

PEDIATRIC STEM CELL TRANSPLANTATION FELLOWSHIP PROGRAM

PEDIATRIC HEMATOLOGY/ ONCOLOGY

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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. Pediatric Hematology/Oncology disorders constitute one of the major causes of morbidity and mortality in children in the country. At the present time there is a very limited number of qualified clinical pediatric hematologists/oncologists in the Kingdom to handle such cases.

The Pediatric Hematopoietic Stem Cell Transplantation (SCT) program at King Faisal Specialist Hospital and Research Centre (Gen. Org.) [KFSH&RC] was founded in 1984. The SCT program at KFSH&RC is well-established, and is currently considered one of the world's leading centers in this field. The Saudi Board of Pediatric Hematology/Oncology, graduates multiple fellows per annum many of whom are interested in the field of SCT. The current Saudi Board program is tailored to provide the fellows skills in all aspects of pediatric hematology/oncology, including SCT. However, its goal is to graduate general pediatric hematologists/oncologists covering the wide range of clinical and laboratory aspects of hematology/oncology. 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 pediatric patients. In addition we get several requests from colleagues in the Gulf region and Arab countries to enroll 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 pediatric hematopoietic SCT. 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 Pediatric 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 Pediatric SCT specialists with adequate knowledge and skills to treat competently relevant health problems associated with SCT.
- 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 pediatric 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 malignant and benign blood diseases, immunological disorders, and metabolic disorders 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 sciences that apply to SCT patient management.

IV. ADMISSION REQUIREMENTS

Candidates must possess specialty certification in Pediatrics. In addition, successful completion of certified training in Pediatric Hematology\Oncology 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 Pediatric 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 Pediatric Hematology\Oncology or its equivalent
 - 3. Three (3) letters of reference
 - 4. Three (3) passport size photographs
 - 5. Sponsorship letter

V. STRUCTURE OF TRAINING PROGRAM

- A. **Duration-** One year training, and an optional one year for meritorious 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 Pediatric SCT Section faculty & the Pediatric SCT Program Director at KFSH&RC
- C. **Training Capacity-** Up to three (3) fellows per year.
- D. **Faculty Qualification**

The faculty should consist of a minimum of five full-time Consultants in Pediatric Hematology/Oncology/SCT, including the Program Director. The faculty in this program shall be Consultants who demonstrate and are committed to postgraduate teaching and medical research. Faculty Consultants staff should possess specialty qualification in Pediatric Hematology/Oncology in the form of American Board Certificate/Canadian Fellowship/MRCPath (UK) or its equivalent, with adequate prior training in Pediatric SCT. Furthermore, faculty consultants should have at least three (3) years of post-qualification experience in the field of Pediatric SCT. Faculty Consultants should have adequate expertise in the spectrum of available Pediatric 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 the Stem Cell Processing, Tissue Typing and other Hematopoietic SCT related Laboratories in this field.

VI. PROGRAM CONTENT

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

1. Enhance the 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 SCT.
4. Learn about the concepts and applicability of cellular therapy in the treatment of malignant and non-malignant hematology, immunological and metabolic diseases requiring hematopoietic SCT.
5. Understand the immunological concepts behind transplantation, tolerance and rejection.
6. Understand the concepts of graft-versus-host disease (GVHD; acute and chronic) and graft-versus-leukemia (GVL) effects, as well as strategies for the prevention and treatment of GVHD.
7. Conduct research using the various technological platforms of our hematopoietic SCT data.
8. Enhance clinical research skills and competencies.

Outline of Clinical and Academic Activities

Year 1

Fellows will rotate in the following areas:

1. Pediatric SCT inpatient service: Four (4) months

2. Pediatric SCT clinic: Three (3) months
3. Stem cell processing Lab/ HLA typing: One (1) month
4. Radiation therapy: Two (2) weeks
5. Aphaeresis unit: Two (2) weeks
6. Adult BMT: One (1) month
7. Pediatric Immunology service rotation: One (1) month
8. Leave: One (1) month

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 by Pediatric SCT Section & the SCT program Director at KFSH&RC.

Details of Representative Rotations

1. Pediatric SCT *inpatients* Rotation:

Fellows will take more or less full responsibility as primary care physicians for their assigned patients with various hematological disorders or other disorders requiring hematopoietic SCT, such as acute and chronic leukemia, aplastic anemia, inherited bone marrow failure syndromes, and myelodysplasia, and immunodeficiency and metabolic diseases requiring hematopoietic SCT. 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 veno-occlusive 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 of the principles of immunobiology and immune reconstitution in hematopoietic SCT.

2. Pediatric SCT Clinic:

Fellows will attend at least 5 clinics per week and 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 SCT clinic after discharge from hospital for monitoring of their SCT full care and management of short and long term complications.

3. 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 acquire knowledge on principles of stem cell laboratory enumeration as well as lab aspects of stem cell processing and cryopreservation.

4. Aphaeresis 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.

5. 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.

6. Adult BMT service:

Fellows in this month will be based in the inpatient adult BMT unit at KFSHRC under supervision of adult HSCT faculty members. In addition, fellows will attend one adult 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 pediatric program, such as chronic leukemia, multiple myeloma and to expose to adolescent patients aged from 14-18 years.

7. Pediatric Immunology Rotation:

Fellows in this month will joined the inpatient pediatric immunology team at KFSH&RC. In addition, fellows will attend one post SCT immunology clinic. The main objective of this rotation to have further understanding of normal immune system and to be familiar to immunological disorders requiring SCT and the post SCT follow up of patients with these disorders.

Procedure

Bone Marrow Harvest is most important procedure related to SCT and it is very critical for fellow to be qualified to do this procedure. Fellows should do and document in a log book a minimum of 20 Bone Marrow Harvests during before completing the training.

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, ASBMT, ASH or ASPHO meeting.

Fellows will be participating in department/section 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 pediatric hematology/oncology 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 come with an appropriate diagnostic and therapeutic decision.

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

Knowledge in pediatric SCT science, basic and clinical.

Methods of evaluation:

Completion of 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 Pediatric 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.