الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

Developmental and Behavioral pediatrics fellowship program


بسم الله الرحمن الرحيم

PREFACE

- The primary goal of this document is to enrich the training experience of postgraduate trainees by outlining the learning objectives to help them become independent and competent future developmental and behavioral pediatricians.
- This curriculum may contain sections outlining some regulations of training; however, such regulations need to be sought from training's "General Bylaws" and "Executive Policies" published by the Saudi Commission for Health Specialties (SCFHS), which can be accessed online through the official SCFHS website. In the occasion of discrepancy in regulation statements, the one stated in the most updated bylaws and executive policies will be the reference to apply.
- As this curriculum is subjected to periodic refinements, please refer to the electronic version posted online for the most updated edition at www.scfhs.org.sa.

CONTRIBUTORS

Curriculum Development Committee:
• Saleh M. AlSalehi • Elham Hassan Alhifthy • Rana Al Tokhais • Fawwaz A Alenazi
Reviewed and Approved by Pediatric Scientific Council Members:
• Fawaz Al Qassim • Abdulaziz Altwaim • Mohammed Jan • Mohammed Algamdi • Mohammed Alzahrani • Hassan AlAhmari • Suliman Alqwaifly • Hamad Alkhalaf • Abdullah Aldawish • Abdulrahman AlNemri • Mohammed Alshehri
Curriculum Review Committee Members:
• Dr. Mai Alajaji, Msc.MedEd, PhD • Dr. Nouf Alrumaihi, MBBS, Msc.MedEd., PMP
Approved by Head of Curriculum Review Committee:
• Dr.Ali AlAssiri, MBBS, Msc.MedEd. FRCSC, FACS

II. COPYRIGHT

Correspondence: Saudi Commission for Health Specialties P.O. Box: 94656 Postal Code: 11614 Contact Center: 920019393

E-mail: Curricula@scfhs.org.sa

Website: www.scfhs.org.sa

III. FOREWORD

The developmental and behavioral pediatric fellowship curriculum development team acknowledges valuable contributions and feedback from the scientific committee members in the progress of this program. We extend our appreciation and gratitude to all the members who have played a pivotal role in the completion of this booklet, especially the Curriculum Development Committee and SCFHS-related departments.

s a new program, the development team comprises qualified and experienced developmental and behavioral pediatricians and uses multiple models of training from the US, Canada, and other countries. We have incorporated several learning objectives, vital competencies, and structured activities into the curriculum. It also covers a wide range of training opportunities in services that are essential to the care of children with disabilities. This program emphasizes the importance of a multidisciplinary approach in the management of such conditions. Trainees will go through a rigorous evaluation process, and their feedback will be worked on to improve the quality of the program.

Again, we would like to take this opportunity to thank the SCFHS for their leadership and for approving and introducing the developmental and behavioral fellowship program to the medical community for the 1st time in the Arabian Gulf countries. This program came after many years of waiting and anticipation. We would also like to thank everyone who participated in the development and implementation of the program. Hopefully, this program will increase the number of trained pediatricians, who will be able to manage children with developmental and behavioral disorders and help their families and the community to minimize their negative psychosocial and economic impact.

IV. TABLE OF CONTENTS

V. INTRODUCTION

1. Context of Practice

An increase in the prevalence of conditions that affect children's growth, development, and behavior can cause significant psychosocial and financial burdens on families and, ultimately, governments. With limited resources, especially manpower, conditions such as attention deficit hyperactivity disorder (ADHD) with a prevalence of 9.40% (1) in school-aged children, autism occurring in 1 in 59 children aged 8 years (2), developmental disabilities in 15% of children aged 3-17 years, (3) learning disabilities in 7.9% of children, (4) and general disability in 6 in 1000 children in Saudi Arabia (5) can cause significant morbidities and negatively impact the quality of life of these children and their families. Delays in early diagnosis and intervention can lead to unfortunate outcomes and negative consequences in this population. Despite our increased understanding of and clinical attention given to these (no longer "new") morbidities of childhood, there remains a considerable deficiency in the knowledge and resources available to prevent and intervene in such conditions. Prevalent parental depression, divorce, and social problems such as child abuse, community violence, unwanted pregnancies, and substance abuse are a partial consequence of this deficiency.

To provide optimal quality of care for children with disabilities, a large number of trained health professionals in different specialties are urgently needed, including developmental and behavioral pediatricians. Developmental and behavioral pediatrics (DBP) is a subspecialty within pediatrics that focuses on the complex developmental and behavioral processes and problems of children under the age of 18 years. This subspecialty, along with several medical and non-medical disciplines, specializes in the study and practice of biopsychosocial medicine in the context of pediatric care. As such, it addresses the biological, psychological, and social influences on children’s development, with emphases on the emotional, social, motor, language, adaptive, and cognitive developmental domains. Developmental and behavioral pediatricians are ideal for managing and coordinating the overall care of affected children in a longitudinal fashion, supporting other professionals towards best care outcomes.

Even though this specialty was introduced in the United States of America in the early 80s and then in Canada, Saudi Arabia has a few developmental and behavioral pediatricians who have been trained abroad. This specialty originated by necessity as many children with different disabilities were receiving split primary care from physicians, neurologists, psychiatrists, and general pediatricians, which resulted in disintegrated, inconsistent, and fragmented long-term care and follow-up.

The goal of this program will be achieved through close collaboration with several medical and non-medical disciplines that address unique and complementary perspectives. The perspective of DBP derives from its centrality as a pediatric subspecialty. Therefore, in our academic environment and collaborative teamwork, we address these challenges. We developed a multimodal training program that incorporates comprehensive clinical care, research opportunities, and professional growth for trainees.

The Multicenter Developmental and Behavioral Pediatric Fellowship training program is a 2-year SCFHS-accredited training program that offers a wide range of training and academic activities. This flourishing program is part of the dynamic and rapidly expanding professional development efforts in the country.

DBP units at the training sites have strong collaborations with medical genetics, neurologists, psychiatrists, rehabilitation services, and other related pediatric specialties. DBP sections have a very high inflow of patients in need, providing trainees with sufficient exposure to a variety of complex developmental and behavioral conditions and challenging patients.

The DBP fellowship is designed to provide increasing levels of clinical responsibilities, starting with the care of infants, toddlers, and preschool children and advancing to school-age children and adolescents. Fellows are expected to spend the majority of their clinical time in developmental and behavioral clinical programs such as the Autism Medical Care Program, Attention Deficit Hyperactivity Disorder Program, Child Protection Program, Global developmental program, Cerebral Palsy Program, and High-Risk Neonatal Follow Up Program. During their training, fellows will be assigned rotational shifts with the department of genetics, neurology, psychiatry, psychology, and rehabilitation, where they will have the opportunity to work with other professionals and understand their methods of assessment and care. Fellows will also have the opportunity to cover consultation services and inpatients. Additionally, they will have a unique experience of working closely with

some community schools and centers that accommodate children with special needs.

Fellows will be expected to develop their teaching and research skills. They will be actively involved in teaching students and pediatric residents, as well as conducting presentations at medical education conferences when such opportunities arise. Fellows will also be trained to initiate clinical research and will be encouraged to publish during their fellowship period.

2. Goals and Responsibilities of Curriculum Implementation

This curriculum ultimately seeks to guide trainees to become competent developmental and behavioral pediatricians. Accordingly, this goal requires a significant amount of effort and coordination from all stakeholders involved in postgraduate training. As “adult-learners”, trainees should be proactive, and fully engaged, and they should exhibit the following: a careful understanding of learning objectives, self-directed learning, problem-solving, an eagerness to apply learning through reflective practice from feedback and formative assessment, 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 resident, have a significant impact on program implementation. Trainees should be called to share responsibility in curriculum implementation. The Saudi Commission for Health Specialties (SCFHS) applies the best models of training governance to achieve the highest quality of training. Additionally, academic affairs in training centers and the regional supervisory training committee play a major role in training supervision and implementation. The pediatric scientific central 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.

The fellowship should prepare the trainee to:

1. Become a developmental and behavioral pediatrician who can lead interdisciplinary diagnostic teams and play a key role in integrating and formulating essential team results with the family. In addition, he/she should be able to provide these families with support to cope with and/or overcome their child's neurodevelopment, behavioral, and psychosocial difficulties.
2. Provide consultation services to pediatricians, professionals, and agencies caring for children with complex clinical situations and

provide expertise in the management of developmental and behavioral problems through various treatment modalities.

3. Become a vital educator of child development and behavior in academic, clinical, and community settings.
4. Design, conduct, and supervise research in these areas of expertise and contribute to relevant pediatric literature.
5. Take a leadership role in advocating for policies and legislation that promote optimal child development and the prevention of disorders and disabilities for all children, particularly for children at risk of developmental, behavioral, and psychosocial problems.

VI. ABBREVIATIONS USED IN THIS DOCUMENT

Abbreviation	Description
SCFHS	Saudi Commission for Health Specialties
F (1)	1st year of Fellowship
F (2)	2nd year of Fellowship
Mini-CEX	Mini-Clinical Experience Report
FITER	Final in Training Evaluation Report
CBD	Case-Based Discussion Report
CBE	Competency-Based Education
ITER	In-Training Evaluation Report
COT	Consultation Observation Tool
MOF	Multimodal Source Feedback
DBP	Developmental and Behavioral Pediatrics
CAP	Child and Adolescent Psychiatry
ASD	Autism Spectrum Disorder
ADHD	Attention Deficit Hyperactivity Disorder

ID	Intellectual Disability

VII. PROGRAM ENTRY REQUIREMENTS

To be eligible for application to the DBP fellowship program, the applicant must have the following:

1. An updated curriculum vitae
2. Saudi Board of Pediatrics and/or any equivalent pediatric board certificate, accepted by the SCFHS. If the applicant has only an equivalent board certificate, it should be authenticated by the SCFHS.
3. 2 letters of recommendation from pediatric consultants.

VIII. 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 special needs. Learning outcomes are supposed to reflect the professional "*competencies*" and tasks that are aimed to be "*entrusted*" by trainees upon graduation. This will ensure that graduates meet the expected demands of the healthcare system and patient care in relation to their particular 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 from complex professional competencies.

Professional competencies related to healthcare are usually complex and contain a mixture of multiple learning domains (knowledge, skills, and attitude). CBE is expected to change the traditional way of postgraduate education. For instance, the time of training, though a precious resource, should not be looked at as a proxy for *competence* (e.g., time of rotation in certain hospital areas is not the primary marker of competence achievement). Furthermore, CBE emphasizes the critical role of informed judgment of 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 (e.g., CanMEDS by the Royal College of Physicians and Surgeon of Canada [RCPSC], the CBME-Competency model by the Accreditation Council for Graduate Medical Education [ACGME], tomorrow's doctor in the UK, and multiple

others). The following are concepts that 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 standard of the profession. Professional roles (e.g., experts, advocates, communicators, leaders, scholars, collaborators, and

professionals) are used to define competency in order to make it mendable for learning and assessment.

- Milestones: Milestones are stages of the developmental journey throughout the competency continuum. Trainees throughout their learning journey, from junior to senior levels, will be assisted in their transformation from the beginning (novice/supervised) until they become practitioners (master/unsupervised). This should not undermine the role of supervisory/regulatory bodies in the malpractice of independent practitioners. Milestones are expected to enhance the learning process by pacing up the training/assessment to match the developmental level of trainees (junior vs. senior).
- Learning-domains: Whenever possible, efforts should be directed to annotate the learning outcomes with the corresponding domain (K=Knowledge, S=Skills, and A=Attitude). You might have more than 1 annotation for a given learning outcome.
- Content-area categorization: It is advisable to categorize learning outcomes in broad content areas related to the practice of a profession. For example, diagnostic versus therapeutic, simple versus complex, urgent versus chronic, etc.
- Trainees are expected to progress from the novice to the mastery level in a certain set of professional competencies. This curriculum applies the principles of competency-based medical education. CanMEDS/ACGME/Other education models represent a globally accepted framework that outlines competency roles. The "CanMEDS 2015/ACGME 2018 framework" was adopted in this section.ACGME reference and link: https://www.acgme.org/Portals/0/MilestonesGuidebook.pdf

This reference is an example of the general outline of the CanMEDS competency (Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 physician competency framework Ottawa: Royal College of Physicians and Surgeons of Canada, 2015). Appendix A

Program learning outcomes:

Medical Expert:

1. Outline the continuum of human development from the prenatal period through adolescence and the natural history of developmental impairments.
2. Recognize the role of growth and maturation of the body systems, in particular the central nervous system, as a substrate of the overall development of the child.
3. Explain the unique individual characteristics of children which determine their resilience and vulnerability.

4. Recognize the influence of the reciprocal interaction between the parent(s) and child, both on the child's development and the family unit.
5. Recognizing the importance of the family, social and cultural influences on the child's development, and the need for inclusion and integration of these influences in the understanding of the child's development.
6. Explain the impact of both potential and actual risk factors on developmental processes. Such factors include:
    a. Disease states
    b. Problems of parent/caregiver in nurturing
    c. Individual differences in the child
    d. The physical and societal environment
    e. Therapeutic interventions

7. Describe the importance of the natural setting for observing and understanding the child's development in the best way and whenever possible. Learning experiences should occur in such settings. Perform comprehensive evaluation related to DBP scope.
8. Analyze complex cases in their element and develop appropriate plans.
9. Establish plans for comprehensive, family-inclusive long-term care.

Communicator:

- Communicate efficiently with patient and family members to achieve planned goals, including anticipatory guidance for transitions.
- Use patient and family-centered approaches to gather information and synthesize long-term management plans.
- Clearly communicate research and other project findings at seminars, conferences, and scientific meetings.
- Communicate efficiently with other healthcare team members and ensure that the roles of these professionals are supported.
- Communicate with other governmental and non-governmental institutions to establish appropriate comprehensive plans for children.
- Deliver information to a child and his/her family, colleagues, and other professionals in a professional and humanistic manner.
- Communicate effectively with the families and encourage discussion and participation in decision-making.
- Demonstrate consultation skills in presenting well-documented assessments and recommendations in oral, written, and/or electronic forms in response to requests from other service care providers.

Collaborator

- Work effectively in interprofessional and multidisciplinary teams.
- Implement strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports collaborative culture.
- Facilitate safe and appropriate transfer of care between professionals.
- Work collaboratively with multidisciplinary teams in different activities and tasks, for example, research, educational work, program review, and/or administrative responsibilities.

- Participate in interprofessional team meetings, demonstrating the ability to accept and respect the opinions of team members, while contributing specialty-specific expertise.

Leader

- Apply principles of quality improvement to patient care processes and the organization's system.
- Allocate health care resources for optimal patient care.
- Set priorities and manage time to integrate practice and personal life.
- Recognize their own limitations and seek effective and timely consultation from other team members or specialties, if needed.
- Demonstrate leadership in a healthcare team, as appropriate

Health Advocate:

- Work with patients and their families to address their needs and access care within and outside the healthcare system.
- Incorporate disease prevention, health promotion, and health surveillance into practice.
- Contribute to a process for health improvement of the community or the population that they serve.
- Advocate for children to prevent and detect developmental and behavioral disorders.
- Initiate community awareness activities for different developmental disabilities.

Scholar:

- Engage in the continuous enhancement of their professional activities through ongoing learning.
- Educate the students, residents, general public, and other health care professionals.
- Integrate best available evidence into practice.

Professional:

- Exhibit appropriate professional behaviors and relationships in all aspects of practice.
- Demonstrate commitment to patient safety and quality improvement.
- Fulfil and adhere to professional and ethical codes, standards of practice, and laws governing practice.
- Respect team ethics, including confidentiality, resource allocation, and professionalism.

- Participate in self-assessments and colleagues' assessments and in improvement plans
- Respect patient's privacy, autonomy, and confidentiality.

2. Program Durations

The DBP fellowship program is a 2-year program. Each year is composed of 13 blocks (including 1 block of vacation); each block is 4 weeks long.

3. Program Rotations

	1	2	3	4	5	6	7	8	9	10	11	12	13
1st year	DBP	DBP	DBP	DBP	DBP	DBP	NEU	RES	CAP	PSYC	SEL	REH	VAC
2nd year	DBP	DBP	CAP	SEL	REH	GEN	DBP	DBP	DBP	DBP	DBP	DBP	VAC

DBP= Developmental and behavioral pediatrics; CAP= child and adolescent psychiatry; PSYCH= Child

Psychology; RES = research; REH = rehabilitation services; NEU = Neurology; GEN = Genetics; VAC = Vacation

Training Year	Mandatory core rotations*			Selective rotations ***		
	Rotation name	Duration	Setting	Rotation name	Duration	Setting
F1	1. DBP Core Rotation	6 blocks	• Clinics • Consultations	Selective	1 block	A specialty of choice for the fellow to meet each fellow's needs, interests, and career goals
	2. Child and Adolescent Psychiatry	1 block	• Clinics • Consultations			
	3. Psychology	1 block	• Clinics • Consultations			
	4. REHAB	1 block	• Clinics • Inpatients • Consultations			
	5. Neurology	1 block	• Clinics • Inpatients • Consultations			
	6. Research	1 block	• Research activity			

	Vacation	1 block	•			
F2	1. DBP	8 blocks	• Clinics • Consultations	Selective	1	A specialty of choice for the fellow
	2. CAP	1 block	• Clinics • Consultations			
	3. REH	1 block	• Clinics • Consultations			
	4. Genetics	1 block	• Clinics • Consultations • Inpatients			
	Vacation	1 block	•			

*Mandatory core rotation: Set of rotations that represent program core components and are mandatory.

***Selective rotation: Set of rotations that is selected by trainee (directed by mentor/program director) to enhance competency acquisition of the specialty.

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

This section aims to match the competencies and objectives of each rotation. Trainees and trainers should work together to achieve these objectives during teaching and formative assessments. Expectations should evolve as the training level progresses (training stage, milestones).

I. DBP rotation:

Duration: A total of 14 blocks (6 blocks in the 1st year and 8 blocks in the 2nd year).

Location: clinics, consultations

By the end of this rotation, the fellow is expected to:

1. Apply knowledge of the clinical, socio-behavioral, and fundamental biomedical sciences relevant to BDP.
2. Recognize normal and aberrant development as derived by development of theories.
3. Identify developmental problems in accordance with the latest edition of the International Classification of Diseases and Diagnostic and Statistical Manual.
4. Recognize the risk factors, epidemiology, etiologies, differential diagnoses, clinical presentations, common comorbidities, and natural

history for the following specific disorders of development/phenomenologies:

- Global developmental delay
- Specific developmental delays
- Autism spectrum disorder
- Attention deficit hyperactivity disorder
- Learning disabilities
- Intellectual disability
- Cerebral palsy
- Oppositional defiant disorder
- Enuresis and encopresis
- Hearing impairment
- Vision impairment
- Acquired injuries to the central nervous system
- Congenital malformations of the nervous system
- Common genetic conditions affecting development
- Neuromuscular disorders
- Toxin exposures
- Pre- and perinatal insults/exposures

5. Recognize and apply developmental screening and assessment tests.
6. Comprehensively describe the approach to identification and management of the following conditions/situations related to children with developmental conditions/disabilities:
    - Atypical behaviors, including mood, anxiety, self-injury, pica, and disruptive behaviors
    - Child abuse and neglect
    - Crises and changes in families/family dysfunction
    - Feeding and eating problems
    - Sleep problems
    - Somatic symptoms such as chronic pain
    - Substance use
    - Temperamental variation
7. Recognize and manage behavioral dysfunctions
    - Be able to describe the behavioral concerns of parents and analyze them to reach a management plan.
    - Apply different behavioral modification plans and theories to manage behavioral problems in children.
    - Support families to establish proper parenting and behavior modification.
8. Describe the effects of ethnicity, culture, and family diversity on coping and management of developmental and behavioral problems.
9. Describe the effects of social and community influences such as poverty and geography on service delivery.

10. Perform a complete and appropriate assessment of a child:
    - Obtain complete detailed developmental history appropriate to the complaint of the patient.
    - Gather information from multiple resources to formulate a comprehensive idea about the child's condition.
    - Elicit complete pediatric history relevant to the child's condition.
    - Perform complete and comprehensive physical examination inclusive of detailed neurological examination.
    - Perform a developmental assessment that is appropriate and adapted to the child's age, developmental level, and behavior.
11. Select medical investigations (lab works, radiology, etc.) that are relevant to each child's condition and are evidence-based.
12. Integrate information effectively from a variety of sources in order to formulate a comprehensive case study for the child and build a management plan.
13. Create a management plan that is evidence-based and appropriate to the child's condition, taking into consideration:
    - Family composition and dynamics
    - Access to care
    - Short- and long-term management plan
14. Use preventive and therapeutic interventions effectively.
15. Collaborate with the patient's family to create a management plan.
16. Provide counseling to patients and their families for establishing short- and long-term plans.
17. Demonstrate proficient and appropriate use of diagnostic skills.
    - Demonstrate the effective, age-appropriate, and timely performance of developmental informal assessments that observe and/or elicit skills in different developmental domains.
    - Demonstrate the ability to select, administer, and interpret standardized tools (psychometrically valid) used in the scope of practice of developmental pediatrics depending on evidence-based literature and/or best practice guidelines.
18. Demonstrate the ability to administer and interpret the following standardized tools:

A. Adaptive functioning
   - Vineland Adaptive Behavior Scales, 3rd Edition (Vineland-3);
   - Adaptive Behavior Assessment System, 3rd Edition (ABAS-3)

B. Fine motor
   - Draw-a-Person Test (DAP)
   - Manual Ability Classification System (MACS)

C. Gross motor
   - Gross Motor Function Classification System (GMFCS)

D. Language
   - Peabody Picture Vocabulary Test, 4th Edition (PPVT-4)

E. Mental health/Behavior
   - Conners 3rd Edition (Conners 3) or
   - Swanson, Nolan, and Pelham-IV Questionnaire (SNAP-IV)
   - NICHQ Vanderbilt Assessment Scales

F. Social communication
   - Autism Diagnostic Observation Schedule, 2nd Edition (ADOS-2)
   - Autism Diagnostic Interview Revised (ADI-R)
   - Social Communication Questioner (SCQ)

G. Tone
   - Hypertonia Assessment Tool (HAT)
   - Modified Ashworth Scale (MAS)
   - Tardieu Scale

H. Visual-motor integration
   - Beery-Buktenica Developmental Test of Visual-Motor Integration, 6th Edition (BEERY VMI)

I. General Developmental scales
   - Bayley Scales of Infant and toddler Development

19. Maintain clear, concise, accurate, timely, and appropriate records of clinical encounters and plans.

II. Pediatric Neurology Rotation:

Duration: 1 block in the 1st year

Location: clinics, inpatients, consultations

By the end of this rotation, the fellow is expected to:

1. Learn to obtain comprehensive pediatric neurology history.
2. Perform competently detailed neurological examination appropriate for a child's age and development.
3. Gather information from multiple sources and analyze it to reach a provisional diagnosis and formulate a management plan.
4. Utilize medical investigation efficiently in accordance with evidence and best practices.
5. Recognize areas of interaction between developmental, behavioral, and neurological problems.
6. Recognize signs of degenerative neurological problems, neuromuscular disorders, seizures, and epileptic syndromes.
7. Understand and manage interactions and side effects of medications.
8. Work collaboratively with other specialists, while demonstrating the ability to accept and respect opinions and work efficiently with coworkers and colleagues.
9. Demonstrate efficient communication with patients and families regarding the illness, its etiology, management plan, and available resources.
10. Present at least 1 presentation on a topic related to both specialties.

III. Pediatric Genetic rotation:

Duration: 1 block in the 1st year

Location: clinics, inpatients, and consultation

The emphasis will be on knowledge and clinical skills of genetic and metabolic specialties related to the practice of DBP.

By the end of this rotation, the fellow is expected to:

1. Describe the most common genetic and metabolic disorders including:
    - Dysmorphic features
    - Common genetic syndromes
    - Common inborn errors of metabolism
2. Recognize the interaction of genetic and metabolic disorders with developmental and behavioral disorders.
3. Describe the behavioral phenotypes of common genetic and metabolic disorders.
4. Demonstrate the ability to take a detailed extended family history and draw an expanded pedigree/family tree.
5. Perform comprehensive and accurate clinical examination with special emphasis on the standards of dysmorphology.
6. Request proper investigations that are cost-effective and related to the child's problem.
7. Manage basic pharmacological needs of the patient.

8. Recognize and describe the interaction of genetic, metabolic, developmental, and behavioral disorders in terms of
    - Co-morbidities
    - Confounding effects
    - Causative relationship
    - Medication interactions
9. Conduct at least 1 presentation on a topic related to both specialties.

IV. Research rotation:

Duration: 1 block in the 1st year

Location: research activity

By the end of this rotation, the fellow is expected to:

1. Locate and critically appraise scientific literature to identify gaps in the literature relevant to the research study.
2. Display skills in communicating research findings and proposals in writing through manuscripts, Institutional Review Board (IRB) applications, poster presentations, and/or grant funding proposals.
3. Display verbal skills in communicating research ideas and findings, including the ability to conduct research presentations.
4. Critically appraise retrieved evidence in order to address a clinical question.
5. Describe the principles of research and scholarly inquiry.
6. Describe the principles of research ethics.
7. Make use of clinical experience to create a patient-centered research question.
8. Perform literature review around the research question.
9. Identify an appropriate study design to answer the research question.
10. Identify IRB requirements and fill the forms.
11. Obtain IRB approval.
12. Start the research process and follow it throughout the remaining fellowship program.
13. Collaborate with other team members and make use of available resources for data collection and analysis.
14. Write a manuscript draft and start the process of article submission.

The fellow is expected to have at least 1 article published in a peer-reviewed journal

V. Child and adolescent psychiatry rotation:

Duration: 1 block in the 1st year and 1 block in the 2nd year

Location: clinics, consultations

By the end of this rotation, the fellow is expected to:

1. Obtain comprehensive patient history with specific focus on mental health.
2. Gather information from multiple resources.
3. Perform mental status examination appropriate for child's age.
4. Become oriented to psychiatric diagnostic methods.
5. Describe risk factors, etiology, clinical presentation, and management of uncomplicated mental health conditions in children, including the following disorders:
    - Anxiety disorders
    - Mood disorders
    - Tic disorders
    - Psychosis
6. Initiate psychopharmacotherapy for uncomplicated mental health problems.
7. Recognize and manage interactions and side effects of psychopharmacotherapy.
8. Recognize the basics of cognitive behavioral therapy for children with mental health issues.
9. Interpret reports of tools used for mental health assessment.
10. Communicate and collaborate with mental health professionals and ensure to consider different opinions to reach optimum evidence-based patient care.
11. Conduct at least 1 presentation on a topic related to both specialties.

VI. Child psychology rotation:

Duration: 1 block in the 1st year

Location: clinics and consultation

By the end of this rotation, the fellow is expected to:

1. Describe common psychometric tools used for a child's evaluation.
2. Interpret results of psychometric tools used for a child's evaluation, such as:
    - Intelligence quotient tests:
        A. Stanford–Binet Intelligence Scale
        B. Wechsler Intelligence Scales
    - Adaptive behavior tests:
        C. Vineland Adaptive Behavior Scales
3. Describe common theories of child development and behavior.
4. Describe behavioral therapy processes commonly used in children.
5. Perform parent counseling for common behavioral problems.
6. Perform behavior modification techniques for common behavioral problems.

VII. Rehabilitation rotation:

Duration: 1 block in the 1st year and 1 block in the 2nd year

Location: clinics, inpatient and consultation

The emphasis will be on developing knowledge and clinical skills in rehabilitation services related to the practice of DBP.

The fellow will join different rehabilitation services including:

- Speech therapy
- Audiology
- Occupational therapy
- Physiotherapy
- Art therapy
- Orthotics
- Assistive devices

By the end of the rotation, the fellow should be able to:

1. Demonstrate a sound knowledge of the assessment tools used in each service.
2. Demonstrate appropriate knowledge of the therapeutic modalities used in each service.
3. Recognize the devices used in each service, the theory behind them, objectives, expected benefits, expected side effects, and harms.
4. Conduct at least 1 presentation on a topic related to the specialties in each rotation.

IX. CONTINUUM OF LEARNING

This includes learning that should take place in 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 in order to meet the demands of their vital profession. The following table shows the expected progression of development of the role throughout the junior, senior, and consultant levels of practice.

Developmental and behavioral fellowship continuum of learning:

F1 (Junior Level)	F2 (Senior Level)	Consultant sub specialist
Dependent/supervised practice	Dependent/supervised practice	Independent practice/provide supervision
• Obtain 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.	• Acquire advanced and up-to-date knowledge related to core clinical problems of the specialty.
• Apply clinical skills such as physical examination and practical skills related to the core presenting problems of the specialty.	• Analyze and interpret the findings from clinical practice to develop appropriate differential diagnoses and management plan for the patient.	• Compare and evaluate challenging, contradictory findings and develop expanded differential diagnoses and management plan.

• Master review and entry of documents in patients records. • Acquire the skills to write comprehensive specialty medical reports.	• Review and analyze medical reports and document revisions of other disciplines. • Analyze patient data and discuss it with related professionals to obtain proper conclusions and action plans.	• Manage documents as per best practice. • Be in charge of junior staff documentation practices. • Review comprehensive medical reports and approve them. • Respond to requests of different types of medical reports and be able to present them to authorities as required.
• Understand the context and frame work of services provided by different stakeholders. • Recognize the gaps in the system to provide optimal care. • Attend leadership development programs.	• Start networking for exchange of views and opinions to provide services to patients effectively. • Attend leadership development programs. • Attend multi-sector team meetings and activities to appreciate views from others and coordinate services.	• Work with other stakeholders in the care system to integrate and complement their work. • Contribute to professional development programs in the care system. • Engage in research activities. • Engage in national teamwork and committees related to the specialties.

X. TEACHING METHODS:

The teaching process in postgraduate fellowship training programs is mainly based on the principles of adult learning theory. The trainees feel the importance of learning and play active roles in content development and the process of their own learning. The training programs implement the concept of adult learning on each feature of the activities where the fellows are responsible for their own learning requirements. Formal training time includes the following 3 formal teaching activities:

1. Program Specific Learning Activities
2. General Learning Opportunities
3. Universal topics

1. Program-specific learning activities:

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

A. Program Academic half-day:

A total of 2 hours of formal training will be reserved every 2 weeks. A formal academic half-day is an activity that is planned in advance with an assigned tutor, time slots, and venue. The academic half-day will cover the core specialty topics that are determined and approved by the specialty's scientific council aligned with the specialty-defined competencies and teaching methods. The core specialty topics will ensure that important clinical problems of the specialty are well taught.

The learning objectives of each core topic should be clearly defined. The trainee should be actively involved in the development and delivery of topics under faculty supervision. The fellowship training committee, program director, and 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.

There will be a total of 24 sessions per training academic year of academic half days, with time reserved for other teaching methods such as journal clubs and clinical/practical teaching.

B. Case-Based Discussion (CBD):

The trainee will choose 1 case and present it with a detailed history, physical examination, and developmental assessment skills. This will be followed by the formulation of a differential diagnosis and the proposal of a comprehensive management plan for the condition. The goals for CBD are to establish core practical competencies, enhance case presentational skills, allow discussion of management of interesting cases, and enhance problem solving and multidisciplinary team skills.

C. Journal Club:

With the guidance of his/her supervisors, the trainee will choose an updated research article related to the DBP field for critical appraisal and evaluation. Journal clubs are valuable academic activities that educate trainees about critical reasoning and evidence-based clinical practice.

The following is a table with sample topics that illustrate half-day activities:

Block	Week	Sessions	Presenters
1st	1	Introduction and welcome to the program	Program director
	2	Case Based Discussion	Trainee A
	3	Topic 1 Developmental History	Consultant B
	4	Journal Club	Trainee B
2nd	1	Topic 2 Developmental Assessment	Consultant D
	2	Case Based Discussion	Trainee B
	3	Topic Evaluation of a child with developmental delay	Consultant C
	4	Review paper/topic	Trainee A
3rd	1	Topic 4 Evidence based practice in the diagnosis and management of ADHD	Consultant D
	2	Case discussion	Trainee A
	3	Topic 5 Why is my child misbehaving; common behavioral problems in childhood	Consultant E
	4	Journal Club	Trainee A
4th	1	Topic 6 The underachieving child, an approach to school failure and refusal	Consultant F
	2	Case Based Discussion	Trainee B
	3	Topic 7: Evidence based practice in the identification, evaluation, and management of autism spectrum disorder (ASD)	Consultant G
	4	Review article/topic	Trainee B

D. Practice-based learning:

Training exposures during clinics, courses, and workshops are excellent targets for learning. Trainees are expected to build their capacity based on 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 and/or attitude towards learning domains.

During the DBP fellowship program, the trainee will be required to establish crucial practical skills to use standardized diagnostic and assessment tools. The Autism Diagnostic Observation schedule (ADOS-all 4 modules) and the Bayley Scales of Infant and Toddler Development are 2 of the main tools that need to be mastered by the trainee.

The trainee will undergo longitudinal teaching and training sessions throughout his/her 2 years until the required skills have been achieved by the end of the 2nd year of the fellowship. Additional workshops and online courses regarding further training for the implementation of these tools are recommended whenever they are available. The trainee will be evaluated based on his ability to perform the assessment smoothly, analyze and interpret the findings correctly, and write a detailed report of his/her assessment results.

Each trainee would need to maintain a logbook documenting observed assessments, performed under supervision or independently throughout the 2 years.

2. General Learning Opportunities:

All formal training times should be supplemented by other practice-based activities that are preferred to be attended but are not mandatory, such as:

1. Grand Rounds: in pediatrics, neuroscience, and child psychiatry.
2. Continuous professional activities relevant to the DBP specialty (annual international and local conferences and workshops).
3. Involvement in quality improvement committees and meetings.
4. Involvement in administrative roles and meetings within the departmental capacity.
5. Active participation in community projects and leadership roles.
6. Activities related to medical education and research.

3. Universal Topics

These are high-value interdisciplinary topics of utmost importance to the trainee. The reason for discussing these topics centrally is to ensure that

every trainee receives high-quality education and develops essential core knowledge. These topics are common to all specialties.

The topics included meet 1 or more of the following criteria:

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

Universal topics such as e-learning via personalized access for each trainee (to access the online modules) have been developed by SCFHS and are available. Each universal topic will have a self-assessment at the end of the module. As indicated in the “executive policies of continuous assessment and annual promotion”, universal topics are mandatory components of the criteria to ensure the annual promotion of trainees from their current level of training to the subsequent level. Universal topics have been distributed across the entire training period.

In the DBP fellowship program, emphasis is put on topics that may not be covered well by conventional assessment methods but are essential skills that must be addressed during the 2-year program. DPB will utilize the modules listed in Table No.X.

Training Year	Modules		Topics name	
	Number	Name	Number	Name
F 1	Module-1	Introduction	Topic-1	Safe drug prescription
	Module-7	Ethics and healthcare	Topic 33	Patient advocacy
F 2	Module-7	Ethics and healthcare	Topic 35	treatment refusal; patient autonomy

XI. ASSESSMENT AND EVALUATION

1. Purpose of Assessment

Assessment plays a vital role in the success of postgraduate training. Assessment will guide trainees and trainers to achieve defined standards, learning outcomes, and competencies. On the other hand, the assessment will provide feedback to learners and faculty regarding curriculum development, teaching methods, and the quality of the learning environment. A reliable and valid assessment is an excellent tool for assessing curriculum alignments between objectives and learning and assessment methods. Finally, assessment assures patients and the public that health professionals competent to practice.

Assessment can serve the following purposes:

A. Assessment for learning: Trainers use information from the performance of trainees to inform them about their learning. It also enables educators to use information about trainees' knowledge, understanding, and skills to provide constructive feedback to them.
B. Assessment as learning: Involves trainees in the learning process, which enables them to monitor their own progress. Trainees use self-assessment and feedback from educators to reflect on their progression. It develops and supports the metacognitive skills of trainees.
C. Assessment as learning is crucial in helping fellows become lifelong learners.
D. Assessment of learning can be utilized to track the learning progression of trainees. This is a graded assessment and usually counts towards the trainee's end-of-training degree.
E. Feedback and evaluation as assessment outcomes will represent quality metrics that can improve the learning experience.

For the sake of organization, assessment will be further classified into 2 main categories: *formative* and *summative*.

2. Formative Assessment

2.1 General Principles

Trainees, as adult learners, should strive for feedback throughout their journey of competency from “novice” to “mastery” levels. Formative assessment (also referred to as continuous assessment) is the component of assessment that is distributed throughout the academic year aiming primarily to provide trainees with effective feedback.

Every 3 months, at least 1 hour should be assigned by trainees to meet their mentors to review their performance reports (e.g., ITER, mini-CEX, 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 the current to the subsequent training level.

According to the executive policy on continuous assessment (available online: www.scfhs.org), formative assessment will have the following features:

1. Multisource: minimum 4 tools.
2. Comprehensive: covering all learning domains (knowledge, skills, and attitude).
3. Relevant: focusing on workplace-based observations.
4. Competency-milestone oriented: reflecting the trainee’s expected competencies that match the trainee’s developmental level.

Trainees should actively seek feedback during training. Trainers are expected to provide timely and formative assessments. The SCFHS will provide an e-portfolio system to enhance communication and analysis of data arising from formative assessments.

Trainers and trainees are directed 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	Specification	Frequency
Knowledge	Written Examination	• A progress exam at the end of the 1st year. • Final written examination at the end of DBP fellowship program	• A written examination that must be cleared by the end of each fellowship year • 2 exams
	Structured Academic Activities	• Journal Clubs	• Once every 2 blocks during DBP rotations. 4th Tuesday of each month (alternating)
		• Review articles/topics	• Once every 2 blocks during DBP rotations. 4th Tuesday of each month (alternating)
	Case Based Discussion (CBD)	• The trainee will choose 1 case, and present it with detailed history, examination, and developmental assessment, followed by formulation of a differential diagnosis and a comprehensive management plan.	• Once every block during DBP rotations. 2nd Tuesday of the month. At least 6 in the 1st year, and 7 in the 2nd year
	In-Training Evaluation Report (ITER)	• Use One45 evaluation form that covers the most essential competencies of CanMEDS.	• At the end of each rotation throughout the 2 years. • At least 6 in the 1st year and 5 in the 2nd year.

Skills	Formal Clinical Observation	• A specific case will be chosen for the trainee, and he/she will evaluate the child thoroughly under supervisor observation.	• Every 3 months during DBP rotations. • Can utilize One45 form.
	Mini-Clinical Evaluation Exercise (Mini-CEX)	• Brief observation of clinical skills.	• At the end of each block. • At least 8 in the 1st year and 7 in the 2nd year.
	E-Portfolio for volunteer and community services	• Participation in international and awareness days. • Volunteering in groups in family education and counseling sessions. • Contribute to community projects	• Create at least 1 community-directed activity related to DBP specialty needs (E-portfolio), at least once per training year. • Actively participate in preparation and organization of the section's professional and community related activities. • Visit at least 1 charitable association, school, or center related to DBP and participate in awareness and educational opportunities, at least once per training year.
	Research Project	• The trainee will be allocated to research for a month during his/her training plus longitudinally during the 2 years of the program.	• By the end of the training program, the trainee is expected to submit at least 1 manuscript based on his/her research of choice.
	Log Book	• The trainee will choose a patient to follow longitudinally during each visit and document his/her progression throughout the 2 years.	• At least 2 patients per year.
Attitude	ITER: In-Training Evaluation Report	• Utilizes One45 evaluation form. • Can log progression through E-portfolio.	• End of each rotation
	Mini-CEX	• End of each block	End of each block

	Multi-source Assessment (360-degree assessment) (Appendix E)	• The trainee gets to be evaluated by his/her peers, coworkers, patients, and other non-medical staff.	• Once a year by 360-degree employee evaluation form by at least 4 members.
	Direct observation	• Direct observation of communication, professionalism, and collaborative skills	• Active participation and presentation in multi-disciplinary meetings • Participation in guidance/education of juniors and other health workers. • Participation in family counselling and patient advocacy.

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

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 “clear pass” in all 5 components.

- The program director can recommend the promotion of candidates if the above criterion is not met in some situations.
- If the candidate scores “borderline pass” in 1 or 2 components at maximum, these scores should not belong to the same area of assessment (for example, both borderline failures should not belong to both skills).
- The candidate must have passed all the other components and scored a minimum of clear pass in at least 2 components.

Formative assessment tools descriptions:

ITER:

The fellow will be monitored continuously during their rotations throughout the 2 years. Evaluation of 6 areas is of great importance: medical expert/clinical decision-makers, communicators, collaborators, managers, scholars, and professionals. During the rotation of the DBP core blocks, evaluations must be obtained from at least 2 different physicians, at least once every 3 months in the core rotations, and at the end of each rotation in other specialties. The trainee will be evaluated electronically using the One45 evaluation form; the form will be

submitted to the trainer and program director. Feedback must be provided to the trainee after completing the evaluation form. Appendix B

MINI-Clinical Evaluation Exercise (Mini-CEX):

A direct observational tool used for clinical evaluation of trainees. It is a short rating scale that assesses 6 core competencies: medical interviewing and physical examination skills, humanistic qualities/professionalism, clinical judgment, counseling, and organizational skills. By the end of each block, the trainee should have at least 1 clinical evaluation in the clinic with the Mini-CEX. A score of 4 is defined as marginal and conveys the need to improve performance through program-recommended remediation. Appendix C

Multisource Assessment/Multisource Feedback (MSF):

A 360-degree employee evaluation is a simple questioner-based assessment tool completed by multiple individuals in the trainee's sphere of influence. Assessment can be performed by patients, peers, and coworkers. It concentrates on the CanMEDS roles of communicators, collaborators, and professionalism. It should be filled out once per year with the closest clinical team members. Appendix E

E-Portfolio (One45):

It is an electronic evaluation platform that collects all the trainees' documents and assessment forms. It is usually utilized to track the progress of the trainees' learning and serves as an online record of achievements and personal and professional development. It facilitates communication between the trainee and their supervisors and can include supervised learning events, reflective work, and extracurricular achievements.

Examples of CanMEDS role incorporation in evaluation strategies

	Medical Expert	Communicator	Collaborator	Health Advocate	Scholar	Leader	Professional
Final Written Examination	X				X		
ITER	X	X	X	X	X	X	X
Mini-Clinical Evaluation Exercise (CEX)	X	X		X		X	X
Formal Clinical Observation	X	X	X	X	X	X	X
Multi-Source Feedback	X	X	X			X	X

3. Summative Assessment

3.1 General Principles

Summative assessment is a component of assessment that aims primarily to make informed decisions on trainees' competency. In comparison to formative assessment, *summative assessment* does not aim to provide constructive feedback. In order to be eligible for the final exams, trainees will be granted "Certification of Training Completion" upon successful completion of all training rotations.

3.1. Final In-training Evaluation Report (FITER)

In addition to approval of the completion of clinical requirements by the supervising committee, FITER is also prepared by program directors for each fellow at the end of his or her final year of training. This report shall be the basis for obtaining the certificate of training program completion and the qualification criterion for appearing for final specialty examinations.

3.2 Certification of Training-Completion

To be eligible for the final specialty examinations, each trainee is required to obtain “Certification of Training-Completion”. Based on the training bylaws and executive policy (please refer to www.scfhs.org) trainees will be granted “Certification of Training-Completion” once the following criteria are fulfilled:

1. Successful completion of all training rotations.
2. Completion of training requirements (e.g., evaluations, research, others)
3. Successful completion of the Written Progress examination.
4. Clearance from SCFHS training affairs ensuring compliance with tuition payments and the completion of universal topics.

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

3.3 Final Specialty Examinations

The final specialty examination is a component of summative assessment that grants specialty certification to the trainees. To be eligible for this exam, trainees are required to have “Certification of Training-Completion”

The blueprints of the final written and clinical/practical exams are shown in the following table.

Example of Written Exam Blueprint

Contents						
Categories	Sections	Proportions	Presentation	Diagnosis	Management	Investigations
Developmental Pediatrics 40%	Intellectual disability	6 %	3	4	3	4
	ASD	6 %	4	5	5	4
	ADHD	6%		1	1	1

	Learning Disability	3%	2	1	1	1
	Communication Disorders	3%	2	1	1	1
	Normal Milestones	6%	1	1	1	1
	Other DD	10%	6	4	5	4
Behavioral Pediatrics 40%	Common Behavioral Disorders	20%	3	3	5	4
	Counseling	10%	1	4	6	4
	Supportive Care	10 %	3	4	5	1
Rehabilitation	Neuromotor conditions	5%	6	5	4	1
Others	Psychology/psychiatry	5 %	6			
Scholarly activities and others 10%	Research, ethics, professionalism, and patient safety	10%	5	0	5	0
	Total	100%				

*Main blueprint framework adapted from the American Board of Pediatrics.

XII. PROGRAM AND COURSE EVALUATION

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

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

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

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

XIII. POLICIES AND PROCEDURES

This curriculum represents the content material that 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” 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, continuous assessment and promotion, examination, representation and support of trainees, duty hours, and leave, 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, which can be accessed online (via the official SCFHS website).

XIV. APPENDICES

Appendix -A: CanMEDS Competencies:

MEDICAL EXPERT

Goals:

- To demonstrate an understanding of the basic principles of research design, methodology, data analysis, and clinical epidemiology. Additionally, advantages and disadvantages from the perspective of radiology.
- To familiarize themselves with the ethical requirements of research and demonstrate an understanding of the responsible use of informed consent.
- To understand and practice appropriate methods for writing the research manuscript, data collection, and result analysis and discussion.
- To demonstrate awareness of the current research topics in radiology using available medical informatics systems.
- To acquire the skills for scientific presentations and public discussions.

Training Methods

- A dedicated 1-month, full-time rotation in research is dx.
- It is expected that the project will span over more than a month. Therefore, the completion of the work should be parallel to the other subsequent rotations.
- The fellow must choose a supervisor to help in accessing the essential resources that will allow an appropriate understanding of research skills and periodically discuss the progress.
- Attendance at dedicated courses or workshops that enhance research skills may be required by the program.
- The fellow must finish the research proposal by the end of the 1st 6 months, which should be accepted by the Neuroradiology Research Committee.
- The oral abstract of the study results should be presented in the 2nd year of the Fellows Neuroradiology Research Day.
- The research paper should be sent for at least 2 weeks before the Neuroradiology Research Day.
- It is highly desirable for fellows to work on presentation of the research results at national and/or international meetings and work hard to publish their work in indexed journals.

Evaluation

- Attendance at designated courses/lectures will be monitored and incorporated into the annual evaluation score.
- Panel scoring of the research abstract presentation will be conducted at the end of the 2nd year on the Neuroradiology Research Day. This would be counted as the rotation score for that month.

COMMUNICATOR

- Demonstrate skills in conveying and discussing scientific research to scientific communities through posters, abstracts, teaching slide manuscripts, or other scientific communications.
- Communicate and collaborate effectively with research supervisors to conduct the research.

COLLABORATOR

- Identify, consult, and collaborate with appropriate experts to conduct the research.

LEADER

- Demonstrate the ability to identify an area of research interest and a research supervisor to engage in the scholarship of scientific inquiry and dissemination.
- Demonstrate the ability to utilize available resources and regularly meet with an identified research mentor.
- Demonstrate the ability to set realistic priorities and use time effectively to optimize professional performance.
- Demonstrate an understanding of the cost-effective use of health care resources.

HEALTH ADVOCATE

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

SCHOLAR

- Demonstrate the ability to pose an appropriate research question, recognize and identify gaps in knowledge and expertise around this question, and formulate an appropriate study design to answer it.
- Demonstrate ability to carry out the research outlined in the proposal.
- Demonstrate the ability for data collection, data analysis, and preparation of an abstract and manuscript.
- Demonstrate ability to identify areas for further research.

PROFESSIONAL

- Ethical and professional research expectations should be consistent with institutional review board guidelines, including the maintenance of meticulous data and compliance with ethical research.
- Demonstrate personal responsibility for setting research goals and working with supervisors to set and achieve research timeline objectives.
- Publish accurate and reliable research results, with attention to appropriate authorship attribution criteria.
- Disclose potential financial conflicts of interest (including speaker fees and consultative relationships) as appropriate when engaging in and disseminating research results.

Appendix B:

The following will be displayed on forms where feedback is enabled: (for the evaluator to answer)

Saudi Commission for Health Specialties
M.R.Peds-MOH.KFMC-Riyadh

Evaluated By : evaluator's name
Evaluating : person (role) or moment's name (if applicable) Dates : start date to end date

* indicates a mandatory response

ITER - IN-TRAINING EVALUATION REPORT (M.R.Peds)

	N/A (0)	Clear Fail (1)	Borderline (2)	Clear Pass (3)	Exceed Expectations (4)
***A. MEDICAL EXPERT:** **History & Physical Examination:** **1. Comprehensive, accurate & concise with all relevant details**	○	○	○	○	○
***Diagnostic Tests:** **2. Used in a cost-effective manner & understands limitations & predictive value.**	○	○	○	○	○
***Clinical Decision:** **3. Able to formulate appropriate differential diagnosis.**	○	○	○	○	○
***4. Able to analyze, integrate, and formulate effective management strategies.**	○	○	○	○	○
***Medical Knowledge:** **5. Broad Clinical & Basic knowledge of a wide variet of medical problems and develops a plan of secondary prevention.**	○	○	○	○	○
***Emergency Management:** **6. Able to identify and respond appropriately to urgent cases**	○	○	○	○	○
***Evidence-based Practice/Critical Appraisal Skills:** **7. Aware of the role of evidence in clinical decision-making.**	○	○	○	○	○
***8. Able to apply relevant information in problem-solving.**	○	○	○	○	○
***9. Demonstrates knowledge of medications used, mechanisms of action, clinically relevant pharmacokinetics, indications, contraindications, and adverse effects.**	○	○	○	○	○
***Procedural Skills:** **10.. Perform diagnostic & therapeutic procedures, undestands indications, limitations & complications.**	○	○	○	○	○
***B. COMMUNICATOR** **11. Communicates effectively with patients, their families, and HCPs.**	○	○	○	○	○
***12. Able to maintain clear, accurate & appropriate records.**	○	○	○	○	○
***13. Written orders and progress notes are well organized & legible.**	○	○	○	○	○
***14. Discharge summaries are concise & completed promptly.**	○	○	○	○	○
***C. COLLABORATOR:** **15. Works effectively in a team environment with attending, juniors & nursing staff.**	○	○	○	○	○
***D. MANAGER :** **16. Serves in administration and leadership roles as appropriate.**	○	○	○	○	○
***17. Appropriate & efficient use of health care resources.**					

Page 1

*Did you have an opportunity to meet with this resident to discuss their performance?

Yes

No

(for the evacuee to answer)

*Are you in agreement with this assessment?

Yes

No

Please enter any comments you have (if any) on this evaluation.

Appendix C:

Saudi Commission for Health Specialties
M.R.Peds-MOH.KFMC-Riyadh

Evaluated By : evaluator's name
Evaluating : person (role) or moment's name (if applicable) Dates : start date to end date

* indicates a mandatory response

Mini-Clinical Evaluation Exercise (Mini-CEX)

*Brief Summary of Case:

	Unable to comment	Below expectations (1)	Borderline (2)	Meets expectations (3)	Above expectation (4)
***1) Medical Interview Skills**					
***2) Physical Examination Skills**					
***3) Counselling and Communications Skills**					
***4) Clinical Judgement**					
***5) Consideration for Patient/Professionalism**					
***6) Organisation/Efficiency**					
***7) Overall Clinical Competence**					

*Comments :

*Which aspects of the encounter were done well?

*Suggested areas for improvement and development?

*Agreed actions / learning plan

*Student's reflections on patients and areas of learning

Appendix D:

Glossary

Blueprint	Description correlating educational objectives with assessment contents. For example, test blueprint defines the proportion of test questions allocated to each learning domain and/or content.
Competency	Capability to function within a defined professional role that implies entrustment of a trainee by progression of the program with the required knowledge, skills, and attitude needed to practice unsupervised.
Specialty Core Content (skills, knowledge, and professional attitude)	Knowledge, skill, or a professional attitude that is specific and integral to the given specialty.
Formative assessment	An assessment that is used to inform the trainer and learner of the content that has been taught and learned, respectively, for the purpose of improving learning. Typically, the results of formative assessment are communicated through feedback to the learner. Formative assessments are not intended primarily to make judgments or decisions (though it can be a secondary gain).
Mastery	Exceeding the minimum level of competency to the proficient level of performance indicating rich experience with possession of great knowledge, skills, and attitude.
Portfolio	A collection of evidence of progression towards competency. It may include both constructed components (defined by mandatory continuous assessment tools in curriculum) and unconstructed components (selected by the learner).
Summative assessment	An assessment that describes the composite performance of development of a learner at a particular point in time and is used to judge and make decisions about the level of learning and certification.
Universal Topic	Knowledge, skill, or professional behavior that is not specific to a given specialty but is universal for the general practice of a given healthcare profession.

Appendix E:

Developmental and Behavioral Fellowship Program

Fellows 360° evaluation

Name: SCFHS number:

Training site:

Please rate the above named physician and score items to the best of your knowledge based on interaction with him/her.

Score Items	1 Never	2 Rarely	3 Occasionally	4 Frequently	5 Always
Patient care 'Implement the highest standard of practice in the effective and timely treatment to all patients'					
Medical knowledge 'Stay updated with the current trends to provide best patient care'					
Interpersonal and communication skills 'Work efficiently with all parties and implement best practices in clinical setting'					
Practice-based learning 'Assess and use medical knowledge and new technology in clinical care'					
Professionalism 'Display personal characteristics consistent with high moral and ethical behaviors'					
System based practice 'Efficiently utilize healthcare resources and community systems in patient care'					

Total					

Evaluator: Unit:
Rank

Date: Signature:

G. References:

1. Danielson ML, Bitsko RH, Ghandour RM, Holbrook JR, Kogan MD, Blumberg SJ. Prevalence of Parent-Reported ADHD Diagnosis and Associated Treatment Among US Children and Adolescents, 2016. J Clin Child Adolesc Psychol. 2018;47(2):199-212. DOI: 10.1080/15374416.2017.1417860.
2. Baio J, Wiggins LD, Christensen DL, et al.. Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years — Autism and Developmental Disabilities Monitoring Network. 11 Sites. United States, 2014. MMWR Surveill Summ. 2018; 67(6):1-23. DOI: 10.15585/mmwr.ss6706a1.
3. Zablotsky B, Black LI, Maenner MJ et al. Prevalence and trends of developmental disabilities among children in the United States: 2009-2017. Pediatrics. 2019;144(4):e20190811. DOI: 10.1542/peds.2019-0811.
4. Zablotsky B, Black LI, Maenner MJ et al. Prevalence and Trends of Developmental Disabilities among Children in the United States: 2009-2017. Pediatrics. 2019;144(4):e20190811.
5. El-Hazmi MAF, Al-Swailem AA, N, Al-Mosa A. A A Al-Jarallah. Prevalence of mental retardation among children in Saudi Arabia. East Mediterr Health J. 2003;9(1-2):6-11.