



الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

Pediatric Rheumatology



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

PREFACE

- A curriculum is a vital part of learning. In addition to informing trainees, trainers, and training supervisors of the goals and objectives of training, the curriculum has major impacts on program planning, execution, and quality assurance of training outcomes.
- The Saudi Commission for Health Specialties (SCFHS) is the national regulatory body of postgraduate training programs across all health professions in Saudi Arabia.
- This manual is meant to serve as a guide for members of the “Pediatric Rheumatology Fellowship Program Curriculum Development Committee” while writing the curriculum of their specialty.
- Curriculum Development Committee (CDC) members should adhere to the proposed curriculum structure in this manual. The subject-matter content needs to be built by the CDC.
- The CDC will be required to set a blueprint for the curriculum content. The CDC will be required to get the blueprint approved by the scientific council/committee of the program (whenever that is applicable).
- This manual will provide pre-written sections and materials that are universally applicable to SCFHS programs. CDC members are also advised to follow instructions to help in customizing content based on program needs.
- For any further support please do not hesitate to contact us at: Curricula@scfhs.org.sa
- The primary goal of this document is to enrich the training experience of postgraduate trainees by outlining their learning objectives to become independent and competent future practitioners.

- This curriculum may contain sections outlining some training regulations; however, such regulations need to be sought from the “General Bylaws of Training in Postgraduate Programs” and “Executive Policies” published by the Saudi Commission for Health Specialties (SCFHS), which can be accessed online through the official SCFHS website. In the case of discrepancy in regulation statements, the one stated in the most recent updated bylaws and executive policies will be the reference to apply.
- As this curriculum is subject to periodic refinements, please refer to the electronic version posted online for the most updated edition at www.scfhs.org.sa



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II. COPYRIGHT STATEMENTS

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We would also like to acknowledge that the CanMEDS framework is a copyright of the Royal College of Physicians and Surgeons of Canada, and many of the description's competencies have been acquired from their resources (Please refer to: CanMEDS 2015 physician competency framework; Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.).

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IV. INTRODUCTION

1. Context of Practice

Pediatric Rheumatology is a clinical discipline that encompasses the study of inflammatory and non-inflammatory disorders of connective tissue and joints in children and adolescents. There are more than 100 rheumatology disorders that range from those affecting isolated parts of the body to those affecting every organ and body system. Rheumatic diseases are important causes of disability in children. Proper diagnosis and early aggressive intervention can minimize both short-term and long-term morbidities from these conditions, thereby lowering the cost of caring for these patients.

Rheumatology is a multidisciplinary specialty, and rheumatologists usually work in close liaison with ophthalmologists, radiologists, orthopedic surgeons, physiotherapists, occupational therapists, podiatrists, and specialist nurses. Rheumatology also requires interdisciplinary knowledge and awareness of new research developments in immunology, genetics, gastroenterology, neurology, pain management, rehabilitation, and radiology.

For example, the most common chronic rheumatic disease is juvenile idiopathic arthritis. This disease affects 3 million children and young adults globally. The yearly incidence of juvenile idiopathic arthritis is estimated to be 2–20 cases/100,000 individuals, with an estimated total of 294,000 children affected in the United States (1). Data demonstrate a delay in access to appropriate care for children with musculoskeletal symptoms before they are ultimately diagnosed with juvenile idiopathic arthritis, as reports show a median interval from symptom onset to first pediatric rheumatology multidisciplinary team assessment of 20 weeks (range, 0–416 weeks). This delay is likely to affect long-term outcomes (2). No local epidemiological data are available in Saudi Arabia.

Other diseases that require assessment by pediatric rheumatologists include systemic lupus erythematosus, juvenile dermatomyositis, and scleroderma. Vasculitis comprises a large portion of cases covered by pediatric rheumatologists, including Kawasaki disease and IgA vasculitis, among other forms of vasculitis. Another expanding disease in pediatric rheumatology are autoinflammatory diseases, especially in areas with high consanguinities, such as Saudi Arabia.

There is a tremendous shortage of pediatric rheumatologists who are trained specifically to treat rheumatologic disorders in children and adolescents. Considering that approximately 38% of Saudis are young (< 15 years of age) according to the 2007 census, and that the field of Pediatric Rheumatology is ever-expanding, the need for a national well-structured pediatric rheumatology training program appears a logical and timely step. Currently, the number of pediatric rheumatologists covering major areas in the Kingdom, such as northern and southern areas, and other remote areas at the borders of the Kingdom, are inadequate, and this compels the population in these areas to seek medical care from neighboring countries. A shortage of rheumatologists has been established in other nations, such as the USA, where the current demand exceeds supply by 33%, a figure that is projected to increase to 61% by 2030 (3).

The Pediatric Rheumatology Fellowship Program not only serves the need of patients in Saudi Arabia but also of those in the Arabian Gulf and Arab region as a whole; there were two fellows who graduated from the program from Kuwait and currently a fellow is doing the program from the United Arab Emirates, which indicating the program's importance to neighborhood countries.

2. Goals and Responsibilities of Curriculum Implementation

This curriculum ultimately seeks to guide trainees in becoming competent in the pediatric rheumatology specialty. Accordingly, this goal requires a significant



amount of effort and coordination from all the stakeholders involved in postgraduate training. As “adult learners,” trainees must be proactive, fully engaged, and exhibit the following: a careful understanding of learning objectives, self-directed learning, problem-solving, an eagerness to apply learning by means of reflective practice from feedback and formative assessment, and self-awareness and willingness to ask for support when needed. The Program Director plays a vital role in ensuring the successful implementation of this curriculum. Moreover, training committee members, particularly the program administrator and chief fellow, had a significant impact on program implementation. Trainees should be called upon to share responsibility in curriculum implementation.

The strategic direction of the Saudi Commission for Health Specialties (SCFHS) applies a recognized competency model of training governance to achieve the highest quality of training, and postgraduate programs are also required to cover research and evidence-based practice in their curriculum. Additionally, academic affairs in training centers and the regional supervisory training committee play major roles in training supervision and implementation. Specialty science (council/committee) will guarantee that the content of this curriculum is constantly updated to match the highest standards in postgraduate education of each trainee's specialty.

Is this a new program? Yes

V. ABBREVIATIONS USED IN THIS DOCUMENT

Abbreviation	Description
SCFHS	Saudi Commission for Health Specialties
F(1)	First year of fellowship
F(2)	Second year of Fellowship
PT	Progress test
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
Mini-CEX	Mini-Clinical Experience report
DOPS	Direct Observation of Procedural Skills report
CBD	Case-Based Discussion report
CBE	Competency-Based Education
ITER	In-Training Evaluation Report
COT	Consultation Observation Tool
FTC	Fellowship Training Committee



VI. PROGRAM ENTRY REQUIREMENTS

Please refer to the updated executive policy of SCFHS on admission and registration.

Website: www.scfhs.org.sa

VII. LEARNING AND COMPETENCIES

1. Introduction to Learning Outcomes and Competency-Based Education

Training should be guided by well-defined “*learning objectives*” that are driven by targeted “*learning outcomes*” of a particular program to serve specific specialty needs. Learning outcomes are supposed to reflect the professional “*competencies*” and tasks that are aimed to be “*entrusted*” to trainees upon graduation. This will ensure that graduates meet the expected demands of the healthcare system and patient care in relation to their specialty. *Competency-based education* (CBE) is an approach of “*adult-learning*” that is based on achieving *pre-defined, fine-grained, and well-paced* learning objectives that are driven by complex professional competencies.

Professional competencies related to health care are usually complex and contain a mixture of multiple learning domains (knowledge, skills, and attitude). CBE is expected to change the traditional method of postgraduate education. For instance, the time of training, though a precious resource, should not be considered as a proxy for *competence* (e.g., time of rotation in certain hospital areas is not the primary marker of achieving competence). Furthermore, CBE emphasizes the critical role of informed judgment in learners’ competency progress, which is based on a staged and formative assessment that is driven by multiple workplace-based observations. Several CBE models have been developed for postgraduate education in healthcare (example: *CanMEDS by the Royal College of Physician and Surgeon of Canada (RCPSC)*).

The following concepts enhance the implementation of CBE in this curriculum:



- **Competency:** Competency is a cognitive construct that assesses the potential to perform efficiently in a given situation based on the standards of the profession. Professional roles (e.g., medical experts, health advocates, communicators, leaders, scholars, collaborators, and professionals) are used to define competency roles to make them mendable for learning and assessment.
- **Milestones:** Milestones are the stages of the developmental journey throughout the competency continuum. Trainees throughout their learning journey, from junior to senior levels, will be assisted in transforming from being novice/supervised to being masters/unsupervised practitioners. This should not undermine the role of supervisory/regulatory bodies toward the malpractice of independent practitioners. Milestones are expected to enhance the learning process by pacing training/assessment to match the developmental level of trainees (junior vs. senior).
- **Learning-Domains:** Whenever possible, efforts should be directed to annotate learning outcomes with the corresponding domain (K=Knowledge, S=Skills, and A=Attitude). More than one annotation may be used for a given learning outcome.
- **Content-area Categorization:** It is advisable to categorize learning outcomes in broad content areas related to the practice of the profession. For example, diagnostic versus therapeutic, simple versus complex, and urgent versus chronic.
- **Trainees** are expected to progress from the novice to the master's level in a certain set of professional competencies. The SCFHS endorsed CanMEDS to articulate professional competencies. The curriculum applies the principles of competency-based medical education. CanMEDS is a globally accepted framework that outlines competency roles. The CanMEDS 2015/ACGME 2018 framework" was adopted in this section.

This reference is an example of the general outline of CanMEDS competency (Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015).

2. Program Duration

The pediatric rheumatology fellowship program is a 2-year program.

3. Program Rotations

Year	Rotation	Duration
First year	Inpatient, outpatient, emergency room, and consultation service for pediatric rheumatology	36 weeks
	Immunopathology and immunology	4 weeks
	Radiology	4 weeks
	Elective Rotation 1 (clinics, research, pathology, overseas or outside hospital...etc.)	4 weeks
	Vacation	4 weeks
Second year	Inpatient, outpatient, emergency room, and consultation service for pediatric rheumatology	36 weeks
	Physiotherapy and rehabilitation	4 weeks
	Elective rotation 2 (clinics, research, pathology, overseas or outside hospital...etc.)	4 weeks
	Adult rheumatology	4 weeks
	Vacation	4 weeks



4. Mapping of learning objectives and competency roles to program rotations

Pediatric rheumatology rotations include the following:

1- Inpatient/outpatient/emergency room (ER) and consultations:

The rotation consisted of inpatient, outpatient, and consultation services. These provide the sole pediatric rheumatology patient encounter time. The fellow is expected to do the following:

- 1.1. Thoroughly evaluate a new patient who presents to the outpatient clinic, plan the appropriate management, and discuss it with a rheumatology consultant.
- 1.2. Assess admitted patients, plan appropriate management, and discuss it with the rheumatology consultant.
- 1.3. Evaluate and manage consultations during the day and on call, then discuss management with rheumatology consultants.
- 1.4. Practice daily ward rounds with residents and attend other regular clinical meetings in the division.
- 1.5. Participate in rheumatology meetings and conferences.
- 1.6. Participate in the morning report meeting of the department.

2- Immunology and pathology rotation

The rotation will allow the fellow to be exposed to outpatient and inpatient immunology services, as well as attend immunology laboratories.

In the immunology rotation, the fellow is expected to do the following:

- 2.1. Describe immune and inflammatory responses relevant to rheumatologic disease pathogenesis that include the following:
 - 2.1.1 Acute phase responses.
 - 2.1.2 Innate immunity with emphasis on complement immune system.
 - 2.1.3 Adaptive immunity with emphasis on T-cell development and B-cell development.

- 2.1.4 Antigen presentation, Major Histocompatibility Complex, and Co-stimulatory signals.
- 2.1.5 Important transcription factor.
- 2.1.6 Central and peripheral tolerance, and mechanism of autoimmunity.
- 2.1.7 Autoantibodies, cytokines, and chemokines.
- 2.2 Explain the immunological mechanism of actions in relevant therapeutic interventions for rheumatological diseases that include the following:
 - 2.2.1 Immune Modulators: IVIG, calcineurin-Inhibitors, and mTOR inhibitors.
 - 2.2.2 Anti-inflammatory: Corticosteroids.
 - 2.2.3 Anti-mitotic: Colchicine.
 - 2.2.4 Antimetabolites (purine/pyrimidine pathways): Azathioprine, MMF, allopurinol, and leflunomide.
 - 2.2.5 Antineoplastics: MTX, cyclophosphamide.
 - 2.2.6 Cytokines Signaling blockers:
 - *Anti-: IL-1,6,12,17,23; TNF.*
 - 2.2.7 T-cells and B-cells signaling:
 - *Co-stimulatory blockers; Anti-CD20; BAFF inhibitors.*
- 2.3 Recognize vaccination consideration in immunocompromised patients.
- 2.4 Recognize monogenic immune dysregulation diseases with rheumatological phenotypes such as the following diseases:
 - 2.4.1 CVID.
 - 2.4.2 PNP deficiency.
 - 2.4.3 Complement deficiencies.
 - 2.4.4 CGD.
- 2.5 Identify common immunological adverse drug reactions pertinent to medications used in rheumatological diseases, including the following:
 - 2.5.1 Anaphylaxis and non-IgE-mediated anaphylaxis (anaphylactoid)



2.5.2 NSAID pseudoallergic reactions.

In immunopathology rotation, the fellow is expected to recognize the indications, interpretation, and utility of different serologic tests of pediatric rheumatology, including ANA, dsDNA, SSA, SSB, Smith, RNP, Jo-1, SCL-70, and ANCA.

3- Radiology rotation

The fellow would join musculoskeletal (MSK) radiologists and is expected to:

- 4.3. Recognize, and interpret imaging studies used in rheumatology, in particular radiographs, MRI, and US of the MSK system.

4- Physiotherapy and rehabilitation

The fellow will join physiotherapy and occupational therapist experts in rheumatology diseases and is expected to:

- 4.1. Recognize rehabilitation services (physical therapy, occupational therapy, and orthotics/prosthetics) within the available resources.
- 4.2. Identify and describe the overall physical assessment to set realistic and attainable treatment goals at two levels: long-term goals and short-term goals.
- 4.3. Recognize Rehabilitation Objective Measurements/Tools that are appropriate for the problems and goals identified.

5- Adult rheumatology rotation

The aims of this rotation are as follows:

- 5.1 Assess adult patients with musculoskeletal complaints.
- 5.2 Compare rheumatologic diseases in pediatric and adult patients in terms of presentation and management.
- 5.3 Evaluate rheumatologic diseases in adults, namely, those seen rarely in pediatric patients.
- 5.4 Recognize the long-term outcomes of pediatric patients with rheumatologic diseases followed by adult physicians when they are older than 14 years.

6- Elective rotation

The fellow can choose any field of interest to spend two (2) months of elective rotations during the entire training program. These include pediatric dermatology, ophthalmology, pediatric orthopedics, and research. In addition, the fellow could spend the duration of elective rotation in another clinical rheumatology center outside his/her hospital or abroad in a well-recognized center. Prior arrangements and approval by the Program Director are mandatory. The fellow can have these months either separate or combined after the initial 10 months of training have elapsed. During rotation, the fellow will be exposed to different expertise in the field that may reflect on his/her future approach and management of rheumatologic disorders.

Rotation Name: (replicate table based on rotations number)

Rotation Setting	Training Stage	Training Years	Rotation's Duration (Months/Weeks/Block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	Competency Roles**
<i>Inpatient Outpatient ER and consultations</i>	<i>Junior (F1)</i>	<i>1</i>	<i>36 weeks</i>	<ul style="list-style-type: none"> • Recognize emergency rheumatologic situations and build his/her ability in initial diagnosis and planning for patients with common rheumatology presentations. • Perform and master a detailed examination of the musculoskeletal system for large and small joints. • Discuss and implement research projects. 	<i>Medical expert Communicator Collaborator Leader Health advocate Scholar Professional</i>



Rotation Setting	Training Stage	Training Years	Rotation's Duration (Months/Weeks/Block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	Competency Roles**
	<i>Senior (F2)</i>	<i>2</i>	<i>36 weeks</i>	<ul style="list-style-type: none"> Analyze and interpret findings obtained using clinical skills to develop appropriate differential diagnoses and management plans for patients. Investigate and manage emergency and complicated common rheumatology cases and follow up these cases appropriately. 	<i>Medical expert</i> <i>Communicator</i> <i>Collaborator</i> <i>Leader</i> <i>Health advocate</i> <i>Scholar</i> <i>Professional</i>

Rotation Setting	Training Stage	Training Years	Rotation's Duration (Months/Weeks/Block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	Competency Roles**
<i>Immunopathology and immunology</i>	<i>Junior (F1)</i>	<i>1</i>	<i>4 weeks</i>	<ul style="list-style-type: none"> Recognize the indications, interpretation, and utility of different serologic tests for pediatric rheumatology that include ANA, dsDNA, SSA, SSB, Smith, RNP, Jo-1, SCL-70, and ANCA. Implement basic immunology mechanisms in rheumatological and immunological diseases. 	<i>Medical expert</i> <i>Communicator</i> <i>Scholar</i> <i>Professional</i>

Rotation Setting	Training Stage	Training Years	Rotation's Duration (Months/Weeks/Block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	Competency Roles**
<i>Radiology</i>	<i>Junior (F1)</i>	<i>1</i>	<i>4 weeks</i>	Discuss the indications, and interpretations of common imaging tests used in rheumatology, in particular the skeletal radiographs, US, and MRI.	<i>Medical expert Communicator Scholar Professional</i>

Rotation Setting	Training Stage	Training Years	Rotation's Duration (Months/Weeks /Block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	Competency Roles**
<i>Physiotherapy and rehabilitation</i>	<i>Senior (F2)</i>	<i>2</i>	<i>4 weeks</i>	Discuss overall Physical Assessment and rehabilitation objective measures used for rheumatology patients to set realistic, attainable treatment Goals at two levels; long-term and short-term goals.	<i>Medical expert Communicator Professional</i>



Rotation Setting	Training Stage	Training Years	Rotation's Duration (Months/Weeks /Block)	Rotation specific objectives (SMART)* (To describe the purposed outcomes in the form of KSA)	Competency Roles**
<i>Adult rheumatology</i>	<i>Senior (F2)</i>	<i>2</i>	<i>4 weeks</i>	Recognize appropriate rheumatology approach in adult practice, value the differences in clinical presentations compared to children, and long-term outcome of juvenile rheumatologic disorders.	<i>Medical expert Communicator Scholar Professional</i>

Important notice:

**** The strategic direction of the Saudi Commission for Health Specialties (SCFHS) applies the best competency models of training governance to achieve the highest quality of training. The postgraduate programs are also required to cover research and evidence-based practice in their curriculum. Research and scholarship are the domains of the curriculum. Trainees at all levels need to demonstrate that they can apply an evidence-based approach to their practice, including the adoption of an evidence-based approach for informed decision-making and enhanced patient care and patient outcomes. Trainers are expected to demonstrate the ability to critically appraise the literature. They are also encouraged to be involved in clinical research or audits for the advancement of science and medicine.

Embedding of research could be done through the conduction of lectures on academic half-days, rotation-based content, or available courses that prepare the trainee to conduct well-designed sound research on pertinent topics relevant to the field. The research requirement for the subspecialized postgraduate program should be in continuity with the requirement of the general postgraduate programs with clear reasonable expectations. Based on this strategic approach the scientific council/committee of the SCFHS have the freedom to customize the research application based on their need. We highly recommend utilizing the developed research and EBP online modules [SCFHS](#) (check the checklist) [appendix A](#) (Research and EBP online modules).



VIII. CONTINUUM OF LEARNING

This includes learning that should take place at each key stage of progression within the specialty. Trainees are reminded of lifelong Continuous Professional Development (CPD). Trainees should keep in mind the necessity of CPD for every healthcare provider to meet the demands of their vital profession. The following table shows how this role is progressively expected to develop throughout the junior, senior, and consultant levels of practice.

Specialty General Practice	F1 (Junior Level)	F2 (Senior Level)	Consultant Sub Specialist
Sub- specialty non-practicing (general pediatric resident)	Dependent/supervised practice	Dependent/supervised practice	Independent practice/provide supervision
Recognize basic health science and foundational level to core discipline knowledge	Identify fundamental knowledge related to core clinical problems of the specialty	Apply knowledge to provide appropriate clinical care related to core clinical problems of the specialty	Show advanced and up-to-date knowledge related to core clinical problems of the specialty
Recognize clinical skills such as physical examination related to the specialty	Apply clinical skills, such as physical examination and practical procedures related to the core presenting problems and procedures of the specialty	Analyze and interpret findings obtained using clinical skills to develop appropriate differential diagnoses and management plans for patients	Compare and evaluate challenging, contradictory findings and develop expanded differential diagnoses and management plan

Specialty General Practice	F1 (Junior Level)	F2 (Senior Level)	Consultant Sub Specialist
Recognize common and emergency situations related to pediatric rheumatology practice	Recognize emergency rheumatologic situations and build his ability in initial diagnosis and plan for patients with common rheumatology presentations	Analyze and manage emergency and complicated common rheumatology cases, and follow-up patients appropriately	Evaluate, supervise, teach, and contribute to the management of complicated cases in pediatric rheumatology



IX. TEACHING METHODS

The teaching process in postgraduate fellowship training programs is mainly based on the principles of adult learning theory. The trainees are expected to be aware of the importance of learning and play active roles in the content and process of their learning. The training programs implement the adult learning concept in each feature of the activities, where fellows are responsible for their own learning requirements. The formal training time includes the following four teaching activities:

- Program Specific Learning Activities
- Universal topics
- General Learning Opportunities
- Simulation

1. Program-Specific Learning Activities:

Program-specific activities are educational activities specifically designed and intended to teach trainees during their training time. Trainees are required to attend these activities, and non-compliance can subject trainees to disciplinary actions. It is advisable to link attendance and participation in these activities with formative assessment tools (see the formative assessment section below). Program administration should support these activities by providing protected time for trainees to attend and allow them to participate in such activities.

A) Program Academic Half-Day:

Every week, at least 2–4 h of formal training (commonly referred to as an *academic half-day*) should be reserved. A formal teaching time is an activity planned in advance with an assigned tutor(s), time slots, and venue. Formal teaching time excludes bedside teaching and clinic postings. The academic half-day covers the

core specialty topics that are determined and approved by the specialty's scientific council aligned with specialty-defined competencies and teaching methods. The core specialty topics ensure that important clinical problems of the specialty are well taught. It is recommended that lectures be conducted in an interactive case-based discussion format. The learning objectives of each core topic must be clearly defined, and it is preferable to use pre-learning materials. Whenever applicable, core specialty topics should include workshops, team-based learning (TBL), and simulation to develop skills in core procedures. Regional supervisory committees, in coordination with academic and training affairs, program directors, and chief fellows should work together to ensure the planning and implementation of academic activities, as indicated in the curriculum. There should be the active involvement of the trainee in the development and delivery of topics under faculty supervision; the involvement might be in the form of delivery, content development, or research. The trainee's supervisor should ensure that the discussion of each topic is stratified into three categories of learning domains: knowledge, skill, and attitude whenever applicable.

The recommended number of half-days that should be conducted annually is 40 sessions per academic training year, with time reserved for other forms of teaching methods, such as journal clubs and clinical/practical teaching. The training program committee, program directors, and chief fellows in coordination with academic and training affairs, and regional supervisory committees should work together to ensure the planning and implementation of academic activities, as indicated in the curriculum. This should be done efficiently by utilizing the available resources with an optimal exchange of expertise.



Example of half day activities

<i>Academic week</i>	<i>Section</i>	<i>Date</i>	<i>Time</i>		
1	General pediatric rheumatology	11 May	13:00–15:00	Topic review Primary Sjogren syndrome	F1 fellow
2		18 May	13:00–15:00	Update review Biologic medications in Juvenile SLE	F2 fellow
3		25 May	13:00–15:00	Tutorial MCQs and slide	Consultant
4		01 June	13:00–15:00	Case based discussion CNS lupus	F1 fellow
5		08 June	13:00–15:00	Journal Club	F1 fellow
6		15 June	13:00–15:00	Evidence-based practice MTX in rheumatic diseases	F2 fellow
7		22 June	13:00–15:00	Review MSK examination	Consultant

List of activities

1. Topic review: once per month for one hour, covering common rheumatologic conditions.
2. Journal club: once per month for one hour, covering high-quality studies related to the subspecialty.
3. Case-based presentation: once per month for one hour to include patient condition and review of the evidence for investigation or management.

4. Bedside session: once per month for 30 minutes to cover clinical signs related to common diseases.

B) Practice-Based Learning:

Training exposures during bedside, clinic, day care, and other work-related activities, including courses and workshops (e.g., standardized patients and bedside teaching), represent excellent opportunities for learning. Trainees are expected to build their capacity through self-directed learning.

On the other hand, practice-based learning allows the educator to supervise trainees to become competent in the required program practical skills that ensure fulfilling knowledge, psychomotor, and/or attitude learning domains. Each trainee was required to maintain a logbook documenting the procedures observed, performed under supervision, and performed independently. It would be prudent to determine the minimum number of procedures to be performed before the completion of training, and the minimum number needed to maintain competency after certification.

Fellows are encouraged to attend to and perform joint aspiration and intra-articular steroid injections.

2. Universal Topics:

Universal topics are educational activities developed by the SCFHS and intended for all specialties. Priority is given to topics with the following qualities:

- High value
- Interdisciplinary and integrated
- Require expertise that might be beyond the availability of the local clinical training sites

Universal topics have been developed by the SCFHS, and are available through e-learning via personalized access for each trainee (to access the online modules). Each universal topic will have self-assessment at the end of the module. As indicated in the “executive policies of formative assessment and annual



promotion,” universal topics are a mandatory component of the criteria for the annual promotion of trainees from their current level of training to the subsequent level. Universal topics were distributed over the training period.

Training Year	Modules			Topics name
Number	Number Name		Number	Name
F1	Module-1	Introduction	Topic 5 Topic 4	Safe drug prescribing Sepsis; SIRS; DIVC
	Module-5	Acute Care	Topic 24 Topic 24	Acute pain management Chronic pain management
F2	Module-7	Ethics and Healthcare	Topic 33	Patient advocacy
	Module-7	Ethics and Healthcare	Topic 35	Ethical issues: treatment refusal; patient autonomy

3. General learning opportunities:

Formal training time should be supplemented by other practice-based learning (PBL) methods, such as

- **Journal Club****, where the fellow is responsible for searching for a good-quality article under tutor supervision and presents it with a standardized criticism form.
- **Grand rounds****, where the fellow will present a short case, followed by a literature review under tutor supervision.
- **Research project**: Research is a mandatory task by SCFHS and the fellow is expected to choose a supervisor for his/her research within the first three months of starting the fellowship program, followed by writing the research proposal and getting acceptance from the institutional review board in the

subsequent three months of the program. The research journey throughout the fellowship will be evaluated through an in-training evaluation report. The final corrected manuscript should be submitted to the supervisor by the end of the fellowship and before the final exam.

Morning report:

The morning report was from a case-based teaching session. It is common for many training programs to have varying purposes and foci. The goals of morning reports are to teach efficient handover strategies and case presentation skills, to allow discussion of the management of interesting cases, and to enhance problem-solving and multidisciplinary team skills.

4. Simulation:

As the national supervising body, the SCFHS initiated a move towards integrating simulations into residency training programs.

Medical simulation involves creating an artificial clinical scenario from which trainees can learn. This process has educational advantages, such as learning and practicing how to deal with rare and/or high-risk clinical scenarios, and rare procedures while practicing in a controlled standardized environment with immediate effective feedback that has a significant impact on knowledge, skills, and attitude. (4, 5, 6, 7)

The scenarios for simulation need to be as close to real-world clinical situations as possible, including team members, equipment, and the environment, followed by timely and effective feedback. According to McGaghie et al., effective feedback has three key components: planning, pre-briefing, and feedback provision. (8)

The use of simulation in postgraduate training programs is currently a necessity, especially in competency-based curricula. Current programs are looking to graduate skilled, competent, and independent physicians while maintaining a focus on quality and patient safety. Practically speaking, there can be a high level of variability in using simulation to implement competency-based curricula, and the



nature of the specialty is likely to play another role in increasing this variability. Establishing standardized needs assessment methods for simulation may pose a challenge to any national organizational body dealing with various ongoing postgraduate training programs.

Simulation examples in pediatric rheumatology include joint aspiration and intra-articular steroid injections.

Overview

Joint injection involves aspiration and/or steroid injection of a joint for diagnostic or therapeutic purposes.

Goals of the procedure

- Identify evidence-based resources for performing joint injections.
- Determine indications and contraindications for joint injections.
- Identify elements of informed consent for the procedure.
- Demonstrate proper technique in performing knee injection using a simulation model.
- Describe post procedure management including post-procedure complications and follow-up instructions.

Required Procedure Competencies

- Identify anatomical landmarks on simulation model.
- Simulate sterile technique.
- Insert needle into the model in the correct location and at an appropriate angle.
- Confirm proper needle placement.
- Draw the syringe back and simulate medication administration.
- Withdraw the needle from model.

X. ASSESSMENT AND EVALUATION

1. Purpose of Assessment

Assessment plays a vital role in the success of postgraduate training. Assessment guides trainees and trainers to achieve defined standards, learning outcomes, and competencies. However, assessment provides feedback to learners and the faculty regarding curriculum development and implementation, teaching methods, and the quality of the learning environment. Reliable and valid assessment is essential in assessing curriculum alignment with respect to objectives, learning methods, and assessment tools. Finally, assessments assure patients and the public that health professionals are safe and competent to practice.

Assessment can serve the following purposes:

- a. **Assessment for learning:** Trainers will use information from trainees' performance to provide useful details regarding their learning for improvement. This enables educators to use information about trainees' knowledge, understanding, and skills to provide feedback to trainees regarding learning and how to improve.
- b. **Assessment as learning** involves trainees in the learning process while enabling them to monitor their progress. Trainees use self-assessment and educators' feedback to reflect on their progress. It develops and supports the trainees' metacognitive skills. Assessment as a form of learning is crucial in helping fellows become lifelong learners.
- c. **Assessment of learning** is used to demonstrate the achievement of trainees' learning. This is a graded assessment and usually counts towards the trainees' end-of-training degree.



- d. **Feedback and evaluation** as assessment outcomes will represent quality metrics that can improve the learning experience.

2. Formative Assessment

2.1 General Principles

Trainees, as adult learners, should strive to seek and develop their performance based on feedback throughout their journey of competency from “novice” to “mastery” levels. Formative assessment is a component of assessment distributed throughout the academic year, that aims primarily to provide trainees with effective feedback.

Every 3 months, at least 1 h should be assigned for trainees to meet with their program director, in order to review performance reports (e.g., ITER, e-portfolio, etc.). Input from the overall formative assessment tools will be utilized at the end of the year to determine whether individual trainees will be promoted from their current to the subsequent training level. A formative assessment will be defined based on scientific (council/committee) recommendations.

- a. **Multisource:** Minimum of four tools.
- b. **Comprehensive:** Covering all learning domains (knowledge, skills, and attitude).
- c. **Relevant:** Focusing on workplace-based observations.
- d. **Competency milestone-oriented:** Reflects the trainee’s expected competencies that match the trainee’s developmental level.

Trainees should play an active role in seeking feedback during their training, and trainers should provide timely and formative assessments. The SCFHS provides an e-portfolio system to enhance the communication and analysis of data from formative assessments.

Trainers and trainees are expected to follow the recommendations of the Scientific Council regarding the updated forms, frequency, distribution, and deadlines related to the implementation of evaluation forms.

2.2 Formative Assessment Tools

Learning Domain	Formative Assessment Tools	Important details (e.g., frequency, specifications related to the tool)
Knowledge	Annual Written Progress Test (promotion)	1 st fellowship training year
Skills	OSCE: Objective structured clinical examination	By the end of the 2 nd fellowship training year
	DOPS: Direct Observation for Procedural/examination Skills Procedures: Intra-articular steroid injection (the only procedure in Pediatric rheumatology) Examination: MSK examination	Continuous observation (evaluation and feedback can be documented on the ITER)
Attitude	ITER: In-Training Evaluation Report	Monthly

The evaluation of each component will be based on the following scale:

Percentage	< 50%	50–59.4%	60–69.4%	>70%
Description	Clear fail	Borderline fail	Borderline pass	Clear pass

To achieve unconditioned promotion, the candidate must score a minimum of a “borderline pass” for all formative assessment tools used.

The program director can still recommend the promotion of candidates if the above is not met in some situations.

- If the candidate had “borderline failure” in one or two components at maximum, these scores should not belong to the same area of assessment.



- The candidate must have passed all other components and scored a minimum of a clear pass in at least two components.

3. Summative Assessment

3.1 General Principles

Summative assessment is a component of assessment that aims primarily to make informed decisions about trainees' competency. Compared to formative assessment, summative assessment does not aim to provide constructive feedback. For further details in this section, please refer to the General Bylaws of Training in Postgraduate Programs and General Assessment Bylaws (available online: www.scfhs.org). In order to be eligible to sit for the final exams, trainees will be granted "Certification of Training Completion" upon successful completion of all training rotations.

3.2 Promotion Examination (If Applicable)

This is only applicable to fellowship programs. It is a written examination that permits the fellow to be promoted from "first" to "second" (final) year of training. For further details, please refer to the General Bylaws of Training in Postgraduate Programs and General Assessment Bylaws (available online: www.scfhs.org).

Blueprint Outlines: The content of the following table is for demonstration only (please refer to the most updated version published on the SCFHS website).

A blueprint of both promotion and Final exams is shown in table # 1.

Table # 1: Pediatric Rheumatology Written Examination Blueprints

Promotion Examination (F1)

Sections	Proportions	Medical Science	Diagnosis	Management	Investigations
Basic concepts (Anatomy, research, drug therapy, immunology, labs, and imaging)	15%	8	3	2	2
Chronic inflammatory Arthritis	20%	8	4	4	4
Systemic Lupus Erythematosus and Antiphospholipid Syndrome	10%	2	3	3	2
Inflammatory myositis & Myopathy	10%	2	3	3	2
Vasculitis & vasculopathy	10%	2	3	3	2
Scleroderma and undifferentiated connective tissue diseases	10%	3	3	2	2
Arthritis related to Infections	10%	2	3	4	1
Autoinflammatory diseases	10%	3	3	2	2
Non-inflammatory musculoskeletal pain	5%	1	1	2	1
Total	100%	31	26	25	18



Final Examination (F2)

Sections	Proportions	Medical science	Diagnosis	Management	Investigations
Basic concepts (Anatomy, Research, drug therapy, Immunology, labs, and imaging)	10%	2	3	3	2
Chronic inflammatory Arthritis	17%	3	6	4	4
Systemic Lupus Erythematosus and Antiphospholipid Syndrome	12%	2	5	4	1
Inflammatory myositis & Myopathy	12%	2	4	5	1
Vasculitis & vasculopathy	12%	2	4	5	1
Scleroderma and undifferentiated connective tissue diseases	10%	2	4	5	1
Arthritis related to Infections	10%	2	3	3	2
Autoinflammatory diseases	12%	3	3	3	1
Non-inflammatory musculoskeletal pain	5%	1	1	2	1
Total	100%	19	33	34	14

3.3 Certification of Training Completion

To be eligible to sit for final specialty examinations, each fellow is required to obtain a “Certification of Training Completion.” Based on the General Bylaws of Training in Postgraduate Programs and executive policy (please refer to www.scfhs.org) fellows will be granted “Certification of Training-Completion” once the following criteria are fulfilled:

- Successful completion of all training rotations.

- b. Completion of training requirements (e.g., logbook, research, others) as outlined and approved by the scientific council/committee of specialties.
- c. Clearance from SCFHS training affairs ensures compliance with tuition payments and completion of universal topics.
- d. Passing the promotion examination (whenever applicable).

The “Certification of Training Completion” will be issued and approved by the supervisory committee or its equivalent, according to the SCFHS policies.

3.4 Final Subspecialty Examinations

The final subspecialty examination is the summative assessment component that grants fellows the subspecialty’s certification. It has two elements:

- a. **Final written examination:** To be eligible for this examination, fellows are required to have obtained “Certification of Training Completion.” A blueprint outline of the examination is presented in Table 1.
- b. **Final clinical/practical examination:** Fellows will be required to pass the final written examination to be eligible to sit for the final clinical/practical examination. The examination blueprints are shown in Table 2.

Blueprint Outlines: The content of the following table is for demonstration only (please refer to the most updated version published on the SCFHS website).

An example of a blueprint of the clinical/practical examination is shown in the following table:

Example of Final Clinical Examination Blueprint



		DIMENSIONS OF CARE				
		Health Promotion & Illness Prevention 1±1 Station(s)	Acute 1±1 Station(s)	Chronic 1±1 Station(s)	Psychological Aspects 1±1 Station(s)	# Station(s)
DOMAINS FOR INTEGRATED CLINICAL ENCOUNTER	Patient Care 7±1 Station(s)	1	1	1		3
	Patient Safety & Procedural Skills 1±1 Station(s)		0			0
	Communication & Interpersonal Skills 2±1 Station(s)			1	1	2
	Professional Behaviors 0±1 Station(s)					0
	Total Stations	1	1	2	1	5

*Main blueprint framework adapted from the Medical Council of Canada Blueprint Project.

For further details on the final exams, please refer to the General Bylaws of Training in Postgraduate Programs and General Assessment Bylaws (available online: www.scfhs.org).

Learning Domain	Summative Assessment Tools	Passing Score
Knowledge	- Final Written Examination	At least a borderline pass in each tool in accordance with the standard setting method used by the executive administration of assessment
Skills	- Objective Structured Clinical Examinations (OSCE) - Structured Oral Examinations (SOE)	At least a borderline pass in each tool in accordance with the standard setting method used by the executive administration of assessment
Attitude	FITER: In-Training Evaluation Report	Successfully pass FITER



XI. PROGRAM AND COURSE EVALUATION

The SCFHS applies various measures to evaluate the implementation of this curriculum. The training outcomes of this program will follow the quality assurance framework endorsed by the Central Training Committee at the SCFHS. Trainee assessment (both formative and summative) results will be analyzed and mapped to the curriculum content. Other indicators that will be incorporated are as follows:

- Report on the annual trainees' satisfaction survey.
- Reports from trainees' evaluation of faculty members.
- Reports from trainees' evaluation of rotations.
- Data available from program accreditations.
- Reports from direct field communications with trainees and trainers.

Goal-based Evaluation: The achievement of intended milestones will be evaluated at the end of each stage to assess the progress of curriculum delivery, and any deficiencies will be addressed in the following stage using the time devoted to trainee-selected topics and professional sessions.

In addition to subject-matter opinions and best practices from benchmarked international programs, the SCFHS will apply a robust method to ensure that this curriculum will utilize all the data available during the revision of this curriculum in the future.

XII. POLICIES AND PROCEDURES

This curriculum represents the means, materials, and outlines the learning objectives with which trainees and trainers will interact to achieve the identified educational outcomes. The SCFHS has a full set of “General Bylaws of Training in Postgraduate Programs” and “Executive Policies” (published on the official SCFHS website) that regulate all training-related processes. The general bylaws of training, assessment, and accreditation, as well as executive policies on admission, registration, formative assessment and promotion, examination, trainees’ representation and support, duty hours, and leaves, are examples of regulations that need to be implemented. Under this curriculum, trainees, trainers, and supervisors must comply with the most updated bylaws and policies that can be accessed online (via the official SCFHS website).



XIII. APPENDICES

- A. Junior-level Competency-Matrix
- B. Senior-level Competency-Matrix
- C. Universal Topics Modules
- D. Research
- E. References

Appendix A

Junior-level Competency-Matrix: to map Competency, learning domain, and Milestones

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Conducting full patient clinical assessment	Managing patients undergoing procedures (Joint injection)	Managing febrile immunocompromised patient	Managing an unstable child with macrophage activation syndrome	Compliance with documentation and proper reporting standards
F1	Professional Expert	Mastering history taking and physical examination , especially the MSK examination K, S	Clinical and laboratory evaluation, hydration, NPO, and risk assessment (K, S)	Assessing and managing a febrile child with autoimmune disease on immunosuppressive medications K, S	Evaluate and manage an unstable child (abnormal vital signs) K, S	Relevant documentation of daily patient care, prescriptions , discharge summaries K, S, A

<i>Training Year level</i>	<i>Competency- Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)</i>	Conducting full patient clinical assessment	Managing patients undergoing procedures (Joint injection)	Managing febrile immunocompro mised patient	Managing an unstable child with macrophage activation syndrome	Compliance with documentatio n and proper reporting standards
	Communicator	Effectively communicat e with patients and their guardians K, S, A	Informed consent K, S	Effectively communicate with patients, guardians, and team members K, S, A	Effectively communicate with patients, guardians, and team members K, S, A	Writing, dictation, and presentation skills K, S
	Collaborator		Multidiscipl inary, team work S, A	Seek support from senior physicians when needed K, S, A	Seek support from senior physicians when needed K, S, A	Interprofessi onal communicati on A
	Advocate	Holistic approach and preventive medicine K, S, A	Patient safety K, S, A	Patient safety K, S, A	Patient safety K, S, A	Quality improvement K, S, A
	Leader	Time managemen t S		Lead the situation in the patient's best interest S, A	Lead the situation in the patient's best interest S, A	Quality assurance K, S, A
	Scholar	Implement research project (K, S, A)	Evidence based practice lectures K, S	Evidence based practice K, S	Evidence based practice K, S	



Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Conducting full patient clinical assessment	Managing patients undergoing procedures (Joint injection)	Managing febrile immunocompromised patient	Managing an unstable child with macrophage activation syndrome	Compliance with documentation and proper reporting standards
	Professional				Interprofessional relation A	Interprofessional relation A

Appendix B

Senior-level Competency-Matrix: to map Competency, learning domain, and Milestones

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Conducting full patient clinical assessment	Managing patients undergoing procedures (Joint injection)	Managing febrile immunocompromised patient	Managing an unstable child with macrophage activation syndrome	Compliance with documentation and proper reporting standards
F2	Professional Expert	Mastering the differential diagnosis based on history and physical examination K, S	Clinical and laboratory evaluation, hydration, NPO, and risk assessment (K, S)	Assessing and managing a febrile child with autoimmune disease on immunosuppressive medications K, S	Evaluate and manage an unstable child (abnormal vital signs) K, S	Relevant documentation of daily patient care, prescriptions, discharge summaries K, S, A

Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Conducting full patient clinical assessment	Managing patients undergoing procedures (Joint injection)	Managing febrile immunocompromised patient	Managing an unstable child with macrophage activation syndrome	Compliance with documentation and proper reporting standards
	Communicator	Effectively communicate with patients and their guardians K, S, A	Informed consent K, S	Effectively communicate with patients, guardians, and team members K, S, A	Effectively communicate with patients, guardians, and team members K, S, A	Writing, dictation, and presentation skills K, S
	Collaborator	Multidisciplinary team work S, A	Multidisciplinary, team work S, A	Seek support from other teams when needed K, S, A	Seek support from other specialty when needed K, S, A	Interprofessional communication A
	Advocate	Holistic approach and preventive medicine K, S, A	Patient safety K, S, A	Patient safety K, S, A	Patient safety K, S, A	Quality improvement K, S, A
	Leader	Time management S		Lead the situation in the patient's best interest S, A	Lead the situation in the patient's best interest S, A	Quality assurance K, S, A
	Scholar	Submitting research project (K, S, A)	Evidence based practice lectures K, S	Evidence based practice K, S	Evidence based practice K, S	



Training Year level	Competency-Roles (with annotation of learning domains involved: K: knowledge, S: Skills, A: Attitude)	Conducting full patient clinical assessment	Managing patients undergoing procedures (Joint injection)	Managing febrile immunocompromised patient	Managing an unstable child with macrophage activation syndrome	Compliance with documentation and proper reporting standards
Professional		interprofessional relation A	interprofessional relation A	interprofessional relation A	interprofessional relation A	interprofessional relation A

Appendix-C

Universal Topics

Intent:

These are high-value interdisciplinary topics of utmost importance to the trainee. The reason for delivering the topics is mainly to ensure that every trainee receives high-quality teaching and develops essential core knowledge. These topics are common to all specialties.

Topics included here meet one or more of the following criteria:

- Impactful: These are topics on diseases that are common or life-threatening.
- Interdisciplinary: Topics that are difficult to teach by a single discipline.
- Orphan: Topics that are poorly represented in the undergraduate curriculum.
- Practical: Topics that trainees will encounter in hospital practice

Development and Delivery:

Core topics for the PG curriculum will be centrally developed and delivered by the Commission through an e-learning platform. A set of preliminary learning outcomes was developed for each topic. Content experts, in collaboration with the central team, may modify learning outcomes.

These topics will be didactic in nature, with a focus on the practical aspects of care. These topics will be more content-intensive than workshops and other planned face-to-face interactive sessions.

The suggested duration of each topic is 1 h and 30 min.

Assessment:

The topics were delivered in a modular fashion. At the end of each Learning Unit, there should be an online formative assessment. After completion of all topics, there will be a combined summative assessment in the form of a context-rich MCQ. All trainees must attain minimum competency in summative assessment. Alternatively, these topics can be assessed in a summative manner along with a specialty examination.

Some ideas may include case studies, high-quality images, worked examples of prescribing drugs in disease states, and Internet resources.

Module 1: Introduction

1. Safe drug prescribing
2. Sepsis; SIRS; DIVC

Safe drug prescribing: At the end of the Learning Unit, the trainee should be able to:

- a) Recognize the importance of safe drug prescribing in healthcare.
- b) Describe various adverse drug reactions with examples of commonly prescribed drugs that can cause such reactions.
- c) Apply principles of drug-drug interactions, drug-disease interactions, and drug-food interactions to common situations.
- d) Apply the principles of prescribing drugs in special situations, such as renal failure and liver failure.
- e) Apply the principles of prescribing drugs for elderly patients, pediatric patients, and pregnant or lactating mothers.
- f) Promote evidence-based cost-effective prescribing.



- g) Discuss the ethical and legal framework governing safe-drug prescribing in Saudi Arabia.

Sepsis, SIRS, DIVC: At the end of the Learning Unit, the trainee should be able to

- a) Explain the pathogenesis of sepsis, SIRS, and DIVC.
- b) Identifying patient-related and non-patient-related predisposing factors for sepsis, SIRS, and DIVC.
- c) Recognize a patient at risk of developing sepsis, SIRS, and DIVC.
- d) Describe the complications of sepsis, SIRS, and DIVC.
- e) Apply the principles of management of patients with sepsis, SIRS, and DIVC.
- f) Describe the prognosis of sepsis, SIRS, and DIVC.

Module 5: Acute Care

- 1. Acute pain management
- 2. Chronic pain management

Acute Pain Management:

At the end of the Learning Unit, the trainee should be able to:

- a) Review the physiological basis of pain perception.
- b) Proactively identify patients who might be in acute pain.
- c) Assess a patient with acute pain.
- d) Apply various pharmacological and non-pharmacological modalities available for acute pain management.
- e) Provide adequate pain relief for uncomplicated patients with acute pain.
- f) Identify and refer patients with acute pain who can benefit from specialized pain services.

Chronic Pain Management:

At end of the Learning Unit, the trainee should be able to:

- a) Review the bio-psychosocial and physiological basis of chronic pain perception.

- b) Discuss various pharmacological and non-pharmacological options available for chronic pain management.
- c) Provide adequate pain relief for uncomplicated patients with chronic pain.
- d) Identify and refer patients with chronic pain who can benefit from specialized pain services.

Module 7: Ethics and Healthcare

- 1. Patient advocacy
- 2. Ethical issues: Treatment refusal; patient autonomy

Patient Advocacy: At the end of the Learning Unit:

Trainees should be able to:

- a) Define patient advocacy.
- b) Recognize patient advocacy as a core value governing medical practice.
- c) Describe the role of patient advocates in the care of the patients.
- d) Develop a positive attitude towards patient advocacy.
- e) Be a patient advocate in conflicting situations.
- f) Be familiar with local and national patient advocacy groups.

Ethical issues: treatment refusal; patient autonomy:

At the end of the Learning Unit, trainees should be able to:

- a) Predict situations where a patient or family is likely to decline prescribed treatment.
- b) Describe the concept of “rational adults” in the context of patient autonomy and treatment refusal.
- c) Analyze key ethical, moral, and regulatory dilemmas in treatment refusal.
- d) Recognize the importance of patient autonomy in the decision-making process.
- e) Counsel patients and families that decline medical treatment in light of the best interests of the patients.



Appendix- D

Research Rotation

Number of rotation months	First year	Second year	Total
	0	0	0

Medical Expert

Goals:

- To demonstrate an understanding of the basic principles of research design, methodology, data analysis, and clinical epidemiology. Also, with their advantages and disadvantages from the perspective of radiology.
- Familiarize themselves with the ethical requirements of research and demonstrate an understanding of the responsible use of informed consent.
- To practice appropriate methods for writing research proposals, manuscripts, data collection, and result in analysis and discussion.
- To demonstrate awareness of current research topics in radiology using available medical informatics systems.
- To skillfully present scientific presentations and participate in public discussions.

Training Methods

- Specify the period, as appropriate, dedicated to research *or* full-time rotation in the research to be conducted.
- Attendance of dedicated courses or workshops that enhance research skills may be required by the program.
- The project is expected to span more than a month. Therefore, **the completion of the work should be parallel** to other subsequent rotations.
- The trainee must choose a supervisor to help in accessing the essential resources that will allow **appropriate utilization of research skills and periodically discuss** progress.

- The trainee must finish the research proposal by the end of **the first 6 months and should be accepted by the institutional review board.**
- The oral abstract of the study results should be presented at **a specified time point (e.g., end of the final year before entering the final exam)** on Specialty Research Day.
- The research paper should be sent **at least** 2 weeks before the Specialty's Research Day.
- It is highly desirable for trainees to present research results at national and/or international meetings and aim to publish their work in indexed journals.

Evaluation

- Attendance at designated courses/lectures/workshops was monitored and incorporated into the annual evaluation score.
- Panel scoring of the research abstract presentation will be conducted at the end of the pre-specified point year on the Specialty's Research Day. This will be considered the rotation score for that month.

Communicator

- Demonstrate skills in conveying and discussing scientific research to scientific communities through posters, abstracts, teaching slides, manuscripts, or other scientific communication modalities.
- Communicate and collaborate effectively with the research supervisor to conduct the research.

Collaborator

- Identify, consult, and collaborate with appropriate experts, research institutions, and/or organizational bodies to facilitate research.

Leader

- Identify an area of research interest and research supervisor to engage in the scholarship of scientific inquiry and dissemination.
- Utilize available resources and regularly meet an identified research mentor.



- Set realistic priorities and use time effectively to optimize professional performance.
- Utilize health care resources in a cost-effective manner.

Health Advocate

- Recognize the contributions of scientific research in improving the health of patients and communities. [SEP]

Scholar

- Pose appropriate research questions, recognize and identify gaps in knowledge and expertise around this question, and formulate an appropriate study design to answer it.
- Carry out the research as outlined in the proposal.
- Collect and analyze data using appropriate methods.
- Prepare abstracts and manuscripts suitable for publication in peer-reviewed journals and/or international scientific meetings.
- Identify research limitations and areas for further research.

Professional

- Ethical and professional research expectations are consistent with institutional review board guidelines, including the maintenance of meticulous data and the conduct of ethical research.
- Demonstrate personal responsibility for setting research goals and work with supervisors to set and achieve research timeline objectives.
- Appropriately attribute authorship and contributions when publishing research
- Disclose potential financial conflicts of interest (including speaker fees and consultative relationships) as appropriate when engaging in and disseminating research results.

Appendix- E

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