

Advanced Cardiovascular Critical Care and Extracorporeal Life Support Fellowship 1 Year

Fellowship director:

Dr. Roupen Hatzakorjian

Dr. Gordan Samoukovic

Dr. Justin Tabah

Fellowship Information:

Number of positions available per year: 5-6

Training sites: Royal Victoria Hospital (RVH)

Duration: 1 year

Admission requirements:

Completion of residency and/or fellowship in one of the following specialties: critical care, anaesthesia, cardiology, cardiac surgery

General information and Summary of Clinical Practice

The aim of the fellowship is acquisition of advanced skills in management of critically ill with cardiovascular compromise. This would include management of post-operative cardiac surgical patients as well as of those in cardiogenic and circulatory shock.

Our institution has an active eCPR and VV and VA ECMO program with 100 projected implantations for 2021. Short term mechanical support is also provided to about 60 patients per year in addition to 20 durable VADs. The emphasis of the fellowship would be on expertise in management of acute cardiac / circulatory failure including implementation and management of short-term mechanical circulatory support devices, such as extra-corporeal membrane oxygenation (ECMO), short-term ventricular assist devices (VADs), intra-aortic balloon pump (IABP) and extracorporeal CO₂ removal (ECCO₂R). The fellow will become an integral part of the ECMO team and develop skills in patient selection, technical aspects of implantation and peri- implantation management. The core competencies the fellow will be expected to acquire by the end of the fellowship will be:

- 1) Understand indications and contraindications to the different cardiac support device
- 2) Acquire facility in cannulation and decannulation of ECMO, IABP and ECCO₂R catheters
- 3) Develop ability to trouble-shoot devices during hemodynamic support

4. 4) Develop echocardiography skills as it pertains to hemodynamic support with the various devices
5. 5) Develop quality improvement and research skills appropriate for a cardiac support device program

Approximately a thousand complex cardiac surgical cases are performed at RVH every year. The fellow will also participate in peri-operative care, including management of cardio-pulmonary-bypass in the operating theatre through a rotation with our busy perfusion service. Familiarization with cardiac surgical principles and procedures will be essential.

The fellow will acquire proficiency in thoracic echocardiography and required to pass CC ultrasound exam.

Academic duties will be based on clinical research with options in epidemiology, bedside hemodynamics or literature-related qualitative / quantitative research and quality improvement research. The fellow is expected with faculty help, develop a research question and engage in active research to answer this question. Faculty supervisor will be assigned after consultation with the fellow and **the Fellowship director**. At least one publication in a peer reviewed journal is expected three to four times per year. The fellow will also take part in the ongoing quality improvement framework of the program. **The Fellowship director** will act as the supervisor for the QI component. Participation in ECMO rounds will be mandatory.

The fellow will be given opportunities to teach residents rotating through ICU as well as others at request of program directors. They will complete EPAs for residents that they teach and supervise as appropriate for the residents' program.

Time distribution:

75% clinical matters related to patient management 20% clinical research and manuscript generation 5% teaching

Mission:

To create experts in advanced cardiovascular critical care, including short-term mechanical circulatory support, utilizing a multidisciplinary approach between critical care, cardiac surgery and cardiology. Graduating fellows would be employable at tertiary / quaternary centres exceling in the fields of the fellowship.

Funding source:

Candidates are expected to secure funding from foreign governments or institutions

Faculty:

The training will employ a multidisciplinary approach from faculty carefully selected from divisions of cardiac surgery, critical care, anaesthesia, perfusion and cardiology (interventional and heart failure). The fellow will interact with faculty assigned during each 4-week rotation.

Information and material:

Web-based echocardiography modules as well as up-to date reports of clinical and basic scientific research. The fellow will be required to attend one ELSO (Extracorporeal Life Support Organisation) course and once ELSO conference during the year.

Academic responsibilities

In addition to the clinical duties, the fellow is required to maintain an active academic domain by generating scientific hypotheses, conducting research resulting in publications. At least one publication in a peer-reviewed journal is expected three to four times during the duration of the fellowship

The fellow will present at critical care grand rounds once during the year.

Call responsibilities

The fellow will take call while on clinical service and will assume a supervisory role during calls, teaching and supervising junior residents and critical care residents. Additionally, (s)he will be on call for all ECMO implantations during the year (when available).

Curriculum:

13 blocks of 4 weeks partitioned as follows:

Block 1: critical care RVH

Block 2: Interventional cardiology / Cardiac catheterization lab

Block 3: ICU echocardiography or cardiac anaesthesia

Block 4: perfusion and cardiac anaesthesia

Blocks 5-13: critical care RVH (1- 2 blocks may be dedicated to research)

Longitudinal training: ECMO and short-term VADS and echocardiography

Longitudinal research and QI. In addition to one to two blocks dedicated to working on either developing and starting a research project or for completion/submission of manuscript as appropriate for the fellow.

Evaluation process:

The fellow will be evaluated every 3 months by the program directors. At the end of the fellowship, the fellow will write the critical care echocardiography exam.