



University of Toronto

INTERVENTIONAL NEURORADIOLOGY

GENERAL INFORMATION

Location	Toronto Western Hospital Toronto, Ontario, Canada
Duration	1-2 years
Deadline for Applications	Early PGY4 Choices made by year end, 1.5 years before start year.
Number of Fellowship Positions	In addition to one and 2 year INR fellowships, we offer a two year combined diagnostic and interventional Neuroradiological Fellowships as well as combined open neurosurgical/endovascular fellowships in collaboration with the Division of Neurosurgery. A two-year INR fellowship either at the TWH or combined with one year at St. Michael's Hospital (see below) is available.
Fellowship Website	http://medical-imaging.utoronto.ca/interventional-neuroradiology-fellowship-smh
Contact Information	<p>Fellowship Director: Dr. Timo Krings timo.krings@uhn.ca</p> <p>Fellowship Coordinator/Administrator: Amy Shea Fellowship Program Assistant Tel: 416-978-0514 a.shea@utoronto.ca</p>

WORKFLOW

General structure	<p>The Toronto Western Hospital (TWH) training program in Interventional Neuroradiology (INR) of the University of Toronto was established in 1984 by Karel terBrugge under the supervision of Pierre Lasjaunias of France. Since then, more than 50 fellows from all over the world have been trained with us, many of whom now lead their own programs. We have trained fellows with backgrounds in neurosurgery, neurology and radiology.</p> <p>The TWH INR Program will allow the applicants to become proficient in all aspects of Interventional Neuroradiology including the entire spectrum of vascular disorders of the central nervous system and percutaneous minimally invasive spinal procedures.</p>
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	<p>The TWH is a referral center for complex aneurysms, brain and spinal AVMs, dural AV fistulae and vascular malformations of the head and neck region from all over North America. We manage patients with epistaxis, complex intracranial, head and neck and spinal tumors with preoperative embolization, and have the capability of intraoperative angiography as well as a combined angio /MRI suite. The Toronto Western Hospital is a primary acute stroke center with more than 100 acute stroke treatments each year. Stroke prevention procedures (both extracranial and intracranial angioplasty and stenting) are routinely performed. Managements of intracranial aneurysms, including coiling, stent or balloon assisted, flow diversion or deconstructive techniques are a major focus of our workload. Minimally invasive percutaneous treatments such as spinal biopsy, vertebroplasty, kyphoplasty, nerve and facet blocks are routinely performed. Our program includes exposure to pediatric interventional procedures at the Hospital for Sick Children in Toronto where we manage Vein of Galen Malformation, pediatric AVFs and AVMs as well as pediatric aneurysms and stroke.</p>
<p>Are there times when fellows overlap and share work?</p>	<p>Yes but case volume is high. The diagnostic workload being over 300 diagnostic cerebral and 30 spinal angiographic procedures and 30 angiographies for Gamma Knife planning (that is performed in collaboration with Radiosurgery) per year. Annually, we perform more than 500 interventional procedures, among which 50 interventional procedures that are performed yearly at HSC. This also includes about 100 percutaneous spinal procedures that are performed each year. Since 1990, we have entered our patient collective into a prospectively maintained neurovascular database that by now encompasses more than 5000 aneurysms and 3000 AVMs of various types..</p>
<p>How many rounds are you expected to attend? Contribute to?</p>	<p>A weekly multidisciplinary AVM and aneurysms outpatient clinic is held where we see between 30-50 patients each week, including new referrals and follow-up visits. At the TWH, we have weekly "Stroke" rounds, Neuroscience rounds (together with Neurology and Neurosurgery), INR-specific teaching rounds, and dedicated neurovascular rounds. Monthly M & M rounds, Neuropediatric vascular rounds, research rounds, and multidisciplinary AVM rounds with Neurosurgery and Radiosurgery are held. These rounds allow the trainees to gain experience on non-invasive vascular imaging and multidisciplinary management of complex vascular malformations.</p>
<p>Other than rounds, are there teaching responsibilities?</p>	<p>Ad hoc</p>
<p>How procedure focused is the fellowship?</p>	<p>As an IR fellowship procedural competency is a main focus of the fellowship</p>
<p>Which procedures are you responsible for?</p>	<p>-</p>
<p>Additional Comments about Workflow:</p>	<p>The TWH has 2 state-of-the-art flat-panel biplane neuroangiographic suites, one of which is physically connected to a 3T MRI facility allowing for easy transfer between MRI and DSA, which may be required during management of patients with certain neurovascular disorders. One of the biplane angiography suites is also OR compatible allowing for combined surgical and endovascular procedures to be performed. In addition, we have two 1.5T and one 3T MRIs on site with the capability of state of the art vascular imaging (including vessel wall imaging and dynamic MRAs) and two 64 slice CTs as well as one 320 slice CT (with the possibility of sub second dynamic CTA). An additional 3T MRI and a 7T MRI system will be opened in 2019.</p>

RESEARCH	
What are the Research Expectations?	-
How much protected time is given for research (per week)?	-
CALL	
General	Call is coordinated internally and varies from year to year with the experience and background of fellows, number of fellows etc.
Responsibilities on Call:	Fellow (with staff backup) covers all emergent neurovascular work
Is there a call stipend?	No
Additional comments about call	To be discussed with the candidates
HOLIDAYS AND PAY	
Number of paid holiday's (in weeks):	See University of Toronto policy
Sick and Caregiver time (in days):	N/A
Extra time off (in days):	Conferences: Department will provide partial funding if fellow presents at a conference. CME: None Teaching: None
Income before tax (CAD):	See University of Toronto policy - PARO PGY6/7 level salary
Opportunities for additional income (directly related to the fellowship):	No
Additional Comments about Holidays and Pay:	To be discussed with the candidates.