

STEM CELL TRANSPLANTATION FELLOWSHIP PROGRAM

ONCOLOGY CENTER

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I. INTRODUCTION

The Kingdom of Saudi Arabia is a very rapidly developing country, with vast improvements occurring in private and government health services. Hematologic disorders constitute one of the major causes of morbidity and mortality in the country. At the present time there is a very limited number of qualified clinical hematologists in the Kingdom to handle such cases.

The hematopoietic Stem Cell Transplantation (SCT) program at King Faisal Specialist Hospital and Research Centre (Gen. Org.) [KFSH&RC] is well-established. Founded in 1975, KFSH&RC is currently considered one of the world's leading centers in this field. Currently there is a good number of fellows enrolled in Saudi Board of Adult Hematology, many of whom are interested in the field of SCT. The current Saudi Board program is tailored to give the fellows skills in all aspects of hematology, including SCT. However, its goal is to graduate general hematologists covering the wide range of clinical and laboratory aspects of hematology. Several oncology centers have recently opened in the different regions in the Kingdom, many of which are in the process of starting to establish and offer SCT service to their patients. In addition we get several requests from colleagues in the Gulf region and Arab countries to enrol their physicians in the SCT program.

Based on this, there is a demand for a national training program that will provide trainees with all the necessary skills towards the acquisition of the specialty training certificate in STC. The trainees will be capable of handling all types of SCT-related disorders, with good understanding of related social, economic and environmental aspects.

The SCT fellowship program consists of 12 months of full-time structured supervised training in adult hematopoietic SCT program. This will include rotations in different related services. Fellows will also be allowed a one-year extension in research or in clinical areas of interest to them.

II. GENERAL OBJECTIVES

- A. To graduate adult SCT specialists with adequate knowledge and skills to treat competently any relevant health problems of patients with related blood disorders.
- B. To graduate fellows at internationally acceptable standards.
- C. To make fellows realize the importance of team approach to medical problems in the field of SCT.
- D. To graduate adult hematopoietic SCT specialists with appropriate attitude and medical ethics.
- E. To provide an educational environment that will promote health care standards.

- F. To train fellows to perform clinical SCT research, emphasizing the research oriented approach to new problems.

III. SPECIFIC OBJECTIVES

The program emphasizes formal instruction for the following:

- A. Treatment of individual blood diseases requiring SCT, with emphasis on coordinated multidisciplinary approach.
- B. Clinical experience that emphasizes patient management in both inpatient and outpatient settings.
- C. Ability to perform related procedures.
- D. Key tools in basic science that applies to SCT patient management.

IV. ADMISSION REQUIREMENTS

Candidates must possess specialty certification in Internal Medicine. In addition, successful completion of a two-year structured training in Hematology is required. They must have successfully completed a personal interview by the members of the department. Three recent letters of recommendation and a sponsorship letter should be submitted.

Application Procedure

- A. Recruitment process should be based on the guidelines of the KFSH&RC.
- B. Documentation
 - 1. a. Application form for SCT fellowship program.
 - b. Signature of an obligation to abide by the rules and regulations of the training program and KFSH&RC.
 - 2. Copy of Saudi Specialty Certificate in Hematology or its equivalent.
 - 3. Three letters of reference.
 - 4. Three passport size photographs.
 - 5. Sponsorship letter.

V. STRUCTURE OF TRAINING PROGRAM

- A. **Duration.** One-year training, and an optional one year for meritorius fellows to undertake clinical research in the subspecialty.
- B. **Centre.** Training is to be conducted solely in KFSH&RC. In exceptional situations, up to 50% of training may be undertaken overseas in a recognized stem cell transplant centre if approved by the Adult Hematology/HSCT Section faculty and the SCT Program Director at KFSH&RC.

C. Training Capacity. Two fellows per year.

D. Faculty Qualification. The faculty should consist of a minimum of five full-time consultants in Adult Hematology/SCT, including the Program Director. The faculty in this program shall be consultants who are committed to postgraduate teaching and medical research. Faculty consultant staff should possess speciality qualification in Adult Hematology in the form of American Board certificate/Canadian Fellowship/MRCPath (UK) or equivalent, with adequate prior training in hematopoietic SCT. Furthermore, faculty consultants should have at least 3 years of post-qualification experience in the field of hematopoietic SCT. Faculty consultants should have adequate expertise in the spectrum of available hematopoietic SCT fields, including autologous, allogeneic related, allogeneic unrelated and cord blood SCT. The fellowship program will also draw upon the expertise of a range of professionals from other disciplines through the formal rotations in this program, including stem cell processing, tissue typing and other hematopoietic SCT-related laboratories in this field.

VI. PROGRAM CONTENT

The SCT fellowship program provides an environment within which fellows can develop clinical competence in the overall field of hematopoietic SCT. The content of the program is divided into clinical sciences, basic sciences and research. The fellows will:

1. Deepen their understanding of stem cell biology.
2. Review the basics of HLA system, donor selection criteria and the impact of HLA disparity on post-transplant outcomes.
3. Gain knowledge on management and treatment of patients undergoing SCT, as well as on the indications and contraindications for hematopoietic transplant.
4. Learn about the concepts and applicability of cellular therapy in the treatment of malignant hematology.
5. Understand the immunological concepts behind transplantation, tolerance and rejection.
6. Master the concepts of graft-versus-host disease (GVHD) and graft-versus-leukemia (GVL) effects, as well as strategies for the prevention and treatment of GVHD.
7. Acquire the essential skills needed in managing patients with hematologic malignancies.
8. Conduct research using the various technological platforms of our hematopoietic SCT data.
9. Enhance clinical research skills and competencies.

Outline of Clinical and Academic Activities

Year 1

Fellows will rotate in the following areas:

1. Adult BMT inpatient service: 4 months
2. Stem cell processing Lab: 1 month
3. Leukemia inpatient service: 2 months
4. Radiation therapy: 2 weeks
5. Apheresis unit: 2 weeks
6. Leave, 1 month
7. Pediatric SCT: 1 month
8. BMT clinic: 2 months

Note: SCT fellow-candidates who have adequate prior Hematology training in a leukemia unit during their general hematology training may do six (6) months rotation in Adult BMT inpatient service without the need to do leukemia floor rotation. This is assessed on case-by-case basis by the Adult Hematology/HSCT Section faculty & the SCT Program Director at KFSH&RC.

The purpose of the first fellowship year is to introduce the fellow to laboratory and clinical SCT. During the clinical hematology rotations, the fellow will be in immediate contact with the patient and will learn how to deal with problems associated with patient care on a one-to-one basis in conjunction with the senior fellow/assistant, supervised by the attending hematologist. This is to allow the fellows first-hand exposure to SCT related issues and introduce them to the special care and needs of SCT patients in order to gain experience in tackling the various problems associated with these patients.

Year 2 (Potential Extension - Optional)

Fellows will rotate in the following areas:

Research and clinical areas of interest to the fellow, with guidance and supervision from Adult Hematology/HSCT Section faculty and the SCT Program Director at KFSH&RC.

Details of Representative Rotations

1. Adult Bone Marrow Transplantation Rotation

Fellows will take more or less full responsibility as primary care physicians for their assigned patients with various hematological disorders requiring hematopoietic SCT, such as acute and chronic leukemia, aplastic anemia, multiple myeloma, Burkitt's lymphoma, and myelodysplasia. During this rotation fellows will be exposed to a new medical field. They will be able to

follow the hematopoietic SCT patients from the beginning of their treatment course.

Objectives of this rotation include:

1. Recognition of the underlying diseases in which allogenic and autologous hematopoietic SCT is indicated.
2. Knowledge of the different conditioning regimens, including their indications, contraindications, and short- and long-term regimen related toxicities.
3. Recognition of short- and long-term complications of hematopoietic SCT and their management, including:
Prophylaxis of GVHD using the various immune suppressive therapies,
Manifestations and treatment of acute and chronic GVHD,
Early diagnosis and treatment of venoocclusive disease of the liver,
Bacterial, viral and fungal infections in patients undergoing hematopoietic SCT,
Principles of transfusion and nutritional support in hematopoietic SCT, and
Understanding the principles of immunobiology and immune reconstitution in hematopoietic SCT.

2. Adult Hematology Leukemia Service Rotation

Fellows will take more or less full responsibility as primary care physicians for their assigned patients. During this rotation fellows will further expand their competence in Internal Medicine and Hematology. They will gain experience on the implementation of efficient diagnostic evaluation and rational expansion of differential diagnoses with correct interpretation of laboratory and diagnostic imaging tests used in patients with blood diseases. They will have hands-on experience and knowledge in the clinical manifestations, diagnostic modalities and management of acute leukemias, bone marrow failure syndromes, as well as other hematologic problems.

Fellows will be familiarized with:

1. The course of treatment of patients with acute leukemia, particularly the induction and consolidation phases.
2. Mechanism of action, route of administration, contraindications and adverse effects of chemotherapy and management of side effects, including treatment of febrile neutropenia, mucositis and gastrointestinal adverse effects.
3. Indications for blood component transfusion and its adverse effects as well as their prevention and treatment.
4. Performance of bone marrow aspiration and biopsy, and requesting the appropriate tests that need to be done on the samples.
5. Performance of lumbar punctures for diagnostic and therapeutic purposes and evaluation of the cerebrospinal fluid (CSF).
6. Recognition and management of Hickman line and central venous catheter related complications.
7. Multidisciplinary care, including effective interaction with, and

involvement of nursing staff, infectious diseases, pulmonary, radiation oncology, surgery, dental, palliative care, social service, and other supportive services in the management of hematologic disorders.

3. Adult BMT Clinic

Fellows will be involved directly in donor selection for allogeneic SCT patients, undertaking donor assessment as per SCT standard protocols. Fellows will also assess patients being planned to undergo autologous or allogeneic HSCT prior to their admission. Furthermore, fellows will see patients in BMT clinic after discharge from hospital for monitoring of their SCT full care and management of short- and long-term complications.

4. Stem cell Processing Lab

Fellows will familiarize themselves with various serological and molecular techniques of HLA typing, in addition to training on interpretation of HLA typing results. Furthermore, fellows are expected to acquire knowledge on principles of stem cell laboratory enumeration as well as the lab aspects of stem cell processing and cryopreservation.

5. Apheresis Unit

Fellows will oversee patients undergoing autologous and allogeneic stem cell harvest in aphaeresis unit, acquiring knowledge on clinical as well as lab aspects involved in this area.

6. Radiation therapy

Fellows in this rotation will be expected to acquire knowledge on principle of total body irradiation that is used as part of conditioning regimens in SCT, under supervision by radiation physicist and radiation oncologist.

7. Pediatric SCT

Fellows in this month will be based in the inpatient paediatric SCT unit at KFSH&RC under supervision of pediatric HSCT faculty members. In addition, fellows will attend one pediatric BMT clinic per week. The main objective is to acquire knowledge in relevant aspects of SCT in diseases that are less frequently seen in the Adult program, such as hemoglobinopathies, immunological and congenital disorders.

Lectures and Conferences

Fellows will be required to attend all activities as deemed necessary by the participating center's departments/sections. They should attend at least one international annual meeting, preferably the annual EBMT, ASH or IBMT

meeting. Fellows will be participating in the department's or section's CME activities.

VII. RESPONSIBILITIES OF FELLOWS

Training is a full-time commitment. Trainees shall be enrolled in continuous full-time training for the whole period of the program. Training shall be comprehensive and includes inpatient, ambulatory and emergency management, with gradual progression of responsibility.

Fellows will assist in the supervision of medical residents or junior hematology fellows during their rotation. Fellows will be assigned on-call duties for night and weekend coverage in order to provide widened opportunities for clinical experience and graduated responsibility for patient care.

In summary, the fellows will be involved in the activities of the faculty members with varied interests and expertise. They will participate actively in research and the existing treatment protocols, critically analyze the literature and synthesize the information gained.

The trainees shall abide by training regulations and obligations set by the KFSH&RC.

VIII. EVALUATION

The fellow's level of competence and performance will be evaluated at a frequency determined by the Fellowship Postgraduate Education Committee and in the manner as detailed in the Policy for Fellowship Training Program.

Elements of competence to be evaluated should include:

Knowledge of detailed clinical data of patients the fellow is managing.

Ability to arrive at an appropriate diagnostic and therapeutic decision.

Ability to gain procedural skills appropriate to the level of training.

Knowledge of adult SCT science, basic and clinical.

Methods of evaluation:

Completion of the standard formal evaluation form from each faculty member for each rotation.

Written evaluation examination done at the end of the first year, and oral examination at the end of training.

IX. COMPLETION

A certificate of fellowship training in Stem Cell Transplantation at KFSH&RC will be awarded upon satisfactory completion of the program's requirements.

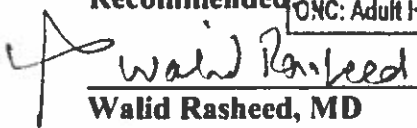
X. LEAVES & HOLIDAYS

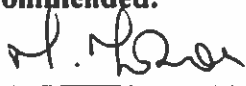
Regulations governing leaves and holidays are as stipulated in the Policy for Fellowship Training Program.


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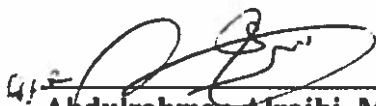
**STEM CELL TRANSPLANTATION
FELLOWSHIP PROGRAM**

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