Assessing the goals of urology residency training: perceptions of practicing urologists in British Columbia

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Purpose: In an effort to evaluate the perceived utility of specific Royal College of Physicians and Surgeons of Canada (RCPSC) urology residency training objectives we conducted a survey of the practicing urologists of British Columbia (BC).

Materials and methods: A two page semi-structured survey was designed. Validity was evaluated for clarity, content and ease of completion. The survey was mailedout to all 61 practicing urologists in BC. The survey population was divided into urban, rural, and academic according to location of practice.

Results: Survey response rate was 79% with varying subgroup rates: urban-69% (20/29), rural-94% (17/18) and academic 86% (12/14). Specific clinical components of training were rated as "useful" by the majority of all respondents: pediatric urology (93%), laparoscopy (88%), TRUS (77%), percutaneous renal access (74%), urethral surgery (72%), microsurgery (62%). Renal transplantation was rated "not useful" by 74% of respondents. TRUS, percutaneous renal access and adrenal

Introduction

Urology is a dynamic field that is constantly changing as a result of medical, surgical and technological

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surgery were perceived as useful by the majority of those practicing in rural and non-academic urban centers compared to those in academic centers where the majority rated these skills as "not useful". Virtually all non-clinical components of training were rated as "useful". The majority of respondents felt that residency training prepared them for the following challenges: accepting responsibility for patient care, assessing scientific literature, ethical decision-making and communication. The majority of respondents felt that residency did not prepare them for the following challenges: time and office management, hospital administration and providing care within a constrained system.

Conclusion: Specific clinical and non-clinical areas of training have high perceived utility in all settings of practice. Certain clinical components of training have high perceived utility only in specific settings of practice. There are many non-clinical components of practice, which are perceived to be important, but for which BC urologists feel inadequately prepared for by their residency training programs. If consistent across Canada, these findings may facilitate a rational approach to the modification of the objectives for urology residency training.

Key Words: residency education, survey, British Columbia

innovation.¹ Newer approaches to specific urological problems often require advanced training and expensive technology. For example, training in advanced techniques such as laparoscopy, microsurgery and lithotripsy may not be necessary or relevant to all settings of practice. Conversely, certain specialized skills that may be important for specific practice settings may not be emphasized during residency training.

In conjunction with these changes in clinical urology we have witnessed significant changes in the

delivery of Canadian health care. Included in these changes are increased emphases on outpatient surgery, office procedures, and non-operative management of various conditions, concomitant with diminishing access to hospital resources.² By necessity, urologists are becoming increasingly involved in administrative and managerial roles. With cost-effectiveness becoming the new mantra of modern day health care delivery, urologists are increasingly required to interact with hospital administrators as part of a change-management team.

Residency training should adequately prepare trainees for these clinical and non-clinical challenges. The latter are associated with communication and administrative skills, and the frustrations of smallbusiness management. Given these dynamic and multi-faceted aspects of urologic practice, we wished to examine the perceived relevance of some of the RCPSC training objectives with respect to the following questions:

How important is training in specialized clinical areas of urology?

How important is training in non-clinical areas of urology?

How well does residency prepare for the challenges of clinical practice?

How do urologists of BC feel that residency training can be improved?

The RCPSC Urology training objectives were recently revised to conform to the CanMEDS 2000 format.² The CanMEDS 2000 document was created to outline a competency framework that would guide training in all specialty areas. The seven specific competencies emphasized therein were chosen to prepare clinicians for the many challenges we face as health-care providers. These roles include the following: medical expert/clinical decision-maker, communicator, collaborator, manager, health advocate, scholar and professional. In the preamble to the initial CanMEDS document the generic nature of the competency framework, and the reality that these competencies may not specifically respond to some of the skill requirements of surgical specialties was acknowledged.

In this survey we set out to evaluate the perceived utility of training in specific specialized clinical areas of urology outlined under the medical expert/clinical decision-maker competency role. We specifically addressed skills that were listed as either "B" or "C" list competencies in the RCPSC urology training objectives. The "B-list" skills include skills that the resident "should know how to do" but "may not have actually done during residency training". The "C-list" skills are skills for which the resident " should be able to describe the principles of the procedure". We chose to examine these specific competencies since they represent novel or specialized skills in urology, which may not be adequately emphasized during training. These competencies are distinct from the "A-list" skills that the graduating resident is expected to perform competently and independently. We also chose to examine the non-clinical CanMEDS medical expert competencies. Our hypothesis was that emphasis on these medical expert, communicator, collaborator, manager, health advocate, scholar and professional competencies may be very important but may not be adequately taught in residency.

Materials and methods

Survey instrument

A mail survey of all full-time urologists practicing in BC was carried out. The survey consisted of a two-page, semi-structured questionnaire comprised of four main sections. A modified 6-point Likert scale was used to gather quantitative data in the sections focused on the "relevance" of clinical and non-clinical aspects of practice as well as specific challenges facing practitioners. The 6-point scale was weighted from "not useful" to "useful".

In part I we examined the perceived relevance of specific specialized clinical components of training. We asked the respondents to "rate the components of residency training based on their relevance to clinical urological practice". The clinical components of training that were included in the list were selected from the "B" and "C" list of components of training from the RCPSC "Objectives of Training and Specialty Training Requirements in Urology".⁴ We intentionally sought to exclude clinical components from the "A-list" of RCPSC objectives in our survey, since they are obviously relevant to all practitioners (e.g. TURP, cystoscopy etc.)

In part II we examined the perceived relevance of some of the non-clinical components of training outlined by the RCPSC CanMEDS document. We asked the respondents to "rate the non-clinical components of residency training listed below based on their relevance to clinical urological practice".

Part III examined how well residency prepared urologists for some of the challenges of practice. We asked the respondents to tell us: "How well do you feel residency prepared you for the following challenges of practice?" We employed the same 6-point Likert scale weighted from "not prepared" to "highly prepared".

In part IV, two open-ended questions were posed in order to gather opinions on the challenges currently faced in practice as well as suggestions about possible Assessing the goals of urology residency training: perceptions of practicing urologists in British Columbia

changes to residency training. We asked the respondents to tell us about their "biggest challenge in practice today" as well as to tell us "how (you feel) residency training could be improved".

The survey was screened for face validity on a group of 14 urology residents. The contents of the survey were scrutinized for clarity, ambiguity of terminology and ease of administration.

Conducting the survey

The survey was mailed-out to all practicing urologists in the province of British Columbia who were identified through the BC College of Physicians and Surgeon's registry. The survey was accompanied by a cover letter explaining the goals of the survey. Each survey was marked with a unique number to identify the respondent and allow for subgroup analysis. An adequate response was ensured using the modified-Dillman technique.³ After 6 weeks, a reminder e-mail with an attached survey was sent out to all those who had not responded. After 10 weeks, a second hard copy of the survey was mailed-out to those who had not responded. All surveys included in the final analysis were collected within 12 weeks of initial mailing.

Data analysis

The quantitative Likert data was entered into an Excel® spreadsheet. Data was organized into the following subgroups based on the setting of practice: urban, rural and academic. The urban contingent of urologists consisted of 29 urologists practicing in communities with local health area populations greater that 100 000 as defined by BC local health area population estimates 1996-2001 (Population Section, BC Stats, Ministry of Management Services, Government of British Columbia.). Urban communities included: Richmond, Burnaby, Surrey, New Westminister, North Vancouver, Prince George, Victoria, Kelowna and Abbotsford. The rural group consisted of 18 urologists practicing in local health regions with populations less than 100 000. The rural communities included: Vernon, Nanaimo, Penticton, Courtenay, Duncan, Sidney, Kamloops, Maple Ridge, Quesnel, Trail, Chilliwack, Port Alberni and Whiterock. The academic subgroup consisted of all 14 urologists practicing in university-associated hospitals in Vancouver (Vancouver Hospital UBC site, Vancouver Hospital VGH site, St. Paul's Hospital, and BC Children's Hospital).

Statistical analysis

The graded Likert data from sections I-III was organized into two groups to facilitate analysis. The

Likert scale was interpreted as a continuous scale from 1 (adjacent to "not useful") to 6 (adjacent to "highly useful"). A "useful" rating in the results section corresponds to a rating in the boxes 4,5 or 6 (adjacent to the weighted end "useful") whereas a "not useful" rating corresponds to a rating in the boxes 1, 2 or 3 (adjacent to weighted end "not useful"). A "highly useful" rating corresponds to the combination of responses 5 and 6. The standard errors of the proportions were calculated in order to account for sampling error of the population. The standard error was calculated using the finite population correction (fpc) to account for a population n=61 (fpc= square root (1-0.78=0.2167) = 0.4655). The standard error (s.e.) for each proportion was then calculated: s.e.= 0.4655x [square root of{p x (1-p)/n}]. In this formula "p" represents the tabulated proportion from the data and "n" the total number of response n=48. Statistical significance was set at a p-value of 0.05 and 95% confidence intervals were calculated by multiplying the standard errors by the Z-score=1.96.

Results

After 3 months the total response rate was 79%. (Urban = 69%, Rural = 94%, Academic = 86%). Respondents had completed their residency training in the following locations: 46% UBC, 32% other Canadian sites, 15% non-North American sites, and 7% United States.

The demographics of the populations with respect to the numbers of years in practice are presented in Figure 1. The majority of academic physicians (50%) that responded to the questionnaire have been in practice for over 20 years whereas the majority responding from rural centers have been in practice for between 10 to 20 years (48%). In the urban centers the largest proportion of respondents have been in practice for less than 10 years (40%) Figure 1.



Figure 1. Number or years in practice based on setting of practice.

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	Percentage rating "not useful" (std error)	Percentage rating "useful" (std error)	Statistical significance p<0.05
Pediatric urology	7.5 (1.6)	93 (1.8)	yes
Laparoscopy	12 (2.1)	88 (2.2)	yes
TRUS	33 (3.1)	77 (3.14)	yes
Percutaneous renal acce	ess 26 (2.9)	74 (2.8)	yes
Urethral surgery	28 (2.9)	72 (3.0)	yes
Microsurgery	38 (3.3)	62 (3.2)	yes
Lithotripsy	42 (3.0)	58 (3.3)	yes
Renal transplantation	74 (2.9)	26 (2.9)	yes
Adrenal surgery	49 (3.3)	51 (3.3)	no

TABLE 1.	Perceived	utility	of	clinical	com	ponents	of re	esiden	cy	training	ŗ

The majority (71%) of respondents stated that non-academic rotations were best experienced in the fourth year of residency training. When asked about the duration of exposure outside of academic centers the opinions were almost evenly split between 3, 6, and 12 months.

Part I-clinical components of training

The perceived utility of the clinical components of training are presented in Table 1. Laparoscopic surgery and pediatric urology were rated as "useful" by the majority of all respondents. Urethral surgery, transrectal ultrasound (TRUS) and percutaneous renal surgery were also rated as "useful" by almost 75% of respondents. Lithotripsy and microsurgery were rated as "useful" by approximately 60% of the respondents. Taking into account the margin of error of the study there was no statistical difference between those who rated adrenal surgery as "useful" and those that rated it as "not useful". The majority of respondents (74%) rated renal transplantation as "not useful".



Figure 2. a) Perceived utility of percutaneous renal access based on setting of practice. b) Perceived utility of adrenal surgery based on setting of practice.

Part I-subgroup analysis

In examining the perceived utility of the clinical components of training we found significant differences of opinion between the different subgroups of urologists (urban, rural, academic). Specifically, adrenal surgery and percutaneous renal access were favored by the majority of those practicing outside of academic centers whereas less than 50% of those within academic centers rated these as "useful" components Figure 2. TRUS was also found to be rated as "highly useful" (Likert rating >5) by the majority of urologists practicing outside of academic centers Figure 3. Renal transplantation was rated as "not useful" by close to three quarters of all respondents Table 1. On subgroup analysis however, we found that the majority of academic practitioners rated transplantation as a "useful" component of training. In contrast, the majority of those practicing outside of academic centers rated renal transplantation as "not useful" as a component of training Figure 3.



Figure 3. a) Perceived utility of TRUS based on setting of practice. b) Perceived utility of renal transplantation based on setting of practice.

	Percentage rating "not useful" (std error)	Percentage rating "useful" (std error)	Statistical significance
Appraisal of literature	4 (1.6)	96 (0.97)	yes
Communication	4 (1.3)	96 (0.9)	yes
Ethical decision makin	g 10 (2.0)	90 (1.8)	yes
Office management	13 (2.4)	87 (2.0)	yes
Using the internet	13 (2.2)	87 (1.8)	yes
Time management	15 (2.5)	85 (2.2)	yes
Hospital administratio	n 48 (3.3)	52 (3.3)	no

TABLE 2. Perceived utility of non-clinical components of residency training

Part II-non-clinical components of training

With the exception of hospital administration, all nonclinical components that we examined were rated as "useful" components of training Table 2. Given the margin of error for the survey there was no statistical difference between the proportion of respondents rating hospital administration as "useful" compared with those rating it as "not useful".

Part III-preparation for the challenges of practice

We found that the majority of respondents felt that residency adequately prepared them for the following facets of practice: appraisal of the scientific literature, ethical decision-making, communication, gaining the medical community's confidence and accepting ultimate patient-care responsibility Table 3. The majority of respondents felt unprepared for the following challenges: time management, office management, hospital administration, building referrals and providing care in a financially constrained system. On examination of the responses based on the setting of practice there

TABLE 3. Preparation for challenges of practice

was only one significant subgroup difference. The majority of those practicing in academic settings felt that residency adequately prepared them for the challenges of building a referral base whereas those practicing in urban and rural areas did not feel prepared for this.

Part IV -ppen-ended questions

With respect to the challenges of practice, the most common comments included mention of time and office management. As well, many described the challenges related to providing care with limited access to resources such as operating room time, diagnostic radiology and hospital beds.

The feedback related to how residency could be improved was varied and interesting. Many respondents suggested that increased exposure to community urology in conjunction with increased elective time during the residency would allow residents to develop skills in areas of special interest as well as assist them in finding potential employment positions. A significant number of comments related

	Percentage rate "not prepared" (s.e)	Percentage rate "prepared" (s.e)	Statistical significance		
Office management	93 (1.4)	7 (1.8)	yes		
Hospital administration	n 92 (1.3)	8 (1.8)	yes		
Time management	64 (3.2)	36 (3.2)	yes		
Building referrals	64 (3.2)	36 (3.2)	yes		
Delivering care in a constrained system	62 (3.2)	38 (3.3)	yes		
Accepting ultimate pt. care responsibility	10 (2.2)	90 (1.6)	yes		
Appraisal of literature	15 (2.6)	85 (2.4)	ves		
Communication	17 (2.5)	83 (2.4)	ves		
Ethical decision making	g 28 (3.0)	72 (2.9)	ves		
Gaining medical	39 (3.2)	61 (3.2)	yes		
community's confidence	ce		-		

to increasing emphasis on the common problems of operative and office urology along with a de-emphasis on prostate cancer and high intensity surgery.

Discussion

Urologic practice has been significantly impacted by innovation in medical and surgical therapies at the same time that the delivery of care has been altered by changes in resource allocation, patient demographics and their expectations. The objectives of residency training should remain congruent with these changing realities of healthcare. The goal of this project was to examine the perceived importance of specific RCPSC training objectives in urology as they pertain to these realities.

The overall response rate of 79% is excellent for such a mail-out survey and is higher than other similar surveys.⁵⁻⁹ We speculate that this high response rate likely relates to a sense of interest and concern about resident education amongst the population of practicing urologists in BC. This high response rate has allowed us to make statistically valid inter-group comparisons with small margins of error and to generalize the results to our entire population.

The two clinical components that were rated "useful" by the highest proportion of respondents were laparoscopy and pediatric urology. Laparoscopy is an expanding field in urology. This expansion is being driven by many factors including patient preference, shorter hospitalization, more rapid postop recovery, and decreased morbidity.^{10,11} A recent survey in the United states revealed that 48% of urology residents are being trained in laparoscopy during their residency and that 69% of those trained in laparoscopy continue to apply these skills once in independent practice.¹⁰ Exposure to training in laparoscopic urological surgery at UBC is currently limited and the results of this survey suggest that this is an important component of training that should receive increased emphasis.

The high perceived utility of pediatric urology appears to be consistent with the reality of urological practice, at least in the United States. In a 1999 AUA gallop survey, 83% of respondents treated pediatric patients, including 92% who performed simple urologic procedures rather than referring to a pediatric urologist.¹² At the time of this survey, there were only two full-time pediatric urologists in British Columbia, serving a population of 4 million people. Given the vast geography of the province it seems plausible that general urologists outside of the Greater Vancouver area are required to deal with many less complex pediatric urologic problems.

In the analysis of subgroups (urban, rural and academic) we found that adrenal surgery, TRUS and percutaneous renal access were clinical components only favored by the majority of respondents from nonacademic practices. These findings likely reflect different practice patterns in the UBC academic hospitals where the majority of adrenal surgery is currently performed laparoscopically by general surgeons who have acquired the necessary skills, and are receiving the majority of referrals. Similarly, TRUS and percutaneous renal access are specialized techniques that are performed only by interventional radiologists in the UBC academic centers. In many non-academic centers, specialized interventional radiologists may not exist, and urologists are required to assume responsibility for these procedures. Given the high perceived utility of these skills in the nonacademic setting we conclude that resident-training in these areas may require increased emphasis. In fact, recent reports have demonstrated that urologistperformed percutaneous renal access can be achieved with similar success, low complication rates, and cost advantage when compared with radiology series.¹³

The results of the survey indicate that the majority of BC urologists rate renal transplantation as "not useful" to clinical practice. This finding relates to a large majority of urologists practicing outside of academic centers who deemed this skill "not useful". Amongst those practicing in academic centers, the majority deemed renal transplantation "useful". The reality is that renal transplantation does not take place outside of academic centers. As a result, renal transplantation per se is not relevant to practice outside of these specialized centers. However, exposure to renal transplantation is associated with the acquisition of vascular surgical skills, exposure to the pelvic ureter and re-implantation surgery, techniques applicable to many other areas of urology.

In fact, a recent survey of North American academic centers revealed that 81% of urology residency programs in the United States and Canada provided renal transplantation rotations to their residents and that 25% of urology programs had faculty that perform transplantation and administered immunosuppression.¹⁴ The authors concluded that renal transplantation should continue to remain an integral component of urology residency.¹⁴ Many opinion leaders argue that urological involvement in renal transplantation is essential for expert management of the lower urinary tract, and is critical for the success of transplant procedures.^{15,16} It is possible that differing interpretations of the question pertaining to the relevance of renal transplantation may have skewed our responses in a negative direction.

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All respondents rated virtually all components of non-clinical training as useful and relevant. Hospital administration was the only non-clinical component for which there was no statistical difference between the proportion of respondents that rated this as "useful" versus "not useful". In the challenges section (part III) however, the majority of respondents identified this as a component of practice for which they were not prepared. This observation may relate to the fact that urologists do not see their role as administrative when in fact the reality of practice necessitates that they deal with administration. In a recent survey done on practicing general surgeons in BC a similar dichotomy was noted. General surgeons felt that it was important to understand the "business skills" of practice however they did not feel that training in these areas should be incorporated into residency training.⁶

In comparing the utility of non-clinical components of practice with the challenges section of the survey we noted that time and office management were rated as "useful" and were also rated as components for which urologists were not prepared for upon completion of training. As well, in the open-ended portion of the survey many respondents noted that time and office management were their biggest challenges. Currently there is very little instruction in Canadian residency training on time-management and the business aspects of running an office. Similarly, in the US, a recent survey of American Neurosurgical residents and program directors revealed that virtually all respondents felt unprepared for the business aspects of medicine. A significant proportion (58%) of program directors indicated that residency did not deal with the business aspects of medicine.¹⁷

In response to the question of how residency could be improved, many suggested increasing exposure to non-academic centers. Many of the respondents felt that increasing community exposure would assist residents to refine career goals and allow them to explore future job opportunities. In fact, the majority of respondents (71%) felt that a minimum of at least 3 months of community exposure was needed during residency. Given that certain skills such as TRUS and percutaneous renal access appear to be more useful in non-academic centers residents may find that non-academic rotations enhance their exposure to certain technical skills.

Conclusions

The results from this survey are provocative. We have identified a number of clinical and non-clinical areas that have high perceived utility by urologists in all settings of practice. We also have identified specific clinical components of training that have high perceived utility only outside of academic centers. There are many non-clinical components of practice which are perceived to be important, but for which BC urologists felt inadequately prepared by their residencies. These perceptions should be surveyed at a national level. Findings such as these, if consistent across Canada, may play a role in the rational modification of urology residency training objectives.

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