Program Objectives for the Thrombosis and Vascular Medicine Fellowship Training Program at McMaster University, Hamilton Health Sciences and St. Joseph’s Hospital

GENERAL OBJECTIVES

1. Become an expert consultant in venous and arterial thromboembolic disease.
2. Acquire a broad and in-depth knowledge of thromboembolic disease from both a clinical and basic science perspective.
3. Become an independent investigator (clinical trialist and/or basic scientist) with a focus on research in venous and/or arterial thrombosis (does not apply to pure clinical fellows).

SPECIFIC OBJECTIVES

Clinical Practice Skills

The fellow is expected to achieve competency in the following areas:

Prevention of Venous Thromboembolic Disease
1. Learn to stratify patients into low-, moderate- or high-risk categories according to known risk factors for venous thromboembolism.
2. Learn the appropriate use of prophylactic methods, including pharmacologic and mechanical measures, for low, intermediate and high-risk patients.

Diagnosis of Venous Thromboembolism
1. Learn the appropriate use and interpretation of non-invasive and invasive tests for the diagnosis of acute venous thrombosis and pulmonary embolism.
2. Develop a rational approach to the diagnosis of recurrent venous thrombosis and the post-phlebitic syndrome.
3. Understand the limitations of clinical assessment and objective testing in diagnosing acute and recurrent venous thromboembolism and post-phlebitic syndrome.
4. Learn to diagnose heparin-induced thrombocytopenia.

Treatment of Venous Thromboembolic Disease
1. Learn the approach to the treatment of patients presenting with a first episode of venous thromboembolic disease.
2. Learn the indications and side effects of anticoagulant drugs and thrombolytic agents.
3. Develop a rational approach to the management of patients with recurrent episodes of venous thromboembolic disease or with other indications for extended therapy.
5. Develop an approach to treat complicated patients (e.g., cancer patients with thrombosis, patients with antiphospholipid antibody syndrome, women with thromboembolism during pregnancy).
6. Learn how to treat patients with anticoagulant-related bleeding, including the appropriate use of vena caval filters, vitamin K, protamine sulfate, antifibrinolytic agents and blood products.
7. Educate patients and their relatives as to how to administer outpatient anticoagulation therapy.
8. Learn the pharmacology, clinical indications and adverse effects of uncommon or experimental antithrombotic agents (e.g., lepirudin, argatroban, danaparoid, ximelagatran).
**Coronary, Cerebrovascular and Peripheral Vascular Disease**
1. Understand the pathogenesis of atherothrombosis.
2. Develop a rational approach to identifying and treating risk factors for atherothrombosis.
3. Develop a rational approach to the primary and secondary prevention of coronary, cerebral and peripheral vascular disease using appropriate anticoagulant, antiplatelet and thrombolytic strategies.
4. Understand the risks and benefits of combining antithrombotic agents in patients with arterial thromboembolic disease.
5. Develop an in-depth understanding of the medical, radiological and surgical diagnostics and therapeutics in the management of patients with acute arterial ischemia in the cerebral, coronary or peripheral circulation.

**Pathogenesis of Thrombosis**
1. Understand the pathogenesis of arterial and venous thrombosis.
2. Establish a detailed understanding of hemostasis, coagulation cascade and the fibrinolytic systems.
3. Understand the principles of laboratory assays in hemostasis and coagulation and learn how to interpret the results in the clinical setting.
4. Develop an approach to the investigation of patients with hypercoagulable features.

**Patient Education**
1. Demonstrate an appreciation of the health care needs of patients with thromboembolic diseases.
2. Educate patients on the importance of anticoagulant monitoring and the risks of non-compliance.
3. Educate patients on the symptoms and signs of complications from their thromboembolic disease and anticoagulant therapy.
4. Encourage the promotion of patient involvement in decision-making.

**Clinical Research Skills**
Trainees engaging in research are encouraged to apply to and enroll in the Masters of Health Research Methodology program or a graduate degree program in Medical Sciences at McMaster University during their fellowship. Fellows are expected to accomplish the following:
1. Develop critical appraisal skills relevant to the management of patients with venous or arterial thromboembolic diseases.
2. Learn the principles of clinical trials research methodology.
3. Design, conduct, analyze and participate in the publication of one or more clinical or basic science projects.
4. Present original data from their own clinical or basic science research at national or international meetings.
5. Understand and participate in the practical aspects of clinical trials research, including protocol development, ethical review, patient screening and enrolment, process of informed consent, performing structured follow-ups and appropriate documentation.
6. Learn to work as part of a clinical research team, including developing management skills, which will allow the fellow to establish their own research organization at the completion of their training.

**Clinical Responsibilities**
The primary clinical responsibility of the fellow will be to serve as a consultant in Thrombosis and Vascular Medicine at three Hamilton Health Sciences hospital sites (McMaster University, Henderson and Hamilton General Hospital) or at St. Joseph’s Hospital. Inpatients and outpatients with suspected thromboembolism or with management issues relating to the use of antithrombotic therapy for the management of venous or arterial disease are referred to these units for diagnosis, treatment and counseling.

The fellow will be responsible for evaluating patients and providing consultation independently and learn to interpret and report non-invasive vascular diagnostic tests after an initial period of supervision by the faculty members. The fellow will also be responsible for dictating formal consultation letters to the referring physicians and arranging appropriate followup or referrals when indicated. The fellow is expected to handle approximately 20 new outpatients and 20 new inpatient consultations per week.
**Research Responsibilities**
Trainees undertaking research are expected to identify topics for clinical or basic science research during their fellowship. Specific projects will be developed under the supervision of one or more faculty members and a primary research mentor or supervisor will be responsible for overseeing the progress and development of the trainee as an independent investigator. The supervisor will also provide advocacy and funding guidance.

**Educational Responsibilities**
In addition to the clinical work, there are a number of educational activities. These are briefly described below:

1. General Thrombosis and Vascular Medicine Group Meeting (60 minutes weekly). Fellows are expected to present and discuss various aspects of their ongoing and planned research with faculty members. Design of clinical and basic science projects, study conduct issues and funding strategies are some of the topics that will be covered.

2. Research Seminars (60 minutes weekly) Fellows with a research focus are expected to present and discuss various aspects of their ongoing and planned research with faculty members. Design of clinical and basic science projects, study conduct issues and funding strategies are some of the topics that will be covered.

3. Thrombosis and Vascular Medicine Seminar Series (60 minutes monthly). Faculty from Hamilton Health Sciences hospitals and St. Joseph's Hospital present a topic of clinical interest. Occasionally, there is an invited speaker.

**On-Call Responsibilities**
On-call responsibilities will be tailored to the specific program and educational needs of the fellow. Fellows may participate in out-of-hospital Thrombosis and Vascular Medicine Service calls at the hospital where they are providing clinical service. When on call, the fellow provides consultation for both inpatient and emergency referrals.

**TO APPLY**
Inquiries will be treated in confidence and can be directed to:

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