

# Lakeshore General Hospital

## Department of Diagnostic and Interventional Radiology

### Community Radiology Fellowship Program

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**Fellowship Program Director:** Dr. Olivier Banon

**Program Administrator:** Cathy Torchia

#### General Overview

The Lakeshore General Hospital (LGH) (part of the CIUSSS ODIM) is a general and specialized care hospital located in Pointe-Claire, Quebec, a suburban municipality near Montreal, Quebec. As one of Montreal's designated Ambulatory Care Centers (ACC), the hospital boasts one of the busiest emergency departments and serves a population of close to 400,000 in the West Island region of Montreal. The LGH comprises over 250 inpatient beds and performs over 100,000 radiologic examinations per year. As well, the department of Radiology performs over 1200 interventional procedures per year.

Comprised of subspecialty fellowship-trained, board-certified radiologists, the department of Radiology emphasizes clinical service to promote efficiency without sacrificing the quality of subspecialized interpretations. The division is vibrant, growing, and plays a constantly growing role in the multidisciplinary approach to patient care.

Community Radiology is a very demanding subspecialty of Medical Imaging; it requires knowledge in all areas of Medical Imaging and is critical to the support of community practitioners. Highly subspecialized fellowships produce physicians with very specific areas of expertise; often best suited for academic careers. Community fellowships are organized in such a fashion to provide trainees with the subspecialty exposure they require, but also allow a "generalist" approach to the delivery of Medical Imaging services.

Fellows are exposed to a high volume of diverse cases in a Community Hospital setting and are supervised by a dynamic and dedicated group of radiologists, all of which are fellowship trained and have hybrid practices. The faculty include those with expertise in abdominal imaging, thoracic imaging, musculoskeletal imaging, interventional radiology, and neuroimaging.

The emphasis of this fellowship is mainly on performance assessment and improvement, and less on didactic teaching. However, as part of the McGill Department of Radiology, the fellows will be included in all group teaching sessions and activities. Fellows are challenged to balance clinical service and productivity with utilization optimization and quality improvement in a high-volume, fast paced Community Hospital.

**Duration of fellowship:** 1 year (13 periods of four weeks)

**Compensation:** Commensurate to a PGY-6 resident salary in the province of Quebec

**On-Call frequency:** Equivalent of one weeknight per week, and two weekend days per period (total of six calls per period).

### Faculty

Fadi Aris, MD CM, MHM, FRCPC, DABR – Vascular and Interventional Radiology

Khashayar Rafat Zand, MD, FRCPC MHM – Body Imaging and Intervention

John Kosiuk, MD, FRCPC– Thoracic Imaging

Soumia Senouci, MD CM – Musculoskeletal (MSK) Imaging and Intervention

Olivier Banon, MD CM, FRCPC – Vascular and Interventional Radiology, Cardiac Imaging

Jeffrey Chankowsky, MD CM, FRCPC – (Associate) Neuroimaging and Spine Intervention

### Background

Providing high-quality, efficient care is of foremost importance to both academic and nonacademic radiology practices and a topic of increased interest as academic and community radiology practices increasingly consolidate and integrate<sup>1</sup>.

Historically, there have been two types of radiology practices in Canada: The academic radiology practice at a tertiary academic medical centers (AMCs), and the community radiology practice, in both community hospitals and outpatient imaging centers. In Canada, as of 2019, community practices employ about 49% of the radiologist workforce<sup>2</sup>. This group is responsible for interpreting a high volume of imaging studies that do not require the subspecialty expertise of imagers practicing at AMCs.

This landscape, however, has been changing in the recent years due to multiple driving forces:

#### **1. Human Resources:**

For decades, Canadian academic practices have experienced a continuous “brain drain” into the community practice setting.

- i. Academic groups face competing demands of pursuing their three academic missions of research, education and training, and providing care for the sickest and most complicated of the country’s patients, recently compounded by demand for extended 24/7/365 attending-level radiology coverage.
- ii. Although the complex nature of academic practice translates into multiple obligations, the compensation of academic radiologists is unable to match the income of community radiologists. As a result, many academic

radiologists experience frustration and burnout due to the challenges related to maintaining excellence in clinical practice while striving to excel as both researchers and educators.

## **2. Expansion of clinical care mandate of community centers:**

- i. As the role of imaging in cancer screening (e.g., low-dose lung CT, CT colonography, whole body MRI and CT for myeloma) expands, Canadian subspecialists are now able to contribute to early disease detection at the community level. This is particularly important in Canada where the vast majority of CT and MR scanners remain publicly funded and located at hospitals (rather than private imaging centers). During the past 10 years, reprioritization initiatives have led to an increased presence of CT and MR services at an increasing number of community hospitals. A fellowshiptrained academic breast imager, for example, will be better situated to facilitate appropriate utilization of breast MRI than a community radiologist with no modality-specific experience or access.
- ii. The LGH radiology department, for example, strives to emulate this model, with all radiologists possessing subspecialty training in advanced body, thoracic, musculoskeletal and vascular imaging, as well non-vascular and vascular interventional radiology. The benefit of such expertise serves the hospital internally, providing standard of care imaging interpretation, and guides subsequent tertiary care referral when needed, greatly benefiting resource allocation.

Presently, almost all graduates of Canadian residency programs complete fellowships. Fellowship training is now prerequisite to obtain employment in many community practices, including the LGH. These specialty - or subspecialty- trained clinicians expect the same level of radiology services in their community hospital as their training AMC sites. This includes state-of-the-art imaging equipment and studies, quick turnaround time for radiology reports, real-time consultation, and formal teaching activities for their residents.

These demands expand the value proposition offered by Canadian academic radiology groups as they grow their footprints outside of AMCs and increasingly provide coverage at other hospitals and outpatient imaging centers.

### **Responding to the unmet need of 50% of graduating radiology residents:**

We mentioned above that about 49% of the graduating radiologist workforce are employed in community hospitals. The typical community practice in Canada usually requires broadly competent general radiologists comfortable with many modalities (Plain

films, CT, MRI, Ultrasound), across multiple organ systems (brain and spine, cardiopulmonary, abdominal, pelvic and musculoskeletal) and in divergent clinical domains (from emergency radiology to outpatient oncology), as well as an expanding array of interventional procedures. However, the existing radiology fellowships typically train subspecialists who have high levels of expertise in relatively narrow domain areas, in selected modalities only. The examples below highlight this supply-demand discrepancy:

- Fluoroscopy: Unlike in the United States, fluoroscopy is a dying art at most AMCs while it is still widely utilized at community-based outpatient imaging centers.
- Ultrasound: In Canadian AMCs, Ultrasound is divided between four subspecialties: abdominal imaging, breast imaging, women's imaging, and musculoskeletal imaging. This subspecialized approach to ultrasound, however, is not typical in the community setting, where one radiologist frequently interprets all types of ultrasound cases.

Importantly, though, replacement of general radiologists who served in community hospital settings before AMC expansion is a highly uncommon scenario in Canada. In most newly aligned practices, the standard approach is to retrain community colleagues or create rotations suitable for their individual skill sets.

Accordingly, many academic subspecialists need retraining to successfully practice in the community setting. However, most radiologists are not open to retraining once securing a job, mainly due to the significant financial opportunity cost.

Realizing and responding to this unmet need, the radiology department leadership at LGH proposes its fellowship program.

### [Community Fellowship Model Proposition](#)

At the start of their post-graduate training, approximately three-fourths of radiology residents say they intend to pursue an academic career. However, a significant portion of residents either enter private practice upon conclusion of their training, or are unable to find a job in academic institutions. A community radiology fellowship, directly supervised by subspecialized radiologists with expertise in resident education, could become an ideal additional post-residency training, giving the candidates the ability to adapt to work settings, volumes and clinical demands different to those typically seen in AMCs.

Our new fellowship offers opportunities to alter the traditional University-focused model of radiology education by preparing fellows for "real life" radiology practice as it exists in much of Canada. It is a win-win scenario that trains graduating residents in realities of Canadian community radiology practice, while being directly supervised by subspecialty-trained radiologists with both high volumes and expertise in resident education. Additionally, it provides graduating residents an opportunity to complement

their residency training after identifying areas of weaknesses, which would otherwise affect their value as community radiologists later on.

It is a combined interventional and sub-specialty diagnostic (primed for practice) fellowship. The fellow will be able to perform all procedures, including MSK procedures, and will interpret subspecialty examinations done at LGH under supervision of fellowship-trained faculty (including oncology studies, MSK MRI, body MRI, cardiac and thoracic CT – including pre-TAVI imaging). The fellow will also gain exhaustive experience in emergency neuroradiology imaging (CT and MRI). The fellow will also attend multidisciplinary tumor boards once a week, and the department's M&M rounds once a month.

As part of the exposure to interventional radiology, the fellow will have acquired by the end of his training a great ability to perform central venous accesses (PICCs, dialysis catheters, Port-A-Cath, central lines), CT and US guided interventions (biopsies, drainages, tumor ablation). Moreover, the fellows who wish to acquire more advanced interventional skills will be given the opportunity to participate in and perform urinary tract and hepatobiliary interventions (ie. nephrostomies, biliary drainages, cholecystostomies) and MSK interventions (joint infiltrations and nerve blocks). In addition, following the growing interventional demands in the hospital, the fellow will be exposed to dialysis fistulae interventions and embolization techniques for gastrointestinal (GI) bleeds, notably. These procedural skills are highly beneficial to community radiologists, significantly increasing their marketability and ensuring subsequent desirable recruitment.

This current fellowship proposition follows the mandate by the Royal College to build stronger community radiology training programs and in line with a growing demand for such training in Canada and in the United States. The fellow will function as a junior attending, with progressive autonomy over the course of the year.

Furthermore, this program will strengthen the academic growth at LGH and engage the new, starting radiologists in teaching and hopefully research. We have made significant strides to ensure the LGH to be a teaching site, notably by recruiting radiologists trained at the MUHC and with upcoming faculty lecturer appointments, and by offering McGill residents a one-month community radiology elective. We have built multidisciplinary teams with oncology, nephrology, urology, respirology and emergency departments to enrich the learning environment. The momentum for teaching is strong and we would like to capture it.

### [Typical Week Model](#)

Monday AM: Interventional Radiology Monday

PM: MRI

Tuesday AM: Interventional Radiology

Tuesday PM: ER CT

Wednesday: Ultrasound

Thursday: Outpatient CT

Friday: MSK Interventions + MRI

*Radiographys (CRs) are read on a continuous basis throughout the week as time allows.*

### [Volume/Workload](#)

#### **Emergency Radiology**

The LGH emergency department is one of the busiest for distress cases in Montreal with over 40,000 visits annually. The fellow candidate will become an integral member of the emergency radiology division and will be actively involved in all components of emergency imaging – clinical consultation, protocol prescription, image interpretation, and patient management recommendation. Additionally, the fellow will be involved in urgent interventional procedures, thereby playing a crucial role in the care of our population.

#### *Expected Daily Case Load (Performance Metrics)*

- CT shift: 20
- MRI shift: 15
- US shift: 30 diagnostic and 4 US-guided interventions
- Interventional Radiology: 6-8 daily interventions

### [Fellow's responsibilities](#)

The fellow will be on clinical duties five days per week. While research is not part of the fellowship's mandate, interested candidates will be allotted up to one day per week during the second half of their fellowship to get involved in quality improvement projects. In such case, the fellow can replace one weekday of clinical service (for example, Wednesdays replacing ultrasound) by a research day, at her/his discretion.

#### **Clinical Responsibilities:**

- Timely and accurate reporting
  - Structured reporting based on department templates
  - Objective, concise reporting
  - Actionable diagnosis, limited differential diagnosis if applicable
  - Standard follow-up guidelines and recommendations
- Critical results communication and documentation

- Utilization optimization; first call on protocols & study prioritization □  
Technologists support

**On-Call:** The fellow will be on call one weeknight per week (Mon-Fri), and two weekend days per month (total of six calls per month). The fellow will be paired with a radiologist during those shifts and will be given progressive responsibilities during those calls.

More importantly, the fellow will be given incremental assignments and independence. It is expected that by the last quarter of the fellowship training, the candidate will be able to function independently and easily achieve a community radiologist's daily tasks.

### Structure

Clinical activities will take place at the Lakeshore General Hospital five days per week. The fellowship includes access to advanced imaging equipment: New 1.5T MRI system, 2 CT scanners, 5 ultrasound units and one angiography suite.

The fellow will have daily assignments in US, CT or MRI. He or she will progressively assume the role of junior-staff and will be supervised by staff radiologists. The fellow will benefit from progressive autonomy during the academic year and will be able to further develop their leadership skills. The procedures include:

#### Vascular Procedures:

- Central Venous Access (PICC, Port-A-Cath, central line, dialysis catheter insertion)
- Embolization (acute bleed, fibroid embolization, varicocele embolization)
- Dialysis fistula interventions (angioplasty +/- stenting)
- IVC filters insertion/retrieval

#### Non-Vascular Procedures:

- Nephrostomy and Double-J catheters
- Biliary and cholecystostomy catheters
- CT and US guided biopsies (thoracic, renal, hepatic, abdominopelvic)
- Cryoablations
- Paracentesis and thoracentesis
- Abscess Drainages
- MSK Interventions (infiltration, nerve blocks)

The fellow will be exposed to the bread-and-butter MSK imaging, including large volumes of joints MRI (shoulder, knee, ankle, wrist, elbow, hip) and spine MRI, as well as MSK US for articulations under direct MSK staff supervision.

The fellow will also attend multidisciplinary tumor boards once a week (Tuesdays), and the department's M&M rounds once a month.

The fellows who would like to enhance their expertise in one specific imaging subspecialty can apply for a subspecialty rotation at the downtown campus (pending availability).

### **Quality Improvement**

- Radiologist Peer Review
- Technologist QI
- Completion of one departmental QI project

### **Report Metrics**

- Preliminary report generation time
- Final report turnaround time
- Final report sign-off time
- Backlog Statistics

### *Fellowship Program Objectives*

The fellowship program addresses the following CANMEDS competencies:

#### **Medical Expert**

- Understanding appropriate case management/follow-up in a Community Hospital setting
- Providing high-quality diagnostic interpretations, irrespective of body part or imaging modality

#### **Communicator**

- Inter-professional relationships with other physicians
- Communication with other allied health professionals
- Production of succinct, well organized and structured reports

#### **Collaborator**

- Establishing good relationship with peers, other health care professionals, and recognizing their expertise
- Collaborating effectively with other team members

#### **Leader**

- Organization of daily work & time management in a busy, Community Hospital center

#### **Health Advocate**

- Ensuring appropriate investigations are carried out, and that patient care and comfort are taken in account
- Application of Choosing Wisely Canada principle

## Scholar

- Being up to date with medical literature (specifically regarding follow-up of incidental findings often encountered in community settings)

## Professional

- Demonstrating utmost integrity and honesty while carrying out clinical duties
- Demonstrating compassion and empathy towards patients during interventions
- Recognition of own limitations, seeking advice when needed
- Understanding principles of ethics, applied to clinical situations

## Evaluation

The fellow will be evaluated daily by the supervising attending staff. For clinical work, the focus is gradual development of expertise and independence, understanding imaging techniques and protocoling, supervising scans when needed and understanding the crucial role of radiology in community hospitals. The fellow will meet with the program director every 3 months, where a formal evaluation will be completed, using the CanMEDS roles scheme. The fellowship structure can be adjusted to meet individual candidate's specific needs over the course of the year.

### Evaluation Structure

- Monthly ITER
- 360° evaluations quarterly
  - Radiologists
  - Hospital physicians
  - ER
  - Technologists
  - Department Personnel
- Mid-rotation meeting with LGH community rotation program director
- End-rotation meeting with LGH community rotation program director

## References

1. Patlas MN, Farshait N, Duszak R Jr. Academic and Community Radiology Practice Integration: The Canadian Experience. J Am Coll Radiol. 2017 Aug;14(8):1124-1126. doi: 10.1016/j.jacr.2017.01.019. Epub 2017 Mar 8. PMID: 28284673.
2. <https://www.cma.ca/sites/default/files/2019-01/diagnostic-radiology-e.pdf>