dr. Andonian all declare no competing financial or personal interests. Dr. Aprikian is a board observer for Bioniche Inc., a member of the Speakers bureau for Amgen, Abbvie and Astellas. He has also received grants from Amgen, Astellas and Abbvie. Moreover, he has participated in a clinical trial within the past 2 years for Astellas. Dr. Kassouf is an Advisory Board member and a speaker for Amgen and Astellas. He has also received grants and honoraria from these companies. He is currently participating in unpaid clinical trials.

This paper has been peer-reviewed.

References

1. Royal College of Physicians and Surgeons of Canada. Objectives of Training in Urology; 2009; revision June 2012. <http://www.royalcollege.ca/cs/groups/public/documents/document/y2vk/mdaw/~edisp/tztest3rcpsced000939.pdf>. Accessed May 22, 2014.
2. Bachir BG, Aprikian AG, Kassouf W. Are Canadian urology residency programs fulfilling the Royal College expectations?: A survey of graduated chief residents. *Can Urol Assoc J* 2014;8:109-15. <http://dx.doi.org/10.5489/cuaj.1339>
3. Royal College of Physicians and Surgeons of Canada. Specialty Training Requirements in Urology; 2011. <http://www.royalcollege.ca/cs/groups/public/documents/document/y2vk/mdaw/~edisp/tztest3rcpsced000695.pdf>. Accessed May 22, 2014.
4. Royal College of Physicians and Surgeons of Canada. The CanMEDS Framework; 2005. <http://www.royalcollege.ca/portal/page/portal/rc/canmeds/framework>. Accessed May 22, 2014.
5. Accreditation Council for Graduate Medical Education. Urology program requirements. <http://www.acgme.org/acgmeweb/tabid/152/ProgramandInstitutionalAccreditation/SurgicalSpecialties/Urology.aspx>. Accessed May 22, 2014.
6. Royal College of Physicians and Surgeons of Canada. Objectives of Training in Surgical Foundations 2010; revision 2011. <http://www.royalcollege.ca/cs/groups/public/documents/document/y2vk/mdaw/~edisp/tztest3rcpsced002644.pdf>. Accessed May 22, 2014.
7. Fazio LM, Dagnone AJ, Blew BD, et al. The laparoscopic experience of recently trained Canadian urologists. *Can J Urol* 2006;13:3047-52.
8. Preston MA, Blew BDM, Breau RH, et al. Survey of senior resident training in urologic laparoscopy, robotics and endourology surgery in Canada. *Can Urol Assoc J* 2010;4:42-6. <http://dx.doi.org/10.5489/cuaj.09036>
9. Mickelson JJ, MacNeily AE, Samarasekera D, et al. Competence in pediatric urology upon graduation from residency: perceptions of residents, program directors and pediatric urologists. *Can Urol Assoc J* 2008;2:205-10.

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Appendix A. Royal collage classification of surgical procedures

A: The fully trained resident must be competent to individually perform the following procedures, in addition to being able to manage the patient prior to, during, and after the procedure.

B: The fully trained resident will know how to do the following procedures, including indications, and perioperative management. The resident may not have actually done one of these procedures independently during the residency training period.

C: The fully trained resident will be able to describe the following procedures, the indications for these procedures, and the perioperative complications that might be encountered.

Appendix B. Survey Questions

1. How many years have you been a faculty member in a division/department of urology?
2. What part of the country is your division/department located?
3. Is your clinical practice in an academic institution full-time or part-time?
4. What is your subspecialty area, if any?
5. Does your division/department have access to robotic surgery?
6. How many PGY5 residents are currently in your program? (Enter a figure between 0 - 6)
7. How many PGY4 residents are currently in your program? (Enter a figure between 0 - 6)
8. How many operating days per month are you exposed to or work with any level urology resident? (Enter a figure between 0 - 10)
9. How many operating days per month are you exposed to or work with an R5 urology resident? (Enter a figure between 0 - 10)
10. The Royal College of Canada OBJECTIVES OF TRAINING IN UROLOGY include a list of surgical procedures with varying levels of required proficiency for graduating residents. The levels of proficiency are categorized as A, B, and C, Please examine the list of 54 surgical procedures below and ASSIGN EACH PROCEDURE EITHER category A, B, or C based on your personal impression or opinion of what you feel the most appropriate level of proficiency should be in the current Canadian urologic practice environment.
11. Please again examine the list of 54 procedures and provide your opinion on whether ALL YOUR MOST RECENT GRADUATING RESIDENTS have achieved category A proficiency (competent to individually perform).