

NEUROSURGERY

GENERAL INFORMATION

(Source: RCPSC and Pathway Evaluation Program)

Neurosurgery focuses on the central, peripheral and autonomic nervous systems. Practitioners diagnose problems through physical examination with the aid of such tools as MRI, CT scans and laboratory tests and frequently provide surgical treatment. Neurosurgery includes management of diseases of the skull, the brain, the pituitary and the spinal cord. Management of head and spinal injuries is a major challenge. As many head injuries and acute intracranial emergencies occur in off-hours, this is not a specialty for those who value lifestyle. It is, however, a very challenging and rewarding career.

Neurosurgery as a discipline arose as a result of an increasing need for special expertise in the surgical and non-surgical treatment of various diseases affecting the nervous system and supporting structures. Therefore, it involves the ability to diagnose, and the technical expertise for the effective surgical treatment of congenital and acquired abnormalities. It also requires expertise in trauma and diseases affecting the nervous system that can be potentially prevented, alleviated or cured.

This specialty requires the physician to be well-grounded in the principles of both neurosurgery and surgery in general. Thus, the fully-trained resident must demonstrate proficiency and expertise in the:

- care of neurosurgical emergencies
- principles of pre- and post-operative general surgical care
- treatment of deep vein thrombosis
- management of fluid and electrolyte disturbances
- treatment of sepsis, the use of antibiotic therapy and an understanding of the implications of antibiotic prophylaxis
- understanding of vascular shock and its treatment
- an understanding of the diagnostic importance of disordered blood gas analyses and their treatment
- acute, subacute and chronic management of parenteral nutritional support

A neurosurgical resident must have knowledge, clinical ability and surgical skill as these apply to surgical diseases of the nervous system. They must have familiarity with, and knowledge of, the related disciplines of basic neuroscience, neurology, neuropathology, neuroimaging and neuropsychology.

Neurosurgical residents must also demonstrate a detailed knowledge of the normal structure and function of the nervous system and of the pathological processes that unbalance it. They must develop learning strategies to enhance their knowledge and expertise so as to maintain excellent and current standards of care. Interprofessional skills are imperative as they must become effective neurosurgical consultants with respect to patient care, education of colleagues and the provision of medical legal opinions. Finally, and most importantly, the neurosurgical resident is expected to demonstrate unequivocal high moral and ethical behaviour.

Upon completion of medical school, it takes an additional six years of RCPSC-approved training to become certified in neurosurgery. This period must include: 2 years of core training in surgery and 3 years of RCPSC-approved resident training in neurosurgery. Up to six months of this

period may be spent in pediatric neurosurgery. It also requires 1 year of training that must include 3 months of residency in neurology, 3 months of residency in neuropathology, and 3 months of residency in neuroimaging.

For further details on training requirements go to:

http://rcpsc.medical.org/residency/certification/training/neurosurg_e.pdf

There are currently 293 neurosurgeons practicing in Canada. Of these, 4% are under the age of 35, 58% are 35-54 and 35% are age 55 and older. An overwhelming majority of practicing neurosurgeons are male (91%) and only 9% are female. (Source: 2012 CMA Masterfile).

DETAILED INFORMATION

The remainder of the data contained in this specialty profile has been extracted from the 2010 National Physician Survey (NPS), unless otherwise stated. All percentages are for respondents only. A total of 35 neurosurgeons responded (for a response rate of 13%). Complete data tables for neurosurgery from the 2010 NPS are available at:

http://www.nationalphysiciansurvey.ca/nps/2010_Survey/Results/physician-surg-e.asp

For an index to all specialties, go to:

http://www.nationalphysiciansurvey.ca/nps/2010_Survey/2010results-e.asp

In Training

According to the Canadian Resident Matching Service (CaRMS), there were 19 neurosurgery residency spots available to Canadian medical graduates in 2011.

Surgical specialty residents in general most frequently cited intellectual stimulation/challenge as a reason for choosing a career in medicine (89%), followed by the doctor-patient relationship (65%) and the wide variety of clinical opportunities available (59%).

Practice Setting

Most neurosurgeons (68%) work in an academic health sciences centre (AHSC), while 45% work in a university and 33% work in a private office/clinic. Neurosurgeons see patients in a variety of settings, with AHSC being the main patient care setting for the majority (65%), followed by the community hospital (9%) and non-AHSC teaching hospital (9%).

In 2004¹, the availability of a practice opportunity was the major influence (50%) on a neurosurgeons' selection of their current practice location, but the opportunity for affiliation with a university (39%) and family reasons/spousal influence (29%) were also cited as important influences.

¹ cell sizes too small to report 2007 data

Practice Profile

Almost half of neurosurgeons (49%) work in a group practice setting where on-call duties, equipment, office space and/or staff may be shared amongst the physicians, 19% are in a solo practice setting and 19% are in interprofessional practices.

In 2007, during a *typical* week, neurosurgeons reported seeing an average of 39 patients. Most neurosurgeons (56%) served mainly an urban/suburban population including inner city.

Neurosurgeons work an average of 61 hours per week on professional activities (excluding on-call). Much of this time (34 hours per week) is devoted to direct patient care, with or without a teaching component. An additional 7 hours per week is spent on indirect patient care, such as making appointments with specialists, charting, meeting a patient's family, etc. and 5 hours per week is spent doing research.

Almost all neurosurgeons (92%) report that they make themselves available to their patients (i.e., on-call) outside of their regularly scheduled hours. Almost half (47%) indicated spending up to 120 hours per month on-call, 19% put in between 121 and 180 hours per month but a third 34% spend more than 180 hours per month on-call. While on-call, they spend an average of 51 hours on direct patient care.

Income

Just a quarter of neurosurgeons (26%) receive 90+% of their income from fee-for-service, while a quarter receive it via salary. A further 18% receive their income through a blended source (i.e., made up of a combination of 2 or more payment methods like fee-for-service, salary, capitation, sessional, contract, benefits/pensions, on-call remuneration or some other form).

According to the Canadian Institute for Health Information's National Physician Database 2009-2010, the average gross fee-for-service payment per neurosurgeon (who received at least \$60,000 in payments) in 2009-10 was \$373,356. Note that this is gross billings and does not take into account deductions for overhead expenses, taxes, etc.

Satisfaction

Three-quarters of neurosurgeons (75%) report that they are very or somewhat satisfied with their current professional life.

Most neurosurgeons (83%) are very or somewhat satisfied with their relationship with their patients and with their relationship with specialist physicians (80%).

Almost two-thirds (65%) are very or somewhat satisfied with finding a balance between personal and professional commitments.

ADDITIONAL INFORMATION

Additional information on this specialty can be found from the:

Canadian Neurosurgical Society: <http://www.cnsfederation.org/>