APPLICATION FOR INTERVENTIONAL STRUCTURAL HEART DISEASE
CARDIOLOGY FELLOWSHIP

NAME OF INSTITUTION: Mc Gill University Health Center

2 TYPES OF FELLOWSHIPS:

(1) One-year training in interventional structural heart disease that does not include training for transcatheter mitral valve interventions (after completion of 1 year of interventional coronary fellowship).

(2) Two-year training in interventional structural heart disease that includes training for transcatheter mitral valve interventions (after completion of 1 year of interventional coronary fellowship).

The structural interventional fellowship program has a starting date of July 1st (every year).

ACADEMIC AFFILIATION: McGill University, MUHC Cardiology program.

NAME OF HOSPITALS: Royal Victoria Hospital

FELLOWSHIP PROGRAM DIRECTORS: Nicolo Piazza and Giuseppe Martucci

BACKGROUND:

In 2006, the MUHC concentrated all cardiology interventional activities at a single site (the Royal Victoria Hospital), and opened three state of the art cardiac catheterization laboratories, including a bi-plane unit. The two single-plane rooms were entirely updated in 2013 with new flat-plane image intensifiers, one of which is large enough to allow for structural and peripheral vascular interventions. Current equipment allows for the performance of diagnostic studies (coronary disease, cardiomyopathies, valvular disease, pericardial disease, adult congenital disease) including ultra-specialized diagnostic procedures such as intravascular and intracardiac ultrasound and fractional flow reserve. Therapeutic interventional procedures performed at the MUHC include coronary angioplasty and stent implantation, rotablation, use of percutaneous ventricular assist devices, ASD & VSD closure, LAA closure, balloon valvuloplasty, transcatheter valve repair and replacement, and renal denervation. This concentration of activities and standardization of care, with much tighter integration and professional formation of support staff, i.e. nursing and X-Ray technologists, has allowed us to provide level three interventional formations for suitably qualified cardiologists (ACC interventional task force).

MISSION

There are three major missions of the cardiac catheterization laboratory: (1) clinical; (2) teaching and formation; and (3) research. Clinical activities revolve around diagnostic and therapeutic options for coronary, aortic, valvular, cardiomyopathies, pericardial and congenital

heart disease. Some the activities therefore include percutaneous coronary interventions, transseptal punctures, endomyocardial biopsies, aortic and mitral valve balloon valvuloplasty, transcatheter valve replacement and repair, PFO/ASD/VSD closure, and cardiac assist devices (intra-aortic balloon counterpulsation, Impella).

McGill University Health Center provides interventional cardiology level three formation. We are in the midst of collaborating on more than 10 clinical national and international trials, performing first-in-human procedures while critically appraising the risks/benefits, and housing a team of local and international juniors to perform research in the field of structural heart disease.

The intent of the training program is to prepare suitable candidates for independent performance of interventional structural interventions such as, but not limited to, trans-septal catheterization, balloon mitral valvuloplasty, balloon aortic valvuloplasty, transcatheter aortic, mitral, and pulmonary valve interventions, ASD/PFO closures, and left atrial appendage closure. Thus, the candidate will develop a mastery of the indications, contraindications, and limitations of the various procedures. The candidate will learn to work within a multidisciplinary Heart Team (cardiologists, surgeons, anesthetists, nurses and technicians, and trainees of various levels).

ACADEMIC FACILITIES:

The MUHC cath lab facilities are concentrated at the Royal Victoria Hospital. The facilities consist of three cath lab suites (including a biplane room), integrated secretariat, and a dedicated fellow conference room with AV equipment. As well, there is a fully monitored 18 bed ward for pre- and post-cath procedures, a dedicated staff room and suitable sanitary accommodations. This produces a privileged working and learning environment, with close access to a reserved reading space and immediate, moment to moment access to staff physicians.

Our labs perform 3,000 or more procedures per year. We perform approximately 90 transcatheter aortic valve interventions, 20-25 MitraClip procedures, 40 balloon aortic and mitral valvuloplasties, 20-30 ASD/PFO closures, and 30-40 complex congenital interventions per year.

FELLOWSHIP REQUIREMENTS:

Applicants must have completed (1) basic cardiology residency and (2) at least one year of interventional cardiology training in coronary artery disease. Fellowship appointments are contingent upon being appropriately licensed to engage in clinical activities in the Province of Quebec. The McGill University Post Graduate Medical Education Office will assist in the process of registering as a fellow with the Division of Cardiology.

FELLOWS DUTIES AND RESPONSIBILITIES:

The interventional fellow(s) will be expected, over the first year, to develop satisfactory expertise in case selection, procedural judgment and technical ability, gathering and interpretation of hemodynamic and angiographic data in the following: aortictricuspid/pulmonary valve disease, congenital and left atrial appendage related procedures. Expertise in mitral valve related procedures will be developed in the second year.

The candidate will be expected to master all aspects of large bore vascular access and closure, cardiac chamber angiography, pericardiocentesis, temporary pacemaker insertion, transseptal catheterization, balloon aortic and mitral valvuloplasty, transcatheter aortic valve replacement and repair, PFO/ASD closure and left atrial appendage closure.

The candidate will be expected to perform at least 75-100 structural heart disease interventions. There will be enough experience as 1st and 2nd operator to master the necessary foundational skills to eventually become an independent operator. Even in the presence of concomitant training fellows, an alternating role as 1st and 2nd operator between the fellows will be more than sufficient to acquire the necessary skills. Furthermore, the fellow will keep a formal journal of completed procedures.

The candidate will be evaluated at 3-month intervals to ensure that basic knowledge and skills are being and will be evaluated on the following criteria: competent clinical follow-up, availability and reliability, complications, and quality of interpersonal (patients, staff and peers) and interdisciplinary relations, initiative, teaching and mentoring ability.

The candidate will become competent with pre-procedure evaluation, timely and informative reporting of results and therapeutic recommendations.

The candidate will be expected to arrive at work at 07:30 every working day, except for specified out of lab teaching opportunities (conferences, research activities), holiday or illness.

The candidate will be responsible for organizing the Heart Team meetings that take place once a week and will be dedicated to case presentation for patient selection, including major complications or difficult clinical cases during the preceding weeks. Furthermore, the fellow will participate in the formal cath lab teaching schedule for cardiology trainees. The candidate will become an active participant in the cath lab journal club. The candidate will be supervised and directly responsible to the program director, but will work with other staff interventionalists to widen their range of clinical experience.

Our group has acquired the necessary infrastructure and clinical competence to offer selected candidates an instructive and rewarding learning experience. At the end fellowship training, the candidate will fully meet the necessary qualifications required by the appropriate governing bodies.

PROGRAM DESCRIPTION:

After completion of the 1-year fellowship, Fellows will have acquired the knowledge and skills to:

(1) Understand the complete hemodynamic assessment of congenital cardiac defects, including left to right shunt and right to left shunt lesions
(2) Understand the various aspects of angiographic assessment of congenital cardiac defects and the best angiographic projections for each defect.
(3) Understand the proper radiation protection measures for the patients and operators in the cath lab.
(4) Understand how to stock the cardiac cath lab with appropriate equipment and tools so that a procedure can be done effectively.
(5) Learn the essential echocardiographic assessments of various interventional therapeutic procedures (ASD's/PDA's/VSD's/AS/PS/etc.).
(6) Learn step-by-step how to close ASD's using various devices.
(7) Learn how to perform effective balloon valvuloplasty of the aortic, mitral and pulmonic valves
(8) Learn how to perform transcatheter aortic valve replacement
(9) Learn how to perform embolization therapies for AP collaterals, coronary AV fistulas, pulmonary AVM's etc.
(10) Learn how to perform pericardiocentesis.
(11) Learn how to perform myocardial biopsies.

After completion of the 2-year fellowship, Fellows will have acquired the knowledge and skills to:

(1) Refine knowledge and skills acquired during the first year of fellowship
(2) Acquire the knowledge and skills to perform the MitraClip procedure

The transcatheter mitral valve therapy program was instituted at the McGill University Health Center in March 2017 which includes a mitral valve clinic and MitraClip interventions. We plan on performing 20-25 MitraClip procedures per year. Fellowship training for transcatheter mitral valve interventions will begin in July 2018. Given the low per year procedural volumes, fellows will need 2 years in order to acquire the knowledge and skills for MitraClip procedures. There is a lack of established guidelines for the number of cases required to establish competence in MitraClip procedures. Competency will be assessed at 3 months intervals and feedback will be given to the fellow with respects to limitations in knowledge and skills. Fellows registered for the 2-year program will be expected to attend a weekly mitral valve clinic and will be able to participate as first and second operator during MitraClip procedures.

EDUCATIONAL RESOURCES:

- Weekly Coronary Cath Lab Rounds
- Weekly Structural Heart Team Rounds
- Manuscript writing
- Conference attendance

- Simulation Laboratory
- Animal laboratory

RESEARCH PROGRAM:

The 1- or 2-year *Structural Interventional Cardiology Fellowship Program* has a mandatory research component. Fellows are expected to maintain a clinical database of all structural interventions for purposes of prospective and retrospective data analyses. The vast majority of research is centered around aortic and mitral valve disease with a particular interest in cardiovascular imaging (pre-procedural, intra-procedural and post-procedural imaging). Fellows will have the opportunity to research case reports, case series, observational cohort series, and become involved with international multi-center registry studies. We would expect the fellow to submit abstracts to interventional cardiology congresses for presentation. A background in statistical analyses is strongly recommended. Fellows are expected to complete at least 2 peer reviewed publications per year.

TEACHING FACULTY:

The fellow will be closely mentored and supervised by Dr. Nicolo Piazza MD, PhD, FRCPC, FESC and Dr. Giuseppe Martucci MD, FRCPC who are co-directors of the Interventional Structural Heart Disease and Transcatheter Valve Therapy program. Dr. Spaziano, who has recently joined the Structural Heart Disease program, will also be acting as a clinical and research mentor.

Dr. Nicolo Piazza obtained clinical and research training in transcatheter valve therapies from the Erasmus Medical Center from Rotterdam and the German Heart Center Munich under the supervision of Professor Patrick and Professor Ruediger Lange, respectively.

Dr. Martucci obtained congenital training from the Boston Adult Congenital Hospital under the supervision of Professor James Lock and Dr. Michael Landzberg.

Dr. Spaziano obtained clinical and research training from Massy Hospital, France under the supervision of Professor Thierry Lefebvre.

Dr. Stéphane Rinfret is the director of the cardiac catheterization laboratory at the McGill University Health Center.