A survey of urological manpower, technology, and resources in Canada

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Introduction: *Knowledge of the current status of manpower and resources is important in understanding the state of any medical specialty, and critical in planning for future recruitment, funding and infrastructure development.*
Methods: *In 2003, the Canadian Urological Association (CUA) conducted two nationwide surveys examining manpower, resources, and the technology available. One survey went only to academic and hospital leaders across the country (the resources survey), while the other was sent to the entire general membership of the CUA.*
Results: *The response rate for the resources survey was 67%, while that for the membership survey was 50.4%. The respondents' ages were evenly distributed, with the modal 5-year range being 51 to 55 years of age. Eighty-eight percent of respondents were Canadian-trained. Two-thirds of respondents spent over 80% of their practice time in direct patient care, and most practiced general urology. The majority of respondents practiced in smaller hospitals: 57.6% in centres with 300 or fewer inpatient beds, and 47.2% of centres reported < 500 procedures/year. Community hospitals (62% of responses to the resources survey) generally had fewer advanced technologies than academic centres. A quarter of the cystoscopy equipment used by respondents was over 15 years old.*
Conclusions: *The results of these surveys present a snapshot of the current state of urology resources and manpower across Canada, potentially allowing better planning and negotiations with hospitals and governments.*

Key Words: urology, manpower, survey, Canada

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Introduction

In order to provide a snapshot of the current status of Canadian urological practice, the Canadian Urological Association (CUA) undertook two surveys in 2003. One survey (the resources survey) was sent to hospital chiefs of urology departments and to university chairs, while the second was sent to the CUA membership at large. This paper presents results from both of the surveys.

Methods

Two surveys were conducted using mailed questionnaires. The first (the resources survey) focused on hospital-based resources, technology, and equipment. The second survey (the membership survey), sent to all active Canadian-based members of the CUA, examined demographic characteristics and details of the individuals' practice patterns. Both surveys were made up largely of multiple-choice questions (copies of the surveys are available from the corresponding author, or on the CUA website, www.cua.org). The surveys were mailed along with a covering letter from the president of the CUA and a stamped return envelope. Questionnaires were mailed out as a single mailing in January 2003, with telephone follow-up for nonresponders, and a second mailing to willing nonresponders.

Participation in this study was voluntary and limited to members of the association, and all responses (to the membership survey) were anonymous.

In this report, only descriptive statistics are used.

Results

Response rates

The resources survey had a response rate of 67% (73 responses from 109 surveys sent out). Responses were received from all regions of the country, in roughly the same proportion as surveys were sent out.

The CUA listed 544 active Canadian-based members at the time, all of whom were sent the membership survey. Of these, 35 were unreachable, and 6 sent unusable responses, leaving 503 members. The responses analyzed in this paper totalled 254, a response rate of 50.4%.

Demographic characteristics of respondents

Of respondents to the membership survey, 10.7% practiced in Canada's Atlantic provinces, 17.3% in Quebec, 43.3% in Ontario, 14.6% in the Prairie provinces, and 14.2% in British Columbia.

Figure 1 shows the ages of the respondents to the membership survey. Currently, 48% of all Canadian urologists are over the age of 51. The length of time since certification in urology generally mirrored the age ranges, with 21.5% of respondents having been certified for more than 25 years. The vast majority, 88.3%, had been trained in residency programs in Canada, while 10.2% were from programs in the United States, and 1.6% had been trained elsewhere. Overall, 29.3% had received postgraduate training, most commonly in urologic oncology.

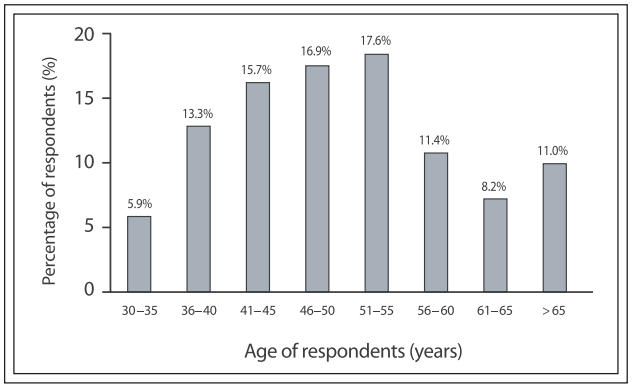

Figure 1. Age of respondents to the membership survey, Canada, 2003.

Practice patterns

The majority of respondents to the manpower survey practiced general urology. Figure 2 shows the proportion of respondents saying that they devoted more than 10% of practice time to the management of a particular type of patient problem. The most prevalent diseases attended to are stones, bladder disease, and prostate disease, with the latter occupying more than 10% of almost all the urologists' time. Only 3% and 6% of urologists spent more than one-tenth of their time doing transplantations or pediatric urology, respectively.

Most respondents concentrated their professional time in direct patient care, with 62.7% saying that they spent over 80% of practice time in clinical management of patients and 97.6% estimating that they spent at least 40% of practice time looking after patients.

Responses to the resources survey showed that most Canadian urologists practice in smaller hospitals (57.6% of respondents in centres with 300 or fewer inpatient beds, 13.7% with 500 or more beds). This was reflected in the total number of urological cases per year: 47.2% of respondents reporting < 500 procedures/year, 18% reporting 500 to 1000 procedures/year, and 27.8% reporting over 1000 procedures/year.

Academic versus community hospitals

The majority of hospitals represented were nonteaching or community hospitals (63%), with 15.1% partially affiliated and 20.5% fully affiliated with a university teaching program (together these 37% of respondent hospitals are termed academic centres). Table 1 shows selected characteristics of responding hospitals: size, number of procedures, and number of full-time urologists on staff. Community hospitals were smaller, performed fewer procedures,

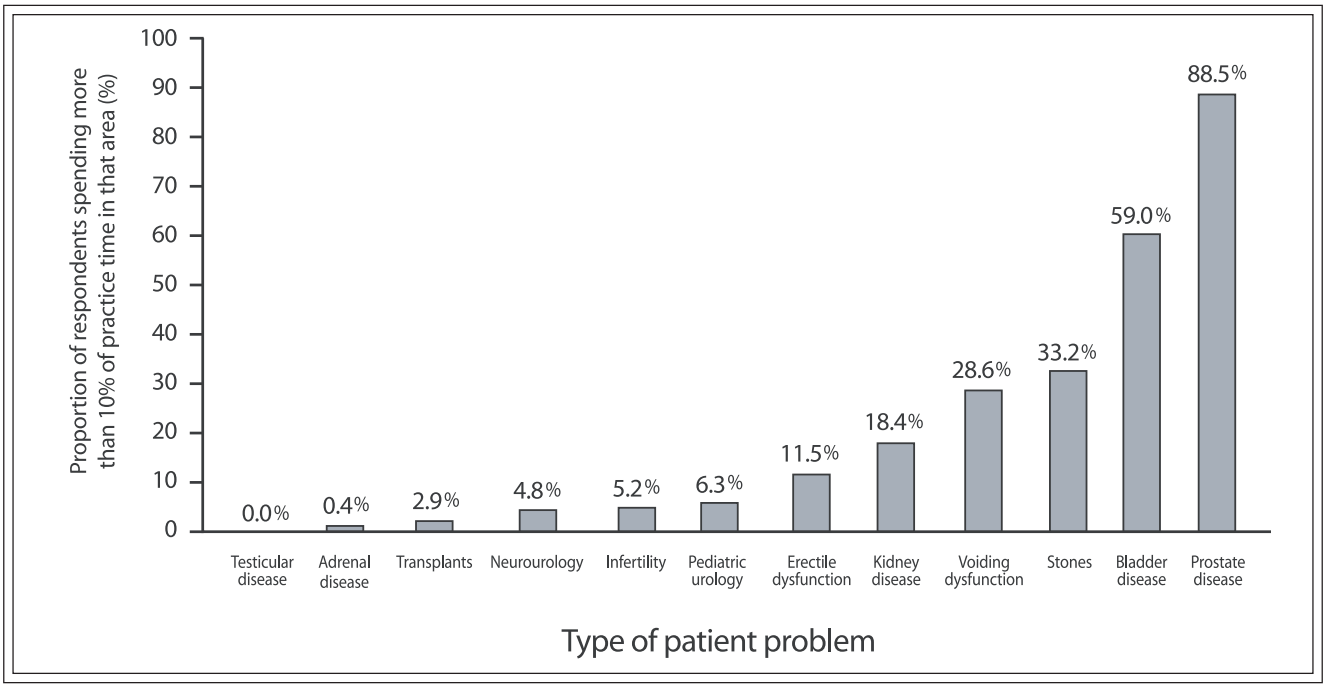

Figure 2. Proportion of respondents devoting more than 10% of practice time to a particular patient problem, Canada, 2003.

and were more likely to have fewer than five full-time urologists on staff.

Table 2 provides details on the availability of imaging, diagnostic, and therapeutic technologies, comparing academic and community centres. Generally, academic centres reported higher availability of advanced technologies with the largest differences being electrohydraulic lithotripsy, extracorporeal shock wave lithotripsy, rollerball, and major laparoscopy.

Access to technology

Figure 3, based on data from the membership survey, portrays which specific urological instrumentation and technologies the respondents used on a regular basis. For transurethral surgery, the vast majority (92%) still use standard transurethral resection of prostate, while very few use transurethral needle ablation, microwave, or laser technology. Regional disparities were noted in the availability and use of some of the more recently developed or advanced technologies: Figure 4 shows these regional differences with respect to the availability and regular use of advanced technologies.

Information about available instrumentation and resources was also obtained from the resources survey, with results generally in the same range. For instance, in the manpower survey, 60.3% of respondents indicated that a Holmium laser was "regularly used" in stone management: in the resources survey, 41.7% of respondents stated that a Holmium laser was "currently used" in stone management. Similarly,

TABLE 1. **Hospital size, number of procedures, and manpower in academic versus community hospitals (percentage of respondents)**

Characteristic	Academic hospitals (n=27)	Community hospitals (n=44)
<500 admissions for urological procedures/year	29.6	56.8
>500 admissions for urological procedures/year	70.4	43.2
<100 total patient beds	7.4	13.6
100 to 300 total patient beds	14.8	61.4
>300 patient beds	77.8	25
<5 full-time urologists	81.5	90.9

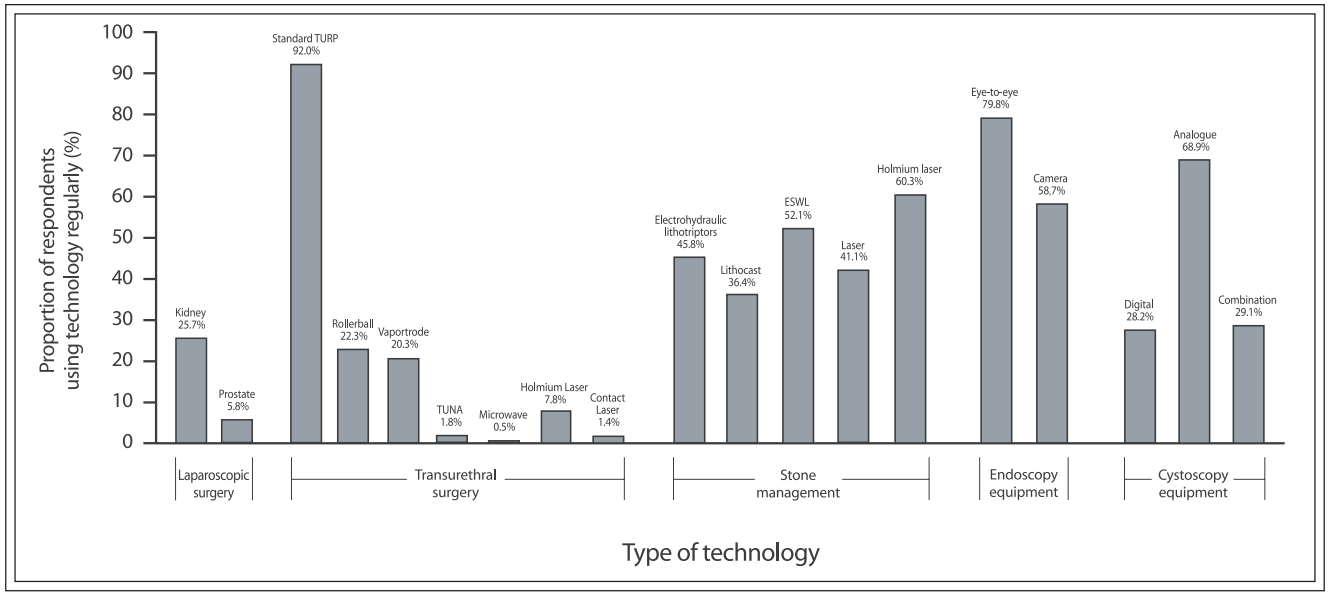

Figure 3. Types of technology used on a regular basis by urologists, Canada, 2003.

TABLE 2. **Availability of imaging and management technologies, academic versus community hospitals (percentage of respondents)**

Characteristic	Academic hospitals (n=27)	Community hospitals (n=44)
Imaging equipment		
MRI available	85.2	47.7
Type of cystoscopy fluoroscopy tables		
Digital	22.2	18.2
Analogue	37	22.7
Combination	0	6.8
All-in-one	33	43.2
Age of tables/imaging equipment		
<5 years	14.8	36.8
6 to 10 years	40.7	18.4
11 to 15 years	11.1	21
>15 years	29.6	23.7
Age of cystoscopy equipment		
<5 years	44.4	34.3
6 to 10 years	25.9	34.3
11 to 15 years	3.7	11.4
>15 years	22.2	20.0
Equipment currently available		
Holmium laser for stones	59.3	52.3
Electrohydraulic lithotriptor	81.5	68.2
ESWL	51.9	20.5
Rollerball	85.2	65.9
TUNA	7.4	6.8
Laparoscopic radical nephrectomy	63	31.8
Laparoscopic radical prostatectomy	29.6	6.8
Laparoscopic varicocelectomy	11.1	9.1

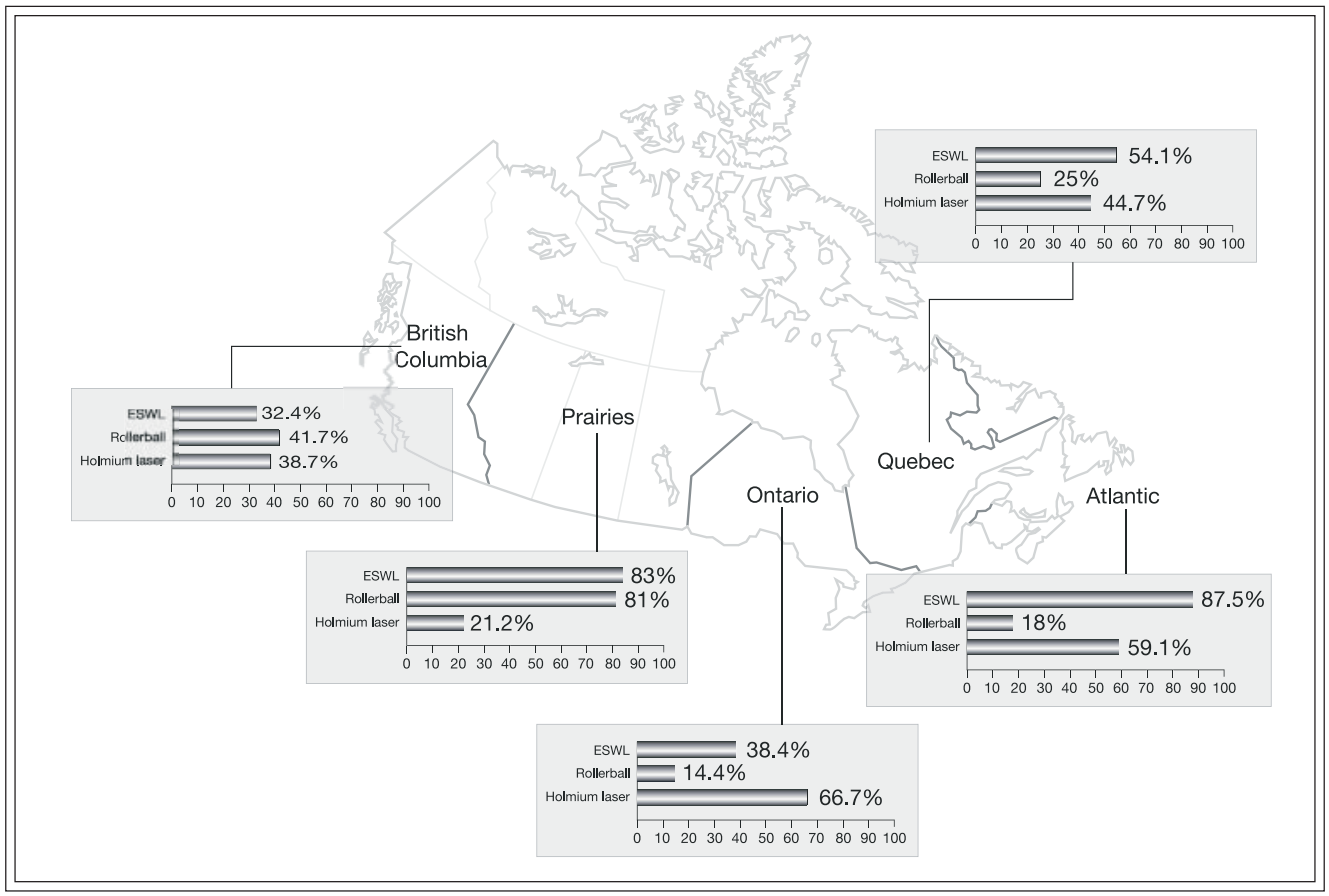

Figure 4. Regional availability of technologies (Percentage of hospitals in region with technology in regular use) Canada, 2003.

rollerball was "regularly used" for transurethral prostate surgery according to 22.3% of those responding to the manpower survey, and "currently used" by 38.8% of respondents to the resources survey.

The imaging technologies available to urologists (data from the resources survey) are shown in Figure 5. Almost one half of respondents do not have access to magnetic resonance imaging (MRI) in their hospitals. CT scanning, transrectal ultrasound and nuclear imaging are accessible to 96%, 93% and 89% of respondents. PET scans are available to only 8.3%.

Cystoscopy practices and equipment

The resources survey examined a number of aspects of the practice of cystoscopy, as it is such an integral part of urological surgery.

The fluoroscopy tables used in outpatient clinics were described as digital by 25.4% of respondents, analogue by 28.2%, combination by 4.2%, and all-in-one (cystoscopy with built-in fluoroscopy) by 39.4%. Much of the equipment in current use was older: over a quarter of tables (26.2%) were over 15 years old, as were 22.8% of cystoscopes.

Most cystoscopies were reported as being done in dedicated cystoscopy suites (65.9%): other locations

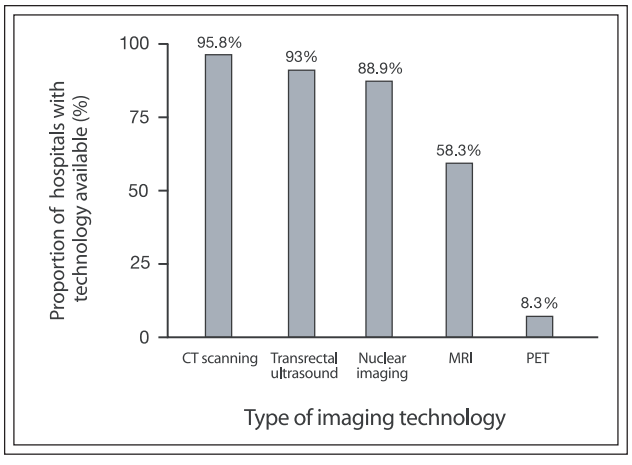

Figure 5. Imaging technologies available in hospital to urologists, Canada, 2003.

included the operating room (18.3%), the office (8.5%), and locations such as outpatient clinics. According to 66.2% of the respondents, a typical urologist at their centre would perform between 11 and 20 cystoscopies in a half-day; 25.4% stated that fewer than 10 would typically be done, while 8.5% said that more than 20 could be conducted in a half-day.

Discussion

The practice of urology across the country is variable. Patterns of practice vary according to the age of the urologist, community versus academic practice, general versus subspecialty, and access to new technology.

Response rates in the two surveys were good, given that this was a mailed survey with telephone follow-up. The relatively high response rate was likely related to several factors. The small size of the Canadian urology community could be expected to lead to implicit peer pressure, and a wish to cooperate with an activity led by the professional specialty organization. As well, there could have been an element of self-interest in responding to this survey, a hope that the results could be used to persuade (for example) hospital budget keepers to purchase new equipment, if this was perceived as necessary to meet national "standards".

Few comparable studies have been published. In 1999, an assessment of current urology manpower was used to forecast future manpower needs in Ontario, suggesting that a shortfall of 101 urologists would be found by 2010 (200 urologists needed, 99 available).[1] The current number of active CUA member urologists in Ontario (154) urologists, along with the even age distribution of respondents, suggests that such a shortfall might not come to pass. However, across the country, 48% of urologists are over the age of 51, with 19.2% over 61. If one assumes that most surgeons will retire at age 65, Canada will require nearly 270 urologists by 2019.

Questions about technology were asked in both surveys, giving results that varied somewhat. A possible explanation for the differences is that in the resources survey, one respondent was answering on behalf of a department of urology that may have included more than 10 surgeons, whereas in the manpower survey, individuals reported on their personal practices.

The data revealed that very few urologists spent a significant proportion of their time on transplantation (2.9%), neurourology (4.8%), infertility (5.2%), or pediatrics (6.3%). This probably reflects the fact that these areas have become subspecialty foci in tertiary and quaternary care centres. It emphasizes that training programs need to identify residents who are interested in pursuing these areas of training so as to maintain the current standard of care.

The survey compared hospitals that were or were not affiliated with teaching centres. For the most part, community hospitals were smaller and had fewer than five urologists per centre. As medical schools expand, many of these groups will be asked to participate in training medical students, residents, and fellows. This would add extra time pressures to busy clinicians' schedules and medical schools could meet resistance if they do not address this issue in a proactive, open manner.

The community hospitals are relatively well equipped for endoscopy compared with the teaching centres. In particular, community urologists had more advanced and newer cystoscopy tables and cystoscopy equipment. However, academic centres have greater access to modern technology for managing stones, transurethal resection, and laparoscopy.

One of the most important findings from these surveys concerned the age of cystoscopy equipment, a central piece of technology for the practice of urology. Over a quarter of respondents (26.2%) said that the cysto tables at their centres were over 15 years of age – a further 15.4% said their tables were 11 to 15 years old, as were 22.8% of cystoscopes. These data suggest an important deficit in the updating of some of the basic tools for urology practice.

Regarding imaging, almost all centres had computed tomography scans, transrectal ultrasound, and nuclear imaging available to them. However, only 58% had access to MRI. As the role of MRI becomes more prominent in GU diagnostics, resources will need to be directed towards providing units in busy clinical centres and eventually to smaller centres as well.

In the covering letter that accompanied the surveys, the president of the Canadian Urological Association stated that "Our success and future depends on having a better understanding of all the resources and technology available...". We hope that this research has helped to provide that degree of understanding. □

References

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