

Canadian Association of General Surgeons

Association canadienne de chirurgiens généraux

PRESIDENTIAL ADDRESS, 1997. GENERAL SURGERY IN THE YEAR 2000: LOOKING TO THE FUTURE

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The goal of the 1997 Canadian Association of General Surgeons presidential address was to predict the future for general surgery in Canada in an optimistic fashion. However, on the basis of its current status, the vision for general surgery also includes the reality of the problems that the specialty will face. General surgeons must become advocates so as to help resolve these problems for the community and for their patients.

L'allocution présidentielle de 1997 de l'Association canadienne des chirurgiens généraux visait à présenter un tableau optimiste de l'avenir de la chirurgie générale au Canada. Or, si l'on se fonde sur la situation actuelle, la vision de la chirurgie générale englobe aussi la réalité des problèmes auxquels fera face la spécialité. Les chirurgiens généraux doivent devenir des défenseurs afin d'aider à régler ces problèmes pour la communauté et pour leurs patients.

As we approach the year 2000 it is wise to reflect on the future of general surgery in Canada by looking at the present status of general surgery and trying to analyse the trends. This is an inexact science, but Julius Stoller has reminded us of the quotation by George Santayana: "Progress far from consisting of change, depends on retentiveness. Those who cannot remember the past are condemned to fulfill it."

On this 20th anniversary of the Canadian Association of General Surgeons (CAGS), my main message is that although our specialty is strong we seem to be sailing on a sea of troubles.

CURRENT STATUS

My first question is, Do we have

enough general surgeons? In 1987, Dr. John Hinchey, then the president of this association predicted that we would need to qualify about 60 general surgeons per year.¹ Now, we are doing better than that, training between 68 and 78 per year (Table I). Our 16 medical schools have over 400 trainees each

Table I

Certification of Trainees in General Surgery, 1992 to 1997

Year	No. of certificates issued		
	Total no.	English	French
1992	78	69	9
1993	72	53	19
1994	68	52	16
1995	69	61	8
1996	68	53	15
1997	78	60	18

year (Table II), but the CAGS Education Committee fears that this will not be enough in the future.

Are we keeping our certificants? In surveys carried out by the Canadian Post-MD Education Registry (CAPER) for the years 1991 to 1997, it appears that we are. Table III shows

Table II

General Surgery Trainees in Faculties of Medicine at Canadian Medical Schools, 1992 to 1996*

Year	No. of trainees
1992	424
1993	435
1994	433
1995	471
1996	472

*Regular Ministry funded only
Source: CAPER

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the whereabouts in 1996 of 57 Canadians who completed their training and were certified in 1994. Note that 49 of these 57 remained in Canada. Of 56 Canadians who completed their training in 1995, 48 were still in Canada in 1997 (Table IV). Each year about 25 trainees go into the specialties such as cardiac or thoracic surgery, colorectal surgery, general surgical oncology, critical care, pediatric general surgery or vascular surgery.

Both the CAGS and the Royal College of Physicians and Surgeons of Canada are vitally interested in how many graduates take up academic appointments and how many set up practice in rural regions. This information is difficult to obtain, but the ef-

fort is worthwhile because it affects how we train our general surgeons. Of the 49 general surgeons who remained in Canada after graduation in 1994, 26 were in rural areas; 5 of the remainder had university positions (Table V). Of the 48 general surgeons who remained in Canada after graduation in 1995, 21 were in rural areas; 4 of the remainder had university positions (Table VI). The provincial distribution of active general surgeons in Canada is shown in Table VII. Note that this number, 1366, is close to the number held by Dr. Jim Watters and his membership committee.

Regarding age distribution, Fig. 1 shows the age average by province, as tabulated by the Scully Report.² It is in-

teresting that 41% of general surgeons are still working at the age of 70 years.

TRAINING A GENERAL SURGEON FOR THE 21ST CENTURY

Modern surgery has developed by a process of evolution from an art to a science. Although our basic structure is strong, the training of a surgeon will continue to change. At the RCPSC, our specialty training requirements and objectives both for core surgery and for the specialty of General Surgery are up to date (1996). These achievements have been realized by the Specialty Committee of the RCPSC (Table VIII) and by the CAGS Education Committee, chaired

Table III

Geographic Location, in 1996, of Canadian Surgeons 2 Years After Completing Postgraduate Training

Last field of postgraduate training	Nfld.	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	USA	Not located	Total
General surgery	2	2	2	13	13	1	0	3	4	4	3	47
Pediatric general surgery	0	0	0	1	0	0	0	0	0	1	0	2
Thoracic surgery	0	0	0	0	2	0	0	0	0	0	0	2
Vascular surgery	0	0	0	1	2	0	1	0	2	0	0	6
Total	2	2	2	15	17	1	1	3	6	5	3	57

Source: Diane Thurber, CAPER

Table IV

Geographic Location, in 1997, of Canadian Surgeons 2 Years After Completing Postgraduate Training

Last field of postgraduate training	Nfld.	NS	NB	Que.	Ont.	Man.	Sask.	Alta.	BC	USA	Other country	Total
General surgery	1	0	1	8	16	2	1	2	7	4	1	43
Colorectal surgery	0	0	0	0	0	0	1	0	0	0	0	1
Critical care surgery	0	1	0	0	0	0	0	1	0	1	0	3
Pediatric general surgery	0	0	0	2	1	0	0	0	0	2	0	5
Thoracic surgery	0	0	0	0	1	0	0	0	0	0	0	1
Vascular surgery	0	0	0	1	2	0	0	0	0	0	0	3
Total	1	1	1	11	20	2	2	3	7	7	1	56

Source: Diane Thurber, CAPER

until recently by Dr. Kenneth Harris and now by Dr. Noelle Davis. University program directors are also corresponding members.

It is noteworthy that, among other improvements, a new paragraph has been added to the specialty requirements that relates to certain required skills for rural practice.

The fully trained general surgeon is expected to function competently in the initial management of conditions that, in major centres, fall within the realm of other specialties. These include: the principles and procedures in the management of the critically ill or traumatized surgical patient; respiratory, renal, coagulation and liver failures in the surgical patient; management of common fractures; hand nerves; upper and lower urinary tract injuries; tracheostomy; even “bur-holes” as well as the placement of tongs for skeletal traction.³

In other matters relating to our structure at the RCPSC, a 2-year core curriculum has been established. Fur-

ther, the principles of surgery examination, which assesses the core curriculum program is chaired by a general surgeon, Dr. Gilles Beauchamp.

The specialty-specific final in-training evaluation report was the first one of the genre and was prepared by Dr. Bryce Taylor and his CAGS Education Committee at the time.

We also have the CAGS in-training examination under the direction of Dr. Stevens Norvell Jr. of Dalhousie University. Now in its 19th year, it correlates very well with success in the RCPSC examinations. The dates of the final qualifying RCPSC examinations have now been settled upon: the spring of the senior residency year. The current chief examiner for the English Board is Dr. Christopher Heughan and for the French Board is Dr. Jean Robert. Under these capable examining boards, the pass rate has been reasonable (Table IX). So let us assume that the structure is there to produce well-qualified general surgeons and in sufficient quantity for the future.

Table V

Location of the 26 Trainees Who Graduated in 1994 and Set Up Practice in Rural Regional Areas*

Gander, Nfld.	Verdun, Que.
Grand Falls-Windsor, Nfld.	Cornwall, Ont.
Rothesay, NB	Newcastle, Ont.
Baie des Chaleurs, Que.	Point Edward, Ont.
Beauport, Que.	Sudbury, Ont.
Chanler, Que.	Windsor, Ont.
Hull, Que.	St. Albert, Alta.
Lévis, Que.	Duncan, BC
Mont-Laurier, Que.	Nanaimo, BC
Repentigny, Que.	Prince George, BC
Sainte-Foy, Que.	Richmond, BC
Trois-Rivières, Que.	Salmon Arm, BC
Val d'Or, Que.	

*5 of the total of 49 trainees took up academic positions.

Table VI

Location of the 21 Trainees Who Graduated in 1995 and Set Up Practice in Rural Regional Areas*

Douglastown, NB	Winchester, Ont.
Moncton, NB	Windsor, Ont.
Baie Comeau, Que.	Morden, Man.
Baie des Chaleurs, Que.	Winnipeg (including Headingly), Man.
Hull, Que.	Red Deer, Alta.
Maniwaki, Que.	Lethbridge, Alta.
Cambridge, Ont.	Nanaimo, BC
Collingwood, Ont.	Nelson, BC
Courtice, Ont.	Prince George, BC
St. Catherines, Ont.	Williams Lake, BC
Thunder Bay, Ont.	

*4 of the total of 48 trainees took up academic positions.

THE FUTURE

The term “general surgery” is well recognized in the medical profession. Dr. Marvin Wexler, during his presidency 5 years ago, quite correctly wondered about the definition of general surgery.⁴ We can now be secure in our position. All doctors know what a general surgeon does. Even though patients do not always recognize the precise nature of our specialty, our role in the medical profession is well established.

However, the issue of community surgeons is a more contentious one. After polling all 16 program directors in Canada about the training of “generalist” general surgeons, Drs. Chiasson and Roy of Dalhousie University concluded that: “Surgical training for residents planning to practise as ‘generalist’ general surgeons in non-urban communities is sub-optimal. Training should be based on an early exposure to community surgical practice followed by non-general-surgery subspecialty rotations in the later years of training or during a community surgery postgraduate fellowship.”⁵

Table VII

Provincial Distribution of Active General Surgeons in Canada in 1997

Province	No. of general surgeons
Newfoundland	21
Nova Scotia	48
Prince Edward Island	5
New Brunswick	23
Quebec	472
Ontario	473
Manitoba	52
Saskatchewan	51
Alberta	98
British Columbia	123
Total	1366

Further, Drs. Ray and Bose⁶ recommended specially designed training programs and their implementation through the involvement of various bodies including the community in which the candidate intends eventually to practise. For example, if a general surgery trainee knows that he or she is going to practise in a rural area where there is no obstetrician/gynecologist, then a well-structured period of preparation in this field toward specific objectives such as cesarean sections would be indicated. But this special training must not dilute that of general surgery, which is a specialty in itself. This topic has been the subject of 4 CAGS presidential addresses — those of John Duff,⁷ Fred Murphy,⁸ Jean Couture⁹ and Tom Williams.¹⁰ Good papers have also appeared in the *Canadian Journal of Surgery* by Drs. Bryce Taylor in 1992¹¹ and by Gerald Fried in 1994.¹²

In the 1995 RCPSC Specialty Physician Work Force Study,² Dr. Hugh Scully of Toronto and his committee reported much interesting information on this subject. Many gen-

eral surgeons over the age of 50 years also did some plastic, orthopedic or gynecologic surgery, but this was not so for those under the age of 50 years. The study workers polled 165 general surgeons across Canada. Twenty-three of them reported that more than 50% of their practice was in primary care/general/family practice. Of those reporting that more than 50% of their time was spent in specialized general surgery disciplines, 5 did pediatric general surgery, 30 did colorectal surgery, 5 did head and neck surgery, 16 did general surgical oncology and 8 did transplantation. The other disciplines in which general surgeons reported spending more than 50% of their time included thoracic surgery, 9; cardiothoracic surgery, 9; vascular surgery, 18; critical care medicine, 11. No significant amount of time was spent by the 165 general surgeons in orthopedics (1 surgeon reported that he did hand surgery), urology, neurosurgery, obstetrics/gynecology (1 surgeon reported spending a significant amount of time), plastic surgery (2 surgeons spent time in

this discipline) and otolaryngology.

It is not easy to persuade general surgeons to practise in rural areas. We prefer to work in tertiary care hospitals, which have all the resources. Provincial governments have found it difficult to recruit young surgeons to rural regions. Socially, it appears that most prefer an urban lifestyle.

Training programs

The length of our training programs seems to be satisfactory. Of the 17 surgical specialties recognized by the RCPSC, 7 are of 5 years' duration. According to the latest data produced by the National Board of Medical Examiners, the average number of years required by the 24 boards represented by the American Board of Medical Specialties is 5.0 years. In addition to the time needed to acquire the cognitive knowledge and technical skills necessary to our practice, a certain investment of time is needed to appropriately apply these skills. Also, enough time is needed to provide learning opportunities that are well balanced with service requirements.

In considering the training of a general surgeon, we should also keep in mind that certain issues will need to be addressed.

- Re-entry

Table VIII

Royal College of Physicians and Surgeons of Canada: Specialty Committee in General Surgery

Committee member	City
Roger G. Keith (chair)	Saskatoon
Ian F. Smith	St. John's
Murray J. Girotti	London
Robert Baird	Vancouver
Duncan J. Gillespie	Winnipeg
Robert M. Girard	Montreal
D. Brock Vair	Halifax

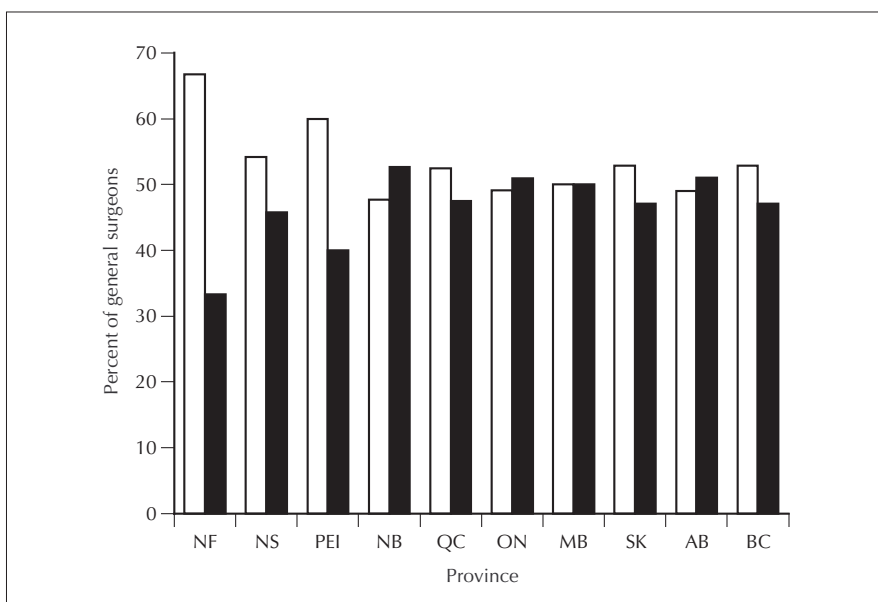


FIG. 1. The age distribution of general surgeons by province. White bars = ≤ 54 years, black bars = ≥ 55 years.

- Travel year. I would like to see provisions made for a travel year.
- Correlation with the American Board of Surgery. That board currently requires 60 months, of which 54 months must be in general surgery. This has affected our research year.
- Jobs. It is not always easy to find jobs. Perhaps, the CAGS Web site at the RCPSC may help in this regard.
- Guidelines. We are being asked increasingly frequently to prepare guidelines. Obtaining uniform approval can be problematic.
- Privileges. Administrators want us to categorize skills for operating surgeons.

AMBULATORY SURGERY

Enough has been written about ambulatory surgery, but there is no doubt that the scope of our practice will continue to be changed by outpatient surgery. Most elective cholecystectomies, hernias and even breast operations can now be done as same day surgery. This has meant that we have had to change our ways. To increase efficiency, we are designing new ambulatory operation facilities so as to maximize productivity. The consent form must be signed in the office. We need well-functioning preadmission clinics at which anesthetists and internists are present as well as the admitting residents and students. Tests and cross-matching have to be done there. General instructions need to be documented for preoperative and postoperative care. Discharge planning is required perhaps with a nurse hired for follow-up.

In this manner, cost savings may be made in beds. In our hospital, the fixed cost for a 35-bed ward is Can\$1.3 million per year. Currently, our same-day admissions and day-surgery admissions surpass 50%. It is predicted that this will become more

and more the accepted way of life. Dr. C. Milne discussed this recently in the *Canadian Journal of Surgery*,¹³ and it was also the subject of a symposium chaired by Dr. John MacFarlane at last year's meeting.¹⁴ Of course, we will always need beds for our other patients, but currently our waiting lists are reasonable. According to the Fraser Institute,¹⁵ the median total waiting period from general practitioner referral to treatment for general surgery was 5.8 weeks in 1993 and 6.4 weeks in 1996.

TECHNOLOGY

In technology the future is so bright it is mind boggling.

Health information highway

The health information highway will become a superhighway. Patients will be linked to health care workers and institutions through a network of computers, telephones, optical fibres and satellite systems. Databases will be generated to provide information not only to patients but to the surgeons who follow these patients.

"High tech"

"High tech" will continue to revolutionize surgery. Robotics and more advanced medical imaging will facilitate common surgical procedures. The following are some "tools" that we can look forward to:

- "Smart" instruments (synesthesia) are being developed that are beyond "grab" and "cut." They will be intuitive with sensors that perceive stimuli; they will be powered by motors with electric, pneumatic or hydraulic drives, which will provide a greater degree of freedom such as flexion and rotation, like a hand; they will be capable of rapid repetition; they

will have microsurgical capability.

- The operating room will be like a command module and have a workstation concept. Engineers are constructing I-beam operating tables with electronic sensors. We will have a hydraulic chair so that we can sit down. Mechanical assistants such as surgeon-controlled robotic arms will be developed; these have been called RO-BODOCs.

In the 1950s we read novels by Isaac Asimov's about robots. Now, Colonel Richard Satava of the United States Army Medical Corps writes about the reality of these fancy new instruments.¹⁶

- Our visual operating field will be

Table IX

Royal College of Physicians and Surgeons of Canada Examinations: Pass Rate for General Surgery, 1992 to 1996

Year	Examination pass rate, %	
	Written	Oral
1992	97.1	85.7
1993	90.7	88.9
1994	93.5	87.2
1995	87.1	93.2
1996	81.0	97.1

Source: Royal College of Physicians and Surgeons of Canada

Table X

Estimates of the Numbers of Patients With Various Cancers in Canada for 1997

Type of cancer	No. of patients
All cancers	130 800
Female breast	18 400
Colorectal	16 400
Melanoma	3 200
Stomach	2 800
Pancreas	2 900
Thyroid	1 520
Esophagus	1 250

Source: National Cancer Institute of Canada

improved by 3-dimensional stereoscopy, higher resolution, wireless transmission (no television monitors will be needed) and camera technology that includes telepresence. Our trainees may learn operating skills in a computer-assisted module. This is especially so for video-assisted surgery such as laparoscopy. They may learn using a surgical helmet with enhanced virtual reality.

- There will be improved imaging accuracy. The electron beam CT scanner will be improved when it has a larger focus, and it will provide rapid images; we will have better spiral CT with the ability to reconstruct 3-dimensional volume.

- MRI. The MR imagers will have improved image resolution and be faster.

- There will be improved communications such as: DICOM 3, which is to be a standard of communication that distributes all different imaging modalities to the area where they are required (ward, operating room, surgical intensive care unit, emergency department). Ultrasonography, will have 3-dimensional capability. This apparatus will change from analogue to digital and will be adapted for the operating room. The American Board of Surgery recently has recognized the need for surgical residents to become knowledgeable about ultrasonography. A book on ultrasonography has even been written for surgeons,¹⁷ and this text will be a help in that educational effort.

THE FUTURE

Patient power

As far as the health system is concerned, there will be "patient power." Patients, not doctors, will drive the system. The patient and the family will be central to the organization of care. This

network will include the community-based physician, the hospital, the home, the community clinic, the rehabilitation centre, the birthing centre and the long-term care institute, but the patient will be at *the centre* of it. Universities will, of course, have to adapt to this framework.

Ethics

Because of the complexity of our work, we will become more and more concerned with matters pertaining to ethics. Dr. Gilles Beauchamp, chairman of the CAGS Committee on Clinical Ethics, polled 442 general surgeons about ethical problems. Most reported that they confronted ethical issues often or occasionally, but all believed that ethical issues were becoming more and more of a problem.

Health advocate

As we look into the crystal globe, some aspects of the future begin to appear less cloudy. Two major discussions at the August 1997 meeting of the Canadian Medical Association in Victoria lead us to believe that, first of all, Canadians will spurn privatization of health care, the so-called 2-tiered system. Second, Health Minister Allan Rock admitted that "Health cuts have hurt." It was the first time since the Chrétien government slashed the provinces' social program transfers by \$7 billion annually that a cabinet minister has admitted that cutbacks would have consequences.

With "cost containment," our resources and ancillary services will decrease, but we must beware lest our morbidity and mortality increase.

In order to monitor this situation, we must make sure that we act as an advocate and become involved in the provision of health care. The 7 roles for physicians and surgeons have been

promulgated for the year 2000 by the Maudsley Committee and 1 of them is as a "health advocate."

As general surgeons, we are dependent on the system. We rely on assistants, anesthetists, the operating room, the surgical intensive care unit, the recovery room, nurses, the admitting office and pathology staff to name just a few. As our supporting services decrease due to cost containment, so do our clinical activities. As a consequence of the latter, waiting times will increase along with patient dissatisfaction. Department and division chiefs may have more difficulty filling service rosters, and the administrative load will increase.

In view of this dependency on hospital resources we must act as an advocate to ascertain that we will not be like a strong ship . . . that is, aground with no sea to support it.

We must be more active in social, health and political issues.

As an example of the workload we face, just look at the predicted number of patients with some cancers in Canada for 1997 (Table X).

Problems

Of course, we will face major problems. We will be exploring new frontiers of knowledge particularly in the field of genetics and molecular biology. The surgeon oncologist will have to keep up to date on the new findings. There is an explosion of knowledge in the field of cytokines. We are also now talking about "dendritic" cells as therapeutic reagents for the treatment of patients with cancer. Dr. Samuel Wells of the American College of Surgeons foresees the increasing importance of oncogenes in our surgical practice.

We will continue to face risks. We will be exposed to the hepatitis B, hepatitis C and human immunodeficiency

ciency viruses. We will need to be meticulous in our “universal precautions” and vaccinations.

With respect to our earnings, matters have become complicated and the future is cloudy. Fee for service has been around Canada since medicare was introduced in 1970. But cuts have squeezed our main sources of income, hence the rush for new pay systems. This will occupy much of our time and tax our ingenuity.

SEVEN GIFTS

As we plan for the 21st century, here are the 7 attributes that general surgeons should possess.

Good health . . . that sort of wiry constitution which is able to resist fatigue and infection.

Luckiness . . . pure luck is one of the chief factors making for happiness and success. Some men and women owe all or nearly all their success to luck, but if you have it not, remember that hard work and patience can make up to a great extent for the want of it.

Brains . . . but not too many. It is unnecessary — perhaps dangerous — in medicine to be too clever. But if I had not many brains to bestow I should make up for it by an extra gift of diligence.

Equanimity . . . there is no quality of mind more essential to you as doctors, for you will often have to face sudden and disconcerting emergencies and a fair share of it will also do much to preserve you from the corroding effect of those worries which are unescapable in practice.

A sense of justice in the first place to your patient — Justice also to your professional brethren — and lastly a sense of what is just to yourself.

A sense of beauty Disease is ugly. . . . You will need a sense of beauty as a compensation and a way of escape; as a sanitifying and steadying influence.

My last and best gift would be a sense of humor. . . . It will help you to bear with the vagaries of your patients and still more with those of their relations and to derive amusement instead of annoyance from the eccentricities of your colleagues.¹⁸

CONCLUSIONS

So I think, in conclusion, that we are in good shape as we head toward the year 2000. We must pledge ourselves not only to be good surgeons and healers but we must also be *advocates* so as to promote and develop our specialty of General Surgery.

The future is daunting, but we are compelled to face it. We are good at problem-solving so we must be confident that the future looks promising.

So let's be optimistic. “It is better to light one candle than curse the darkness.” [Motto of the Christopher Society]

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