

INTERVENTIONAL CARDIOLOGY FELLOWSHIP

TYPE OF FELLOWSHIP: One year training in interventional cardiology (after Cardiology)

ACADEMIC AFFILIATION: McGill University, MUHC cardiology program.

NAME OF HOSPITALS: Royal Victoria Hospital.

FELLOWSHIP PROGRAM DIRECTOR: Dr. Jean-Philippe Pelletier

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 the performance of diagnostic studies (coronary disease, cardiomyopathies, valvular disease, pericardial disease, adult congenital disease), including ultra specialised 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, percutaneous valve implantation, 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 formation for suitably qualified cardiologists (ACC interventional task force). As well, it has allowed us to recruit well trained interventionists, with varied procedural and research interests.

RESEARCH ACTIVITY:

Up until two years ago, because of limitations in infrastructure, staffing (MDs and others), research activity was limited to some collaboration in multicenter trials.

We have now acquired two full time research nurses, and are involved in several ongoing collaborative trials. The efforts of Drs. Bilodeau, Dandona, Pelletier, Beaudry, Piazza and Martucci have given a new impetus to this effort which will continue to develop.

MISSION:

Cardiac catheterization laboratories' activities are central to hospitalized tertiary care cardiology. There are three major objectives pursued.

1. The first, and most developed at this time, is clinical.

The intent in providing interventional training is to prepare suitable candidates for Independent performance of diagnostic and interventional coronary work. Diagnostic studies include aortic, coronary, and peripheral angiography, use of fractional flow reserve, intravascular ultrasound, as well as hemodynamic investigation of valvular, cardiomyopathic and pericardial disease, including performance of trans-septal puncture, endomyocardial biopsies and pericardiocentesis. As part of our clinical services, the cath lab also provides tight integration with cardiovascular surgery, providing diagnostic information and guidance in therapeutic intervention to our cardiologist and surgical colleagues.

Therapeutic procedures include percutaneous coronary intervention and stent implantation, use of rotational atherectomy, aspiration and rheolytic thrombectomy, CTO desobstruction (antegrade and

retrograde), intra-aortic balloon counterpulsation and Impella percutaneous ventricular assistance. A wide range of percutaneous structural procedures are performed (for which a separate fellowship is offered by Drs. Martucci and Piazza), including coarctation stenting, ASD and VSD closure, LAA closure, balloon valvuloplasty and valvular implantation (TAVI). A renal denervation program, under the leadership of Dr. Dandona, has started to perform candidacy assessments and therapeutic procedures. We are currently looking into the possible acquisition of other technologies (laser atherectomy generator, optical coherence tomography).

2. The second is teaching and formation: Fellows in our program will receive training equivalent to ACC interventional level three formation (note that no ACC certification is provided in Canada at this time). Extensive hands-on exposure to all aspects of practice in the cath lab is offered (including as primary operator). Other teaching opportunities include bi-weekly cath lab journal clubs, and weekly cath lab clinical conferences, where interesting, complex or controversial cases are reviewed in a group setting (the group consensus is subsequently relayed to referring physicians to guide management).

3. The third is research: this has been, heretofore, our weakest point, for reasons previously mentioned. Now having the necessary personnel to develop, a number of collaborative trials are ongoing. We are also in the process of acquiring a comprehensive, research-oriented clinical database. Fellows are encouraged to participate in departmental research activities, while being given great latitude in pursuing projects / topics that interest them and with their choice of mentor.

Thus the candidate will develop a strong mastery of the various diagnostic and interventional technique's indications, contraindications, limitations, interpretation and clinical use. He will learn to work within a multidisciplinary team (cardiologists, surgeons, anesthesiologists, nurses and technicians, and trainees of various levels). He will develop appropriate clinical judgment, and self-discipline in further learning and possibly research activities.

TEACHING FACULTY:

- Luc Bilodeau - cath lab chief (diagnostic and interventional coronary disease, CTO desobstruction, peripheral vascular intervention)
- Jean-Philippe Pelletier - training program director (diagnostic and interventional coronary disease, support devices)
- Jean-Pierre Beaudry (diagnostic and interventional coronary disease, support devices)
- Sonny Dandona (as above, plus cardiovascular genetics, renal denervation)
- Giuseppe Martucci (as above plus structural, adult congenital and valvular intervention)
- Nicolo Piazza (as above plus structural and valvular intervention)
- Yves Beaudry (diagnostic and interventional coronary disease)

ACADEMIC FACILITIES:

The MUHC cath lab facilities have been totally renewed and concentrated at the RVH pavilion. The facilities consist of three cath lab suites, including a biplane room, located in a separate, closed and air conditioned suite at the end of the S-4 corridor, with integrated secretariat, dedicated fellow's teaching and conference room with AV equipment (including a numeric projector, two full access computers to hospital, library database and internet, as well as a dedicated PAC station, allowing immediate access to angiographic records and images). As well, there is a fully monitored and nursing staffed seven bed ward for pre and post

cath activities, 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 interventionalists.

One would be hard put to find a better physical environment to facilitate learning. Technical skills are acquired in the labs with the immediate presence and active mentoring and physical demonstration and guidance of the staff MD in the cath lab. Our labs yearly perform roughly 3,000 or more procedures, including 1,400+ interventional procedures. It is therefore very easy for the trainee to reach and exceed the recommended 300 diagnostic procedures (200 as primary operator), and 200 interventional procedures (125 as primary operator). This still leaves ample opportunity to continue delivering adequate clinical cath lab exposure to general cardiology trainees.

FELLOWS DUTIES AND RESPONSIBILITIES:

The interventional fellow(s) will be expected, over the year, to develop satisfactory expertise in case selection, procedural judgment and technical ability, gathering and interpretation of hemodynamic and angiographic data in the following: coronary disease, cardiomyopathies, valvular disease, and pericardial disease.

He will be expected to master all aspects of cardiac chamber and coronary angiography, coronary angioplasty, pericardiocentesis, temporary pacemaker insertion, intra-aortic conterpulsation balloon, FFR, and IVUS. He will be exposed to percutaneous ventricular assist devices (Impella), rotational and rheolytic thrombectomy, and trans-septal catheterization. He will develop full competence in percutaneous jugular and femoral venous access, radial, brachial and femoral arterial access, and implantation of arterial closure devices (AngioSeal, Perclose).

He will be expected to perform at least 300 diagnostic studies (including 200 as primary operator), and 300 coronary interventional procedures (including at least 125 as primary operator). This will not be a problem with our present caseload. He will keep a formal journal of completed procedures.

As well as on the above mentioned skills, he will be evaluated formally every 6 months 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. He will become competent with pre-procedure evaluation (pre cath clinic), timely and informative reporting of results and therapeutic recommendations.

He 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.

He will be responsible for working up and following up patients on whom he will intervene.

He will be responsible for selecting cases for the weekly hour long cath conference, with case presentations, including all major complications or difficult clinical cases during the preceding week. He will also collaborate with formal cath lab teaching to cardiology trainees. Along with general cardiology residents rotating through the cath lab, he will select and present articles during the bi-weekly cath lab journal club. He will also be expected to prepare concise presentations on core topics in interventional cardiology (using ACCSAP as guide), presented to attending staff and cardiology fellows bi-weekly, alternating with the journal club. He will demonstrate competent knowledge of the relevant medical literature.

He will be supervised and directly responsible to the program director, but will work with the other staff interventionalists to widen the range of clinical experience. He will be included in ongoing clinical research activity, and if a project is feasible in a year, will be expected to develop and complete one with a view to publishing.

We truly believe that our group has acquired the necessary infrastructure and MD experience and competence to now offer selected candidates an instructive and rewarding learning experience, at the

end of which he will fully meet the necessary qualifications required by the appropriate governing bodies.