ABSTRACT

IMPACT OF RESTRICTIONS IN THE HOURS OF WORK OF DOCTORS IN TRAINING ON SERVICE DELIVERY AND EDUCATION

.

By Dr Anne-Marie MacLellan, MDCM, FRCPC, Associate Professor, Department of Pediatrics, McGill University, Director, Network Development, Montreal Children's Hospital, 2300 Tupper Street, Montreal, Quebec, H3H1P3, Canada.

The author describes the Canadian experience concerning resident hours of work and their educational experiences. All residents in Canada belong to provincial residents' associations that negotiate on their behalf. The collective agreements have had a positive impact on residents' quality of life. The national accrediting colleges have been instrumental in ensuring that the learning environments meet the standards expected for the training of physicians in the 21st century. Collaborative efforts by all key interest groups are necessary to effect change and to ensure safe patient care in a safe working environment.

IMPACT OF RESTRICTIONS IN THE HOURS OF WORK OF DOCTORS IN TRAINING ON SERVICE DELIVERY AND EDUCATION

.

By Dr Anne-Marie MacLellan, MDCM, FRCPC, Associate Professor, Department of Pediatrics, McGill University, Director, Network Development, Montreal Children's Hospital, 2300 Tupper Street, Montreal, Quebec, H3H1P3, Canada.

The author has been asked to prepare a background paper pertaining to certain specific current issues in health human resources within the Canadian health care system, for the 7th annual International Medical Workforce Conference, to be held in Oxford, England, in September 2003. The author will address the following issues:

1) What is the policy position as regards junior doctors' hours of work in Canada and what future changes are anticipated?
2) What are the perceived impacts of these changes and what are the attitudes of the key interest groups involved?
3) What national initiatives are underway: to measure the actual impact of the reduction of working hours on resident learning to modify the structure and conduct of residency programs to compensate?
4) What specific local (e.g.: in particular hospitals/residency programs) initiatives are there that have been demonstrated to reconcile reduced hours of work, including shifts with the provision of high quality education?

Replies to these questions were sought from the Associate Deans for postgraduate medical education at Canadian medical schools, from the Chair of the Deans of Canadian medical schools, from the Executive Director of the Association of Canadian Medical Colleges (ACMC), from the Executive Director of the Medical Council of Canada (MCC), from the Canadian Association of interns and residents (CAIR), from the Federation des médecins résidents du Québec (FMRQ), from the Royal College of Physicians and Surgeons of Canada (RCPSC), from the College of Family Physicians of Canada (CFPC), from the College des médecins du Quebec (CMQ) and from the McGill Centre for Medical Education. The author thanks all respondents.

Before answering these questions, a brief overview of the Canadian medical education system might be helpful, especially as it pertains to post MD training. In Canada, each undergraduate medical education program is accredited by the Liaison committee on Medical Education (LCME) which also accredits US medical schools. Small group teaching and clinical clerkships with hands on experience are hallmarks of undergraduate medical education. In Canada, the student obtains the MD degree after successful completion of medical school requirements. The internship year was abolished in the late 1980s' and early 1990s'. There are now only two pathways for postgraduate training: either a two year family medicine residency program or a 4-5 year specialty program. Successful completion of both postgraduate training and of the certification and licensure examinations are necessary in order to obtain a license to practice in most provinces. The number and mix of specialty residents versus family medicine residents are decided by each provincial government, usually in concert with the medical schools, in response to educational and societal priorities, such as the need for certain types of specialists or generalists. Accreditation of residency training programs is carried out by the College of Family Physicians of Canada for Family Medicine residency programs (in Quebec also by the College

des médecins du Quebec) and by the Royal College of Physicians and Surgeons of Canada for all Specialty programs and subspecialty residency programs (in Quebec also by the College des Médecins du Quebec). Certification as a Family Physician or as a Specialist can only be granted by the accreditation Colleges.

Dr R.G. Petersdorf (AAMC), in 1993 noted that the Canadian systems of accreditation, certification, and payment for medical education after graduation are much simpler than those of the United States, and the accreditation and certification systems are more objective.[1] All residents training in Canadian hospitals are registered with one of the universities that offer medical education. Residency programs are organized by these universities. Each one has a network of affiliated teaching hospitals and other affiliated teaching sites. Residents are both students registered with a university and employees of hospitals! Hospitals do not organize the residency programs but do train residents according to the objectives of the university residency programs, organized according to the accreditation standards.

What is the policy position as regards junior doctors' hours of work in your country and what future changes are anticipated?

In Canada, resident work hours are controlled by collective agreements which vary between provinces. The resident associations in each province negotiate collective agreements on behalf of their membership. Significant changes to these agreements have occurred in the last 15 years especially concerning on-call (defined as in-hospital overnight and weekend duties). In general, the agreements spell out the regular duty hours, on-call provisions, and policies concerning leaves (leaves of absence, study leaves, conference leaves, maternity and paternity leaves, etc.) These agreements usually also establish the dual nature of residents, as students enrolled in an accredited university residency program as well as service providers employed and paid usually by the hospitals.

In Ontario, the resident association PAIRO (Professional Association of Interns and residents of Ontario) negotiates a biannual collective agreement with the Ontario Council of Teaching Hospitals. The Ministry of Health and the Universities are not signatories to the collective agreement. The Associate Dean from the University of Toronto has recently described some of the features and the limitations of the Ontario collective agreement.[2] In the province of Quebec, the resident associations in the 1970s' regrouped as a federation, FMRQ, (Fédération des médecins résidents du Québec) which negotiates work hours , scientific, cultural, social and economic issues directly with the Ministry of Health. The universities are involved in the discussions but are not signatories to the agreement. A recent review of the Quebec resident's work conditions noted that the regulations in the Quebec 1996-2002 collective agreement prevent the possibility of abusive work schedules and provide for generous benefits.[3]

Individual Provincial Resident Associations have negotiated more favourable working conditions for their members. These advances include limiting on-call to a maximum of one night in four for in-house call (for all but one province) with mechanisms to measure workload of home call to see whether it should be counted as in-hospital call. Many provinces also have limits for call from home. Provisions to ensure that residents can go home post call include the limit of 25 hours for acute care services such as ICU, in some provinces. Also the majority of provinces allow residents to go home after 28 hours or at noon the next day. Most collective agreements

have clauses limiting the number of weekends and limiting the number worked in a row.

The collective agreements do not specifically put a limit on the total number of hours that can be worked. However in Quebec, the collective agreement states that the basic regular timetable shall not exceed 12 hours per day, from Monday to Friday and with the exception of on-call duty, residents shall not be required to work more than that number of hours. Hospitals can be penalized if the work hours do not conform to the spirit of the collective agreement.
Several provincial collective agreements have a provision that allows the resident to remain and participate in educational activities including clinical activities if they so wish. In Quebec the collective agreement states that" participation in scientific activities, within the frame work of the University training program, shall be given priority over any other activity of the resident, except when he is required to administer emergency care to patients under his responsibility".[4]

Few major changes are anticipated. The consensus is that these agreements are necessary, and better than imposition of legislation.

In summary, the provincial collective agreements, which have been in place for several decades have been helpful to ensure more reasonable work hours for residents

What are the perceived impacts of these changes and what are the attitudes of the key interest groups involved?

The perceived impacts of these changes have been positive and the attitudes of the key interests groups have been generally supportive.

It is to be noted that alternate ways to manage patient care in the hospital setting were already being established due to the gradual decrease in resident numbers as provincial governments decreased the number of medical students in Canadian medical schools in the 1990s'. Also in the past 15 years, the accreditation Colleges have been requiring that residents spend more time on educational experiences such as protected teaching time and scholarly activities and are monitoring service versus education issues at the time of the regular accreditation surveys.[5] Following the lead of Family Medicine, part of specialty training is shifting out of the large academic teaching hospital into more appropriate learning environments to prepare the residents for future practice in ambulatory care. Due to the decrease in resident numbers and secondary to collective agreements restrictions, as well as for other reasons (mainly budgetary) Canadian academic health centres have undergone major transformations. The impacts of these changes on residency training have been significant.[6] Non educational repetitive tasks also called scut work have been delegated to other personnel. The hospitals have had to find alternate ways of caring for patients that include short stay units[7], nurse practitioners, nurse first assistants in the OR, standards of care protocols, hospitalists, blood procurement teams, etc. Interestingly, in Quebec, the residents' federation has been concerned about the role of nurses who are first assistants in the OR and the impact on surgical residents' operating room experiences.[8]

CAIR writes in reply to the above question: "the impact of the changes have been substantial and has been almost universally beneficial. Patient safety is improved markedly when the physicians that they are being treated by, are properly rested. Residents have more time to study and read around cases which improves patient care and allows for contextual learning. Residents also retain information better when well rested which further improves the educational dimension of

residency training. Perhaps more importantly, residents have more time to spend worth their families and more time to look after themselves which improves well being. This helps reduce burnout and stress which is good for the profession in the long run". The CAIR website has a position paper on resident well being.[9] There is a large body of literature concerning stress and fatigue in over worked residents and the safety of patients.[10] [11] It is also becoming increasing evident that the number of hours worked does not equate with quality of the learning experience.[12] An recent survey on stress in canadian orthopedic surgery residents defined consistent pressure as being the highest cause of stress followed by overload, working conditions and ill defined work load.[13] Junior surgical residents usually comply with the work hours. Senior surgical residents have found ways to ignore or circumvent the work hour provisions to have more operating room experience (significant educational experience) while respecting the on-call provisions of the collective agreement (extra time in the OR without being on-call).

Physician faculty members across Canada have for the most part been very supportive of the changes in resident work hours. However misconceptions continue to exist about work hours between residents and staff.[14] Also physician faculty members are having to commit more time to clinical activities.[15] Faculty members are increasingly on first call without residents. Some services have had to use attending physicians to do call or perform duties that residents would have performed, resulting in fatigue and overburden by faculty, with potential negative impact on the teaching environment. Hospital department heads have had to assure that there is appropriate coverage of clinical services. These changes are mostly viewed in a positive light. A study by Wachter et al. demonstrated that the reorganization of an academic medical service, led by faculty members who attended more often and became involved more intensively resulted in significant resource savings with no change in clinical outcome.[16]

In summary, key interest groups have been working collaboratively towards the goals of providing safe patient care in a safe working environment. The input from the residents is vital to the success of the endeavours.

What national initiatives are underway: to measure the actual impact of the reduction of working hours on resident learning? To modify the structure and content of residency programmes to compensate?

The Royal College of Physicians and Surgeons of Canada (RCPSC), the College of Family Physicians of Canada (CFPC), and the Collège des médecins du Québec (CMQ) are the Canadian accreditation organizations. The RCPSC has general accreditation standards applicable for all specialty residency programs and specific accreditation standards for each discipline. The CFPC carries out accreditation and certification for Family medicine programs and the CMQ for specialty and family medicine residents in Quebec. The administrative, educational and clinical components of each residency program is reviewed on a regular basis by the university (internal review process) and every 6 years by the accrediting colleges. Changes to the structure and the conduct of residency programs are made on an ongoing basis in conjunction with the accreditation guidelines. Accreditation standards include the administrative structure of the program, goals and objectives, the structure and organization of the program, the resources, the clinical, academic and scholarly content of the program and the regular evaluation of the resident performance, of the teachers and the program. Service to education issues are part of the accreditation process and are also regularly discussed at the program level. The

measurement of resident learning is carried out in a longitudinal fashion via a consistent approach to assessment. Structured in training evaluations are one of the hallmarks of the system.[17] Each residency program has defined goals and objectives, such as the CanMEDS competencies used by specialty programs which are given to each resident.[18] The objectives are tied to the evaluation system. Residents are evaluated on a regular basis with a written formal evaluation report discussed with the resident at the end of each rotation. These evaluations are collated by the program director and regularly discussed with the resident. Residents in difficulty can be identified and remedial help given. If difficulties persist, probation is the next step and promotion to the next level may be compromised. At the end of training, a final in training evaluation confirms the competency of the resident. The certification examinations which are written, oral and might have a OSCE component (Objective Standardized Clinical Examination) are part of this integrated evaluation system. The accrediting Colleges inform each year the universities about the pass rate of the candidates at their respective universities which allows for frequent reassessment of the learning environment.

The accreditation requirements include specific teaching sessions for residents (protected teaching time or academic half day) where residents are relieved of all clinical duties in order to attend and the staff faculty physicians cover for the residents. These sessions ensure that the residents have been exposed to all the components of the discipline.[19]

The comparison of pass rates at certification examinations 20 years ago and now can be used as an outcome measure of the "unionized" Canadian learning environments. The pass rate for Family Physicians(CFPC results courtesy of the Director for Education, Dr Paul Rainsbury) since the first exam in 1969 has been remarkedly consistent despite the reduction in resident work hours.(Table1). The RCPSC data comparing exam results between 1983 and 2002 for Anesthesia, General Surgery, Internal Medicine and Plastic Surgery demonstrates that, in general, residents are benefiting from the improved learning environment (RCPSC results courtesy of the Director of Education, Dr Nadia Mikhael).(Table 2)

A recent clinical outcome study has shown that higher performance at certification examinations and licensure examinations is correlated with better practice performance and that this relationship was sustained, over 4 to 7 years.[20]

In spite of the regulations governing resident work hours which have been in effect for several decades, Canadian residents continue to be well trained. In fact, Canadian residents who sit the U.S. Specialty boards perform quite well.[21]

For specialty residents, there are no plans to increase the length of training. Most residency programs are already 5 years in duration (except for Internal medicine and Pediatrics - 4 years in all of Canada except Quebec-5 years) and Neurosurgery and Cardiac Surgery (6 years). For Family Medicine residents, further training, accredited by the CFPC, is offered by several universities in specific clinical areas such as Geriatrics and Emergency Medicine.

To ensure preparedness for practice, some residency programs have surveyed practicing physicians and surgeons to review educational goals during residency training. A recent survey of General Surgeons in British Columbia found that, given the wide range of practice patterns in general surgery, residents must be allowed to tailor their training, so that a significant amount of time is spent outside the traditional teaching hospital.[22] The RCPSC has developed position

papers on ambulatory training and community based experiences.

All Colleges are now emphasizing maintenance of certification which starts with the acquisition of life long learning skills during training.[23]

In summary, the national accrediting colleges have been instrumental in ensuring that the learning environments meet the standards expected for the training of physicians in the 21st century. There are no new national initiatives to further modify the structure and content of residency programmes to compensate.

What specific local (i.e. in particular hospitals/residency programmes) initiatives are there that have been demonstrated to reconcile reduced hours of work, including shifts, with the provision of high quality education?

Local initiatives that have been helpful in improving hours of work for residents while maintaining or enhancing high quality patient care and resident education include improved information technology systems which allows for easy retrieval of the health record, of medical imaging and laboratory results.
Hospitals are becoming less dependent on resident service for provision of patient care.

The collective agreements along with the accreditation requirements have had a major positive impact on resident education. It is well understood that residents are to be liberated from their duties to attend scheduled educational events (Grand Rounds, Protected teaching, academic half days). Physician Faculty members cover for residents attending scheduled teaching activities. When on a clinical service or when on-call, the residents perform educational clinical activities sometimes covering several related services, which allows them even more opportunities for clinical experience. The residents have been very helpful with suggestions on how to reduce non-educational repetitive tasks. Surgical skills laboratories are being used to teach junior residents basic surgical techniques.

Except for certain rotations such as the Emergency Room rotation, shift work is not encouraged. Rather, the residents and the staff physicians will organize the on-call coverage so that most of the residents are present in the daytime to take advantage of the many clinical and other educational activities. The important daily teaching contributions of residents must not be overlooked. Seely reports that the time residents spend in teaching activities, which includes supervising, instructing and evaluating students and junior residents has been estimated to be as high as 25% of all resident activities.[24] Some programs with clinical teaching units have organized resident call so that the senior supervising resident does no call during the week (no disruptive post call day) and assures, along with the attending physician continuity of care and teaching. For on-call, residents have developed innovative methods to ensure continuity of care by organizing transfer of information via computer generated, frequently updated, summary patient information and check lists.

In summary, innovative local initiatives have resulted in a decrease in resident work hours with an increase in structured learning activities, resulting in improved quality of life and quality of education.

Pass rates for residency eligible candidates on the Certification Examination in Family Medicine

1969 to present

Table 1

Year	Number of Residents	% Passed	Year	Number of Residents	% Passed
1969	6	83%	1986	444	88%
1970	12	67%	1987	429	95%
1971	20	85%	1988	459	93%
1972	31	77%	1989	457	94%
1973	59	90%	1990	635	94%
1974	76	82%	1991	570	93%
1975	133	87%	1992	615	93%
1976	193	96%	1993	617	91%
1977	236	93%	1994	668	91%
1978	268	88%	1995	697	90%
1979	258	85%	1996	683	92%
1980	337	92%	1997	670	90%
1981	332	85%	1998	665	91%
1982	391	91%	1999	645	91%
1983	370	90%	2000	604	92%
1984	379	91%	2001	613	89%
1985	418	89%	2002	576	93%

[1] Petersdorf, R.G. An American's view of Canadian medical education. CMAJ 1993. Vol 148, 9: 1550-1553.
[2] Urowitz, M. Residents duty hours in the Province of Ontario, Canada. Academic Medicine 2003. vol.78, no.1:9-10
[3] MacLellan, A.M. Residents' duty hours in the Province of Quebec, Canada. Academic Medicine2003vol.78, no.1:11-13
[4] FMRQ, www.fmrq.qc.ca
[5] RCPSC, www.rcpsc.medical.org/english/accreditation.
[6] Flegel, K.,Palepu, A. Training on the internal medicine wards. CMAJ 2003, April 15;168 (8)
[7] Abenhaim, H; Kahn, S; Raffoul, J; Becker, R. Program description: a hospitalist-run, medical short stay unit in a teaching hospital. CMAJ 2000 163: 1477-1480
[8] Wharry, S. Quebec's residents worry that sharing of medical duties will affect training time. CMAJ 2001,June:164 (12)
[9] CAIR, www.cair.ca. Position paper on Resident well being.
[10] Gaba, D.;Howard, S. Fatigue among clinicians and the safety of patients. NEJM 2002, vol.347, no.16,1249-1255
[11] Lewittes, L.R.; Marshall, V.W. Fatigue and concerns about quality of care among Ontario interns and residents. CMAJ 1989 vol 140,1, 21-24
[12] ASME.2002 Education and Shift Working: an Oxymoron?
[13] Buckley, R; Harasym, P. Level, Symptoms and Causes of Surgical Residents' stress. Ann RCPSC 2002 Dec, supplement
[14] Pilkey, J;Card, S. Internal Medicine Residents and Attending Physicians: Perceptions of Each Other's Work Hours in 2001- A Pilot Project .Ann RCPSC 2002 Dec, supplement.
[15] Befus, D; Senthilselvan, A.; Haug, L.; Campbell, S.; Morrison, J.; Marrie, T. Perceived Time commitments of Medical Faculty Members do not Coincide with Appointment contracts. Ann RCPSC 2002 Dec, supplement.
[16] Wachter, RM; Katz, P; Showstack, J; Bindman, AB, Goldman, L. Reorganizing an academic medical service: Impact on cost, quality, patient satisfaction and education .JAMA 1998 May 20: 279 (19):1560-5
[17] RCPSC Accreditation Standards
[18] Societal needs working group, Can MEDS 2000 project Ann RCPSC 1996;29;29:206-16
[19] RCPSC Accreditation Standards
[20] Tamblyn, R;Abrahamomwicz, W.Dauphinee, D.;Hanley. J.;Norcini, J.;Girard, N.;Grand"Maison, P.; Brailovsky, C. Association between Licensure Examination Scores and Practice in Primary Care. JAMA, Dec 2002;288:3019-3026
[21] Whitcomb, M; It's time to focus on the quality of GME . Editorial: Academic Medicine 2003 vol. 78, no.1:1-2
[22] Morrison, K; Forward, A.; Webber, E. Survey of General Surgeons of British Columbia: Assessing Educational Goals for Residency Training in General Surgery. Ann RCPSC 2002 Dec, supplement.
[23] Houlden, R.; Collier, C.; Yen D. Cooking from Scratch: Teaching Residents Lifelong learning skills.Ann RCPSC 2002 Dec, supplement
[24] Seely, A; The Teaching Contributions of Residents. CMAJ 1999 Nov;161 (10)

RCPSC Exam Results 1983 & 2002

Table 2

SPECIALTY	1983						2002					
	Total # English candidates	Number Passed	% PASSED	Total # French candidates	Number Passed	% PASSED	Total # English candidates	Number Passed	% PASSED	Total # French candidates	Number Passed	% PASSED
Anesthesia												
Full	60	46	76.7 %	11	7	63.6 %						
Early written	39	36	92.3 %	6	5	83.3 %						
COE							65	55	84.6 %	25	25	100.0 %
Oral only- Spring	44	39	88.6 %	9	9	100.0 %	2	2	100.0 %	1	1	100.0 %
Oral only – Fall	48	37	77.1%	8	6	75.0 %						
General Surgery												
Full												
Early written	72	62	86.1 %	5	5	100.0 %						
COE							84	72	85.7 %	23	22	95.7 %
Oral only	74	59	79.7 %	9	5	55.6 %	1	1	100.0 %	0	0	0
Internal Medicine												
Full	62	48	77.4 %	1	1	100.0 %						
Early written	174	146	83.9 %	28	28	100.0 %						
COE							249	200	80.3 %	46	42	91.3 %
Oral only - Spring	155	138	89.0 %	10	5	50.0 %	18	10	55.6 %	2	2	100.0 %
Oral only - Fall	65	47	72.3 %	6	3	50.0 %						
Plastic Surgery												
Full												
Early written	15	13	86.7 %	3	3	100.0 %						
COE							28	21	75.0 %	2	2	100.0 %
Oral only	14	12	85.7 %	3	3	100.0 %						

F : Full examination
EW : early written

Courtesy of the College of Family Physicians of Canada
May 21, 2003