

Canadian Association of University Surgeons Annual Symposium: continuity of care

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Chris de Gara, MB*
Per-Olof Nyström, MD, PhD†
Stewart Hamilton, MD‡
Debrah A. Wirtzfeld, MD§
Brian M. Taylor, MD¶

From the *Department of Surgical Oncology, Cross Cancer Institute, University of Alberta, Edmonton, Alta., the †Department of Surgical Gastroenterology, Karolinska University Hospital, Huddinge, Sweden, the ‡Division of General Surgery, University of Alberta, Edmonton, Alta., §CancerCare Manitoba, the Departments of Biochemistry and Medical Genetics, Community Health Sciences and Surgery, University of Manitoba, Winnipeg, Man., and the ¶Division of General Surgery, University of Western Ontario, London, Ont.

Correspondence to:

Dr. C. de Gara
Continuous Professional Learning
University of Alberta
2J3 Walter Mackenzie Centre, HSC
Edmonton AB T6G 2R7
fax 780 407-1442
cdegara@ualberta.ca

This 2007 symposium of the Canadian Association of University Surgeons brought together surgeons from a number of jurisdictions to discuss the challenges and opportunities that reduced physician work hours will bring to the care of the surgical patient. Dr. Brian Taylor, president of the association, underscored the need to find a balance between the benefits of diminished workloads/work hours and the loss of continuity of care. He opined that Canada needs to learn from our European colleagues' experience. Dr. Per-Olof Nyström, professor of surgery, presented the modern Swedish model of surgical care, which had to be developed as a consequence of the European Union's legal restrictions on the amount of time an individual surgeon may work. Sweden employs a team-based shared-care model driven by the individual surgeon's expertise rather than the "village factory" model of the multiskilled, multitasking approach of surgical care more prevalent in Canada. Dr. Chris de Gara, secretary treasurer of the association, presented the evidence base for (and against) work-hour restrictions and how well-designed systems can ensure effective continuity of care. Dr. Stewart Hamilton illustrated how one such system for the delivery of the emergency general surgical services has evolved at the University of Alberta Hospital, which demonstrated its effectiveness in providing quality surgical continuity of care. Dr. Debrah Wirtzfeld underscored the importance of trainee lifestyle and how modern Web-based technologies can ensure reduced errors with the implementation of a "sign-out" system.

Ce symposium organisé en 2007 par l'Association canadienne des chirurgiens universitaires a réuni des chirurgiens de plusieurs administrations qui ont discuté des défis et des possibilités que la réduction du nombre d'heures de travail des médecins suscitera dans le soin des patients en chirurgie. Le D^r Brian Taylor, président de l'association, a insisté sur la nécessité de trouver un équilibre entre les bienfaits découlant d'une diminution de la charge et du nombre d'heures de travail et la perte de continuité des soins. Il a affirmé que le Canada doit tirer des leçons de l'expérience de nos collègues européens. Le D^r Per-Olof Nyström, professeur de chirurgie, a présenté le modèle suédois moderne de soins en chirurgie qu'il a fallu créer suite à la restriction des heures de travail des chirurgiens, imposée par la loi dans l'Union européenne. La Suède a recours à un modèle de soins partagés en équipe dictés par le savoir-faire du chirurgien en cause plutôt que le modèle « usine de village » de l'approche basée sur les compétences et tâches multiples des soins chirurgicaux qui prévaut davantage au Canada. Le D^r Chris de Gara, secrétaire trésorier de l'association, a présenté des données probantes qui appuient (et n'appuient pas) la restriction du nombre d'heures de travail et a décrit comment les systèmes bien conçus peuvent assurer la continuité efficace des soins. Le D^r Stewart Hamilton a décrit comment un tel système de prestation de services chirurgicaux généraux d'urgence a évolué à l'Hôpital de l'Université de l'Alberta, qui en a démontré l'efficacité dans la continuité des soins chirurgicaux de qualité. La D^{re} Debrah Wirtzfeld a souligné l'importance des habitudes de vie de l'apprenant et décrit comment les technologies web modernes peuvent réduire les erreurs par l'implantation d'un système dit « de sortie ».

The evidence that patients' health care is best served with effective continuity of care is unquestioned. Yet 80-hour workweeks and research showing the connection between medical errors and sleep-deprived doctors are serving as a wake-up call to the medical profession. Is it possible to achieve that optimal care without sacrificing the well-being of health care professionals? On Sept. 6, 2007, an expert panel at the Canadian Association of University Surgeons (CAUS) Annual Symposium in conjunction with the Canadian Surgery Forum in Toronto, Ontario, addressed this question and discussed different systems of standards of care.

CONTINUITY OF CARE VERSUS SURGICAL SHIFT WORK: WHERE ARE WE GOING?

DR. BRIAN M. TAYLOR, PRESIDENT CAUS, UNIVERSITY OF WESTERN ONTARIO

The advantages of continuity of care are that rapport and trust is formed between the patient, family and surgical team before admission, in hospital and after discharge. Continuity of care ensures management efficiency and facilitates the decision-making process. Responsibility for care is also clearly identified for the family. In such a system, it is natural to learn from results of management decisions, and medicolegal issues are less likely with a good rapport. There is no salary; staff is paid for the work done.

Disadvantages of a system that implements continuity of care are that fatigue may result in incorrect decisions or failure to make proper decisions. "Tunnel vision," "lack of perspective" or bias may lead to faulty decisions. It can be hard to leave the hospital, and staff tends to put in long hours. There is also a lack of familiarity with the "handover process."

What are the advantages of shift-work surgery? It is easier for surgeons to maintain a lifestyle and defined work hours, there are no call backs after hours, a shared responsibility makes for a "lighter load," and the system allows for a "fresh pair of eyes" and "sharp new mind." Surgeons receive a salary, pension, benefits and paid holidays. The patient receives care from several consultants.

The disadvantages of shift-work surgery include difficulty in building rapport and trust between patients and surgeons, and among surgeons. Staff also go through a "starting over" phenomenon and, along with patients, family and the surgical team, have difficulty identifying the surgeon-in-charge. Patients cannot choose their own surgeon. Decision-making can be deferred, and learning from decisions is less likely. The volume of work may be lessened, but learning situations are reduced. The responsibility for postdischarge care can also be unclear. The "handover process" must be comprehensive and include complete details about after-hours work, intraoperative staff changes, postoperative care and postdischarge care. Shift-work surgery also needs many more fully trained staff and faces more medicolegal issues.

When it comes to surgical hours and responsibility, the North American model is slowly changing, but the direction is not coordinated. North America may learn useful lessons from radical changes in Europe.

SHIFT-WORK SURGERY: OUR FUTURE

DR. PER-OLOF NYSTRÖM, KAROLINSKA INSTITUTET AND KAROLINSKA UNIVERSITY HOSPITAL, HUDDINGE, SWEDEN

Dr. David Gratzner, a Manhattan Institute scholar who published an article entitled "The ugly truth about Canadian

health care"¹ states that "socialized medicine has meant rationed care and lack of innovation. Small wonder Canadians are looking to the market."

However, there is probably not a health care system that meets approval by everyone. Sweden, for example, is made up of 21 counties with elected governments for health care, public transportation and culture. There are 6 health care regions, each with a university hospital. A flat tax of 12% ensures that health care is available to all residents, and is virtually free of charge. No "independent" or private health care providers are to operate within the country, and all hospitals are publicly owned.

Each hospital serves a defined population and region — patients need a referral to go outside their county.

As a Swedish academic surgeon, Dr. Nyström, for example, is on a fixed monthly salary and puts in a 40-hour workweek. Twenty percent of his time is dedicated to academic work and 80% to clinical work. On weekdays, he is expected to clock in and out, and overtime is exchanged for time off, within limits. His on-call time is replaced with time off. He is given 6 weeks of paid vacation per year.

Work-time regulations

According to Swedish law, a maximum of 40 hours can be scheduled per week. Overtime and on-call time allows for a maximum of 48 hours per 4-week period, or a total of 200 hours per year. Night work must not exceed 8 hours per 24 hours, on average over a 4-month period. Workers are required to take a minimum of 36 hours of uninterrupted rest for each period of 7 days. Swedish law also allows for 4 weeks of uninterrupted leave from Jun. 1 to Aug. 31. There is some leeway in the practice of these regulations, such that the service can be maintained at a reasonable level even in the shortage of staff.

The European Working Time Directive outlines minimum health and safety requirements for time spent working. It states that every worker is entitled to a minimum daily rest period of 11 consecutive hours, every 24 hours. For every 7-day period, all workers are entitled to a minimum uninterrupted period of 24 hours, plus the 11-hour daily rest. The average working time for each 7-day period, including overtime, must not exceed 48 hours. And every worker is entitled to paid annual leave of at least 4 weeks.

When this directive became law in January 2007, most of its content was already part of the previous Swedish regulations. However, the hospital employers' organizations unsuccessfully attempted to implement a rule that would see doctors working shifts between 7 and 21 hours, including weekends.

Consequences of fewer working hours

Are there disadvantages to fewer working hours? There may be less time for reflection, less time for keeping

abreast with literature and less time for teaching and learning. But surgeons do not just think about surgery during paid working hours.

With fewer working hours, more surgeons are required, parallel processes must be encouraged, and surgeons are required to adopt subspecializations and sub-specializations. A common context and trust must exist among members of the health care unit, and there can be no “solo” businesses. Patients are treated by teams rather than by the individual surgeon.

Surgery must also make the move from “village factory” to a business model to ensure quality of care, consistency, innovation and effectiveness.

A number of innovations for colorectal surgery originated in Europe, including

- total mesorectal excision for rectal cancer,
- preoperative radiotherapy for rectal cancer,
- turning patients prone for abdominoperineal resection,
- colonic pouch-anal anastomosis,
- ileum pouch-anal anastomosis for ulcerative colitis,
- transanal endoscopic microsurgery for rectal adenoma,
- stapled anopexy for mucoanal prolapse,
- stapled transanal rectal resection for rectoanal prolapse,
- dynamic graciloplasty for anal incontinence, and
- sacral nerve stimulation for anal incontinence.

When it comes to surgeon expertise and ability, the musician's rule must come into play: the hours of practice are vital. Over a period of 5 years (between 1996 and 2000), 11 university consultant surgeons performed anywhere between 225 and 900 major surgeries, for an average of 100 per year. During that same period, 12 residents or young specialists performed between 40 and 175 surgeries per year.

Surgery is a marvellous profession for the consultant. Trainee surgeons do not say, “I can do that better.” David Gratzner has written that Sweden's government, after the completion of the latest round of privatizations, will be contracting out 80% of Stockholm's primary care and 40% of its total health services, including one of the city's hospitals.¹ Although this ultimately may be the result, the contracts are still tax paid and carefully specify the volume of care per contract.

WORK HOURS, WORKLOAD RESTRICTIONS AND THEIR IMPACT ON CONTINUITY OF CARE

DR. CHRIS DE GARA, UNIVERSITY OF ALBERTA

Residents putting in an 80-hour workweek are serving as a wake-up call to the profession. Previous literature has argued that no one would fly on a plane in which the pilot had been awake for 30 hours, especially if the only justification was that this is the way pilots had always been trained, or that this was the only way the pilot could learn to be a pilot.²

The Halstedian Residency Training Model has been in

existence since 1890. Under this model, the resident surgeon is subjected to a restrictive lifestyle, a paternalistic system and a structure that endorses patient ownership. Residents are poorly paid, discouraged from marrying, receive didactic information from contact with professors, are responsible for patient welfare around the clock and belong to a system in which altruism, attentiveness and personal sacrifice are assumed.

In the case of Libby Zion, the daughter of a prominent *New York Times* reporter, a grand jury concluded that lack of attending supervision and long working hours of residents contributed to her death in 1984. The court ruled that the “graduate medical system was structured to allow unsupervised junior-level residents to make fatal mistakes.”

In 1989, Section 405 of the Patient and Physician Safety Act allowed for an 80-hour workweek, 24-hour shifts, duty hours followed by 8 hours off and 1 day off every 7.

The Health Care Reform Act of 2000 enforced a \$6000 maximum fine to noncompliant teaching hospitals for resident work-hour violations, \$25 000 for the second offence and \$50 000 for the third offence.

The European Working Time Directive of 2000, on the other hand, called for an average 48-hour workweek. It stated that by 2004, doctors must put in no more than 58 hours of work; by 2007, no more than 56 hours and by 2009, the workweek must be reduced to 48 hours. The directive also stated that night workers must work an average of 8 hours out of 24 and that they were to receive free health assessments. Night workers also were to take 11 hours of rest per day and 1 day off each week, and were entitled to an in-work rest break for workdays longer than 6 hours.

The imperative question to ask is whether patient care has improved or deteriorated as a result of work-hour restrictions. Multiple studies have shown that well-rested physicians outperform those who are sleep deprived. Research has also proven that there are fewer medication errors with decreased work hours.

However, work-hour restriction has revealed delays in the ordering of tests, increased complication rates and use of laboratory tests, and increased length of stay and re-admission to the intensive care unit.

Studies have found no significant improvement or deterioration in mortality, length of stay in hospital or intensive care, or ventilator days before or after the implementation of an 80-hour workweek.

Other literature reported a minor (13%) increase in rates of cesarean delivery when the patient was not attended by their own obstetrician.³ Additionally, in a separate investigation of 250 000 surgical patients, there were no differences before and after implementation of workload restrictions.⁴

Teaching hospitals are complex health care delivery systems with multiple areas of redundancy, where physicians only make up 3.2% of all health care employees. Surgeons

only make up 14.6% of physicians, and residents are a small percentage of this number.

Has limiting work hours decreased the number of operative experiences, clinical exposure and other educational opportunities? Residents in a 5-year program, at 80 hours per week, put in a total of 19 200 hours; 2573 hours or 14.3% of that time was spent as chief.

A recent study looked at the number of surgical procedures performed by the surgical residents each year, both before and after the work changes were implemented.⁵ Overall, the number of surgeries increased from 231 to 246 after the changes took effect.

There is limited, subjective data to determine whether an 80-hour workweek has improved residents' quality of life. One study found that residents in family medicine and internal medicine recorded an improvement, whereas surgical and obstetrics/gynecology residents showed no improvement.⁶

Have faculty hours increased since the work change? A 2005 study showed that 70% of surgical faculty surveyed predicted an increase but only 47% said it actually did.⁷ The study found a slight reduction in faculty hours after the 80-hour workweek. Forty-six per cent of those surveyed thought the reduction in resident work hours were harmful to the faculty.

There are a number of variables to take into consideration when discussing improving patient care in this changing world, including the differences between Generation Xers and Baby Boomers. Communication and culture, supervision and experience, the task and technology, workload and scheduling, and institutional context all must be dealt with when implementing change.

Change is inevitable. The public, governments, and licensing and protective authorities will no longer accept the notion that surgeons are invincible or indispensable. Restrictions and legislation that initially apply only to trainees will inevitably be applied to surgeons in practice — it is mostly a matter of time! The excuse “who is going to do the work” will no longer be acceptable, and alternatives will have to be found, with patient safety being paramount. Potential solutions include looking at lengthening training or adapting it to meet modern needs.

ACUTE CARE AND EMERGENCY SERVICE

DR. STEWART HAMILTON, UNIVERSITY OF ALBERTA
HOSPITAL PILOT PROGRAM

The University of Alberta Hospital is home to a large volume of trauma. It sees 1100 emergency cases per year, more than 300 cases from intensive care, is a high-volume tertiary care centre, with more than 1500 open heart cases annually, a transplant centre and dialysis program, and is competing for resources.

In this pilot project, surgical staff receive a sessional fee for each 12-hour shift, which is a guaranteed minimum.

Billings to the Alberta Health Care Insurance Plan are used to cover the fee. Staff are on call for the acute care and emergency service (ACES) 7 day shifts (0700–1900) in a row, and night shifts are covered individually. The “hospitalist” is an FRCSC surgeon, and resident coverage consists of a junior and senior (postgraduate year 3) resident in house.

To ensure continuity of care, the Monday morning handover is done in person, between staff surgeons and with the hospitalist and residents on the service. Daily handovers are done by telephone or in person if there is a patient in the operating room. The surgeon on duty for the week oversees the care of all patients on ACES, including consults and patients in the intensive care unit. In the morning, night-shift admissions revert to the surgeon who is on duty for the week. The surgeon who initially operates on a patient has the final responsibility for follow-up and ongoing care.

An attempt is made to consolidate all cases in one inpatient unit and on the trauma unit. A daily round of cases on the unit is made by the hospitalists and senior nursing team. The care of patients on ACES longer than 2 weeks reverts to the responsible surgeon, and the operating surgeon has the option of taking over the care of patients immediately postoperatively or at the end of their week.

The resident, hospitalist and/or attending surgeons make daily notes to document continuity of care. The hospitalist does all of the discharge summaries for the non-operative cases. The surgeon is responsible for operative notes and discharge summaries as well as follow-up arrangements.

Concerns have been raised about how to identify the responsible surgeon or doctor for a patient, how communication with the families is maintained, and how complications and follow-up are handled after major procedures by surgeons who are not on staff at the University of Alberta Hospital.

The advantages of this system include the existence of excellent teaching and research opportunities and the timeliness of investigations and surgical decision-making (there are no distractions by elective practice, the operating room is readily available every day, there is availability to the emergency department and critical care line, and the attending surgeon is well rested each morning).

ENSURING CONTINUITY OF CARE: STYLES AND EFFICIENCY OF THE HANDOVER PRACTICE

DR. DEBRAH WIRTZFELD, MEMORIAL UNIVERSITY
OF NEWFOUNDLAND

As patient care becomes more complex, it is becoming increasingly important to address continuity of care. This is further accentuated by restrictions on resident work hours and the more balanced lifestyles sought by the next generation of surgical trainees.

It is essential to define what residents consider when choosing a career in surgery, or, more importantly, not considering a career in surgery. Once these factors are identified, surgical residency programs may use the information in their recruiting efforts to attract the most qualified applicants for postgraduate surgical training.

Perceived controllable lifestyle factors account for most of the variability in specialty choices by American medical students. These include patient demands, perceived responsibilities, and the ability to balance work and family life. It is not necessarily the ability to have a “part-time” practice, but the ability to structure a “life story,” regardless of full-time or part-time practice.

There are numerous styles of patient care handover found in clinical practice. In a solo practice, there may be resident coverage or a surgeon may be faced with no coverage at all, even when out of town.

In a team approach, a hospital-based group may share on-call duties or all patient care. More recently, acute care teams have arisen in response to the recognition that “acute care” and the issues related to acute care patients is a specialty unto itself. Patients admitted through the emergency room, and in some cases trauma patients, are managed by a team of staff members, residents and medical students to provide continuity of care during the day. Night coverage is ensured by an acute call schedule with surgeons participating to a greater or lesser extent depending on their other commitments.

Efficiency in the handover practice can be defined as the coordination of services and the maintenance of stability in patient-provider relationships over time. It also requires linking past and current care to future care.

The prevention of errors in patient care handover is deemed so significant that the World Health Organization has named it number 1 on the list of “High 5s”: an initiative to implement innovative, standardized operating protocols for 5 patient safety solutions over 5 years.

Residents have traditionally provided the desired continuity of care in academic centres. With the advent of the 28-hour rule in 2003, accurate and efficient handover techniques were necessary to address a move to a team-based approach. Now, Web-based systems have arisen as a means of improving resident communication and efficiency.

The sign over of care for admitted patients by written or verbal communication is known to be flawed. One study employed interviews in which first-year resident physicians discussed adverse events related to sign-over and suggestions for improvement. Twenty-six interns caring for 82 patients described 25 adverse events related to communication errors of sign over. Errors of omission (e.g., medications and tests) and errors related to lack of face-to-face discussion were noted as important areas of communication failure. This speaks to the need for a standardized, reliable sign-over process that ensures continuity of care.⁸

At Sunnybrook Hospital, a sign-out system was initiated in general medicine as a result of inadequate sign over of patient care.⁹ It is made up of a Web-based electronic patient sign-out information (EPSI) system. The electronic patient record has been shown to positively impact patient satisfaction, physician satisfaction and communication outside the acute care setting.

The MediSign System at Mount Sinai, New York, is designed around the natural “work flow” of residents and creates a real-time discharge summary available to primary care and specialist providers.¹⁰ It includes names and page numbers of attending physicians and residents, admitting and discharge diagnoses as well as code status, a problem list, medication/allergies, test results and consultant names.

A Web-based sign-out system in Seattle led to a 40% increase in time actually spent with patients, a decline in the number of patients who were missed on morning rounds because of incomplete patients lists and/or incomplete sign over, and shortened team rounds, on average by 1.5 minutes.¹¹

The transfer of information among surgeons can lead to a taxonomy of errors because it blurs the boundaries of responsibility, decreases physician familiarity with patients, diverts surgeon attention, and distorts or inhibits communication.

Lifestyle is an important consideration of medical trainees. When it comes to practice styles, there are those with minimal cross coverage and those requiring a more organized handover of information. Surgeons in both categories can benefit from a more standardized approach to handover and completion of a timely and accurate discharge summary.

Web-based sign over and completion of the discharge summary has been readily accepted.

Further research is required to examine the impact on adverse events and affordability of these systems.

CONCLUSION

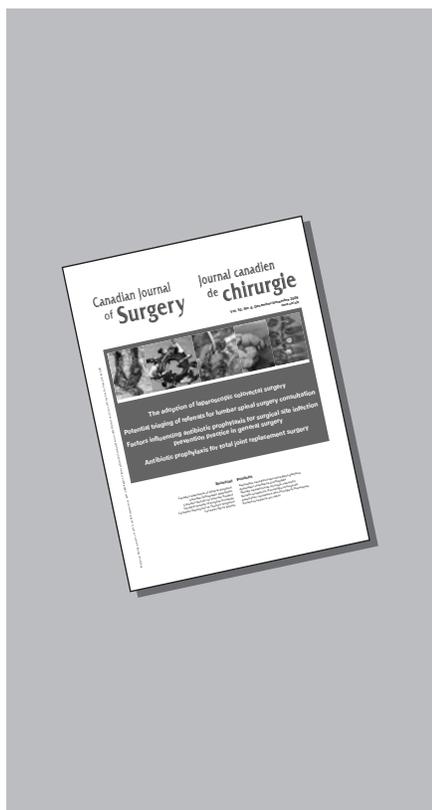
Change is certain. Society is recognizing that surgeons cannot be pushed to rigorous extremes even as patient care becomes increasingly complex. The next generation of surgical trainees is also seeking a more balanced lifestyle. Taking these factors into consideration and holding patient safety as the overriding principle, solutions to training and education must be adapted to meet modern needs. Inevitably, considerable system changes will be required in Canada to adopt not merely the 80-hour workweek that is currently in place but move to the 40-hour workweek as in Europe, while still “getting the work done” and delivering the quality of surgical care the surgical patients of Canada demand.

The issues surrounding this debate have been well articulated in a very recent editorial in the *British Journal of Surgery*.¹²

Competing interests: None declared.

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