European Syllabus for Training in Paediatric Rheumatology
Syllabus completed: March 2016
Approved by European Academy of Paediatrics: June 2016
Approved by UEMS: April 2018

Preface

Paediatrics is an independent medical specialty based on the knowledge and skills required for the prevention, diagnosis and management of all aspects of illness and injury affecting children of all age groups from birth, through adolescence and up to the age of 18 years. Paediatrics also encompasses child health and covers growth, development, health promotion and prevention of disease. The influence of the family and other environmental factors also play a large role in development and for those children with chronic conditions, many require life-long management with smooth transition of care from paediatric to adult services.

We believe therefore that all doctors practising Paediatric Rheumatology require a solid basic training in General Paediatrics, as set out by many National Training Authorities (NTAs), and in the recommended European Common Trunk Syllabus, approved by the European Academy of Paediatrics - Union Européenne des Médecins Spécialistes (EAP-UEMS). This basic paediatric training, which should be a minimum of 3 years duration, should be the prelude to specialist training, and will underpin many of the principles set out in this specialist syllabus.

This document sets out the minimum requirements for training in Tertiary Care Paediatric Rheumatology. Paediatric Rheumatology is a subsection of the Tertiary Care Group of the EAP-UEMS through the European Board of Paediatrics (EBP).

Paediatric Rheumatology is a specialty concerned with the care of children and young people with inflammatory and non-inflammatory disorders of joints, connective tissues and muscles; these range from arthritis limited to one joint to widespread inflammation of joints, muscles, skin, blood vessels and diverse organs such as the eye, lung, brain and bone marrow.

Composition of the syllabus subcommittee

Contents

1. Introduction

This syllabus intends to:

- Harmonise training programmes in Paediatric Rheumatology between different European countries.
- Establish clearly defined standards of knowledge and skill required to practice Paediatric Rheumatology at the tertiary care level.
- Foster the development of a European network of competent tertiary care centres for Paediatric Rheumatology.
- Improve the level of care for children within Paediatric Rheumatology.

2. Aim of tertiary care training

The aim of tertiary care training in Paediatric Rheumatology is to provide training and enable competent practice as a Tertiary Care Specialist in Paediatric Rheumatology in the following:

- Juvenile idiopathic arthritis (JIA) and it's complications
- Childhood-onset systemic lupus erythematosus and other rare systemic connective tissue diseases
- Juvenile dermatomyositis
- Systemic and localized scleroderma
- Childhood vasculitis
- Other rare systemic inflammatory diseases (e.g. paediatric sarcoidosis)
- Infectious arthritis and osteomyelitis
- Reactive arthritis
- Musculoskeletal manifestations of systemic diseases
- Periodic fever syndromes and other monogenic and polygenic autoinflammatory disorders
- Autoinflammatory bone disorders
- Macrophage activation syndrome and other emergencies in paediatric rheumatic diseases
- Non-inflammatory musculoskeletal conditions including collagen disorders
- Non-inflammatory pain syndromes
- Transitional care for patients with chronic paediatric rheumatic diseases
- Assessment of health status, function and quality of life outcomes in paediatric rheumatic diseases
- Laboratory investigations in rheumatic diseases
- Imaging in paediatric rheumatic diseases
- Pharmacology of drugs used for children and adolescents with rheumatic disease
- Occupational and physical therapy for children with rheumatic diseases

End Result of Training

The training programme envisaged and detailed below will provide for the needs of Tertiary Care Paediatricians who will deliver care for the conditions outlined.

The Tertiary Care Paediatric Rheumatologist, at the end of training, should:

- Provide multidisciplinary clinical care within a framework of a specialised service in both inpatient and outpatient settings using various specialised diagnostic and therapeutic modalities.
- Liaise with the clinically affiliated appropriate laboratories and other specialist departments.
- Liaise with colleagues in specialist paediatrics and where appropriate, family medicine, in the provision of high quality local care.
- Liaise with and consult other specialists in paediatric and adult rheumatology as appropriate.
- Engage in an active research programme and be trained in clinical research skills.
- Engage in teaching and training duties to raise awareness of paediatric rheumatology, facilitate early recognition of rheumatic disease, prompt referral to specialists and train future generations of specialists.
- Engage in leadership and management duties.

3. Training period

Clinical training

A medical doctor who has successfully completed his / her training of at least 3 years in general paediatrics will be eligible for access to further specialist training in Paediatric Rheumatology. Clinical training in paediatric rheumatology of full-time equivalent and minimum of 24 months is considered adequate; in some countries a longer training may be required.

4. Academic (Research and Teaching) training

There are no current guidelines for research training within the European Syllabus of Tertiary training, however, research training (clinical or laboratory based) for at least 6 months full time equivalent, in addition to clinical training, is highly recommended. Trainees should also have opportunity to have training in clinical teaching and educational supervision. These arrangements will need to be negotiated at the national level.

5. Requirements for Training Institutions

The recognition of training institutions will ultimately be part of a joint process involving NTAs, EAP-UEMS and the specialist society. It is anticipated that Paediatric Rheumatology European Society (PReS) will act as the agent for EAP-UEMS to implement this task. A list of the names and characteristics of existing national training centres will be created and held by PReS and EAP-UEMS; these organisations will address quality assurance of the recognised centres at periodic intervals (every 5 years) and use the guidelines suggested by the UEMS.

Accreditation of Centres

For each EU Member country, a list of centres, units, training directors, tutors and teachers should be compiled and updated on an annual basis. Each centre is characterised by the available modules or areas of teaching activity, tutors and teachers available and the size of the clinical practice as defined by the needs of the trainee.

Accreditation will initially be given by the NTA and ultimately approved by EAP-UEMS. The approval process will follow the EU Guidelines (currently in preparation). At present PReS will simply review National Inspections and act as arbiter in situations of disagreement. For those countries in which the specialty of Paediatric Rheumatology is not yet recognised, an assessment / inspection could be performed by the ETC board of PReS until a national recognition of the specialty and assessment procedure have been instituted.

A training centre can be a single institution or a group of related institutions.

Full Training Centre

The centre must provide adequate experience in all fields of Paediatric Rheumatology including acute and emergency care. It is expected to deliver all training modules. The number of activities must be sufficient to provide at least the minimum training requirements for a trainee.

A group of related institutions can be considered as a centre and each constituent considered as a unit contributing one or more modules for training.

The centre must have access and working relationships with other relevant specialities such as imaging, ophthalmology, nephrology, cardiology, pulmonology, gastroenterology, neurology, dermatology, orthopaedic surgery, physical medicine and rehabilitation, laboratory medicine, pathology and (clinical) molecular genetics.

Demonstration of involvement of other members of the multidisciplinary team (particularly specialised nurse(s), physical and occupational therapists, paediatric dietician, social worker, and psychologist) is essential for recognition. The centre must provide evidence of on-going clinical research, access to basic research, teaching and educational supervision.

The centre will be responsible for a regular and planned programme of teaching with participation in regional / national meetings. Basic textbooks in Paediatric Rheumatology should be readily available and there should be easy access to a comprehensive reference library either in paper or electronic format.

Training Unit

Training Units are institutions that provide training in one or more aspects (Modules). They must provide adequate exposure to address the learning needs of trainees for each module and provide access to appropriately experienced teachers.

6. Requirements for Trainers in Paediatric Rheumatology

The training staff in a Centre should include at least two trainers. The Training Programme Director (TPD) must have been practising Paediatric Rheumatology **for at least 5 years** and have paediatric specialist accreditation.

There should be additional Educational Supervisors and Trainers who should provide training across all aspects of the speciality and be research active in Paediatric Rheumatology. When an aspect of training cannot be provided in one centre it will be necessary for the trainee to be taught at another suitable centre by a Paediatric Rheumatology trainer approved for that purpose.

A Trainer is a person who holds acknowledged expertise in one or several aspects of Paediatric Rheumatology. This person's contribution may be restricted to these areas of expertise. Educational supervisors and trainers must have practised Paediatric Rheumatology for a **minimum of 2 years**.

Trainers should provide a training programme to address the needs of the trainee and in accordance with the available facilities of the institution. Regular review will be required to allow flexibility and a process to promptly identify and address any areas of concern. The trainer should work with the trainee to create a Personal Development Plan (PDP).

Trainers are expected to provide appraisal and assessment of progress. Appraisal consists of determining what is needed and what evidence is required to show that this has been achieved. Assessment evaluates progress against objectives. Trainee assessment should be provided in terms of:

- Training and career ambitions
- Training experience related to syllabus
- Achievements related to current plan (PDP)

In order to provide appropriate individualised monitoring of the trainee, the number of trainees should not exceed the number of trainers in the centre.

Trainers will meet the trainee at the beginning of the programme to define the educational contract for that trainee. Reviews of progress should take place at 3 monthly intervals during the first year of training to appraise the individual.

An annual assessment should be undertaken, ideally at a National level, to review competencies achieved and to allow progress within the teaching programme. Assessments should be detailed and contain statements of theoretical and practical experience accumulated by the trainee. It is expected that the trainee will also provide an account of the

training received and problems encountered (portfolio). Reports will be submitted to the TPD or national body.

Assessment of training centres

PReS is planning to offer paediatric rheumatology training centre visits and accreditation with representation of EAP in such groups.

PReS will maintain a database of all recognised training centres in Europe, updated by the national and subspecialist delegates that would be available to trainees who want to seek out the appropriate centres where training can occur.

7. Requirements of Trainees

In order to gain the necessary depth of experience, each trainee should be actively involved in the management and care of a range of patients during the whole period of his/her speciality training. This should include the care of outpatients, inpatients (including day care and emergency admissions) and community care where appropriate.

Many countries have recently reformed their postgraduate medical education. New pedagogic initiatives and blueprints have been introduced to improve quality and effectiveness of postgraduate medical education in line with outcome-based Canadian Medical Education Directives for Specialists (CanMEDS) framework. Competency based assessment, as an adjunct to knowledge assessment and portfolio completion, is an important aspect of evaluation.

CanMEDS consists of the following competencies

- Medical expert: integration of all CanMED roles applying medical knowledge, clinical skills and professional attitudes
- Communicator: effectively facilitates doctor-patient relationship and dynamic exchanges before, during and after medical encounter
- Collaborator: effectively work within healthcare system to achieve optimal patient care
- Manager: integral participant in health care organisations, allocating resources and contributing to health care system
- Health advocate: responsibly use expertise and influence to advance the health of individual patients, communities or populations
- Scholar/teacher: demonstrates lifelong commitment to reflective learning and to creation, dissemination, translation of medical knowledge
- Professional: committed to the health and wellbeing of individuals and society through ethical practice, professional led regulation and high personal standards of behaviour.

Log-book

The trainee should keep a written or electronic log-book of patients that they have seen, procedures conducted, diagnosis and therapeutic interventions instigated and followed-up. This will constitute part of their portfolio.

The trainee will be required to keep his/her personal logbook or equivalent up-to-date according to National guidelines and European Union directives. The logbook must be endorsed by his/her tutor or authorised deputy. The trainee should attend and provide evidence of attendance at local, regional and national meetings.

Attendance at International Meetings is considered essential for Tertiary training. It is recommended to give at least 2 - 3 presentations over the course of their training at these meetings. Attendance at PReS summer or winter school is strongly encouraged.

Competency assessment

Competencies should be evaluated throughout the training period. There are a number of different tools for this, describing different aspects of training. Some of these are set out below. Formal and informal reflection on these assessments is important. Evidence of achieving competencies and reflections will be collated the portfolio.

Assessment	**Purpose**	**Method**
MiniCeX (Mini clinical examination)	Provides feedback on skills needed in clinical care	Trainer observes a trainee examining a patient and explaining the management plan to the parents
CbD (Case based discussion)	Assesses clinical reasoning or decision making	Trainee presents a more complex case to the trainer and has a discussion about the evidence or basis for diagnosis or treatment
DOPS (Directly observed procedural skills)	Assesses practical skills	Trainee undertakes a practical skill whilst being observed
LEADER	Focuses on leadership skills	A trainee is observed leading a team (e.g. during a resuscitation or a team meeting)
HAT (Handover assessment tool)	Evaluates handover skills	Handover episodes are supervised and discussed
DOC (Discussion of correspondence)	Assesses letter writing skills	Clinic letters or discharges are reviewed and discussed
MSF (Multi-source feedback)	Provides wider feedback on the performance of the trainee	Confidential comments from a wide range of colleagues, patients and the trainee are sought

A guide to workplace-based assessment can be found here.

Assessment of the trainees

The assessment of training competence is an issue for NTAs. However, the PReS and EAP have agreed the principles of such assessments which should include four separate components of competence – assessment of knowledge, assessment of experience (e.g. logbooks), assessment of work competence (workplace assessment) and a face to face oral assessment. There should be some form of certification of completion of training (or 'Diploma') issued by the NTA, that recognizes all aspects of assessment that have been satisfactorily completed.

PReS is concentrating on developing a paediatric rheumatology knowledge based examination that would be accessible to all paediatric rheumatology trainees in Europe. Such an examination would not be proposed as a mandatory requirement for trainees, particularly as many countries already have such an examination in place. However, it will be available, and NTAs could recognise a pass in this exam as constituting evidence of a solid knowledge base in paediatric rheumatology. The timing of the PReS knowledge based examination should not be fixed and could be taken at any point within the training period as it comprises part of the final assessment of training.

Participation in Management training

The trainee should engage in management experience and training (e.g. audit, appraisal, team working, leadership, dealing with conflict) with documentation in their portfolio and use of the assessment tools (eg MSF, LEADER) to inform their training needs.

8. Content Table

Degree of knowledge required:

H = HIGH	Up to date scientific knowledge
B = BASIC	Paediatric Rheumatology textbook

Table 1: Summary of principles for tertiary care Paediatric Rheumatology:

A	**BASIC KNOWLEDGE**	
1	Structure and function of the connective tissues and the components of the musculoskeletal system	B
2	Basic principles of innate and adaptive immunity	B

3	Pathogenesis of autoimmune disease. Specific reference to the loss of the mechanisms of immunological tolerance by adaptive immunity	H
4	Pathogenesis of autoinflammatory diseases caused by mutations of genes involved in the regulation of the innate response	H
5	Mechanisms of tissue injury in immune-mediated diseases including the role of innate and adaptive immunity in inflammatory process	H
6	General principles of molecular biology	B
7	A knowledge of the rheumatic diseases through the age spectrum	H
8	Understand the inter-relation of rheumatic diseases with other body systems, with particular emphasis on developmental stage and growth	H
9	Assess quality of life for rheumatic diseases	B
B	**BASIC SKILLS**	
B.1	**Clinical skills**	
1	Obtain a rheumatological history from a child and parents or carer, taking into account the child's developmental stage and growth	H
2	Perform a caring yet meticulous clinical examination of a child with suspected rheumatic or musculoskeletal disorder; to include as a minumum, the use of pGALS as a basic examination and pREMS for individual joints	H
3	Assess and quantify the physical function of a child with rheumatic disease	H
4	Assess clinical features and function of all potential target organs: kidneys, lung, central nervous system, heart, blood vessels, eyes, skin, muscle, bone and joints; where necessary this will be in collaboration with other (sub)specialists	H
5	Be able to use disease specific functional scores, outcome variables, disease activity and damage scores	H
6	Assess pain in children and demonstrate awareness of the relevant tools for pain assessment	H
7	Assess health related Quality of Life with disease specific or generic assessments	H
8	Assess health related physical fitness with relevant tools/assessments	H
9	Assess family interactions and their impact on clinical symptoms and signs	H
B.2	**Communication skills**	
10	Communicate with children and young people of all ages and their parents, placing emphasis on counselling skills, the explanation of the disease to the child and provision of appropriate disease education	H
11	Communicate and empathise with parents/care givers of affected children in the emergency situation: employ appropriate counselling skills	H
12	Communicate risks and benefits of drug treatment as well as prognosis to children and their parents	H
13	Counselling about use of immunosuppressive treatments and impact on lifestyle (eg. contraception), and long term risks (including unknown risk eg. malignancy)	H
14	Communication skills for adolescent consultations	H
B.3	**Technical skills**	

16	Expertise in aspiration and injection of knee, ankle, wrist and elbow joints and tendon sheaths	H
17	Experience with aspiration and injection of subtalar, hip, small joints of fingers, shoulder and temporomandibular joints as well as experience of joint aspiration under imaging control is desirable	B
18	Experience with musculoskeletal ultrasonography for the assessment of small and large joints in children	B
C	**RESEARCH SKILLS**	
1	Take an active role in at least one clinical study or trial	B
2	Perform recruitment and consenting of a child or young person to an observational study or interventional trial	B
3	Know about the roles and responsibilities of a local Principal Investigator for a trial	B
4	Understand the roles of different observational and interventional trial design: retrospective case series, cohort studies, randomised controlled trials, randomised withdrawal trials, cross-over trials, Bayesian design	B
5	Present research findings as a poster or oral presentation at a national or international meeting	B
D	**MANAGEMENT SKILLS**	
1	Time management	B
2	Chairing meetings (including teleconferences) and team working	B
3	Appraisal, audit and governance	B
4	Health economics and service provision	B
E	**EDUCATION**	
1	Defining aims of teaching course/programme/lecture for different audiences	B
2	Presentation skills and preparation of teaching materials using different formats	B
3	Educational methodologies including evaluation of teaching	B
4	Educational supervision	B
5	Commitment to continuing self-education, continual professional development and maintenance of competence.	H
6	Teaching of essential clinical skills for medical students to include pGALS as a basic examination and the structured approach to more detailed joint examination (pREMS)	
F	**JUVENILE IDIOPATHIC ARTHRITIS (JIA)**	
1	Classification and diagnosis of JIA	H
2	Differential diagnosis and conditions that mimic JIA	H

3	Epidemiology, aetiology, immunopathogenesis and genetics of JIA	H
4	Clinical presentation of JIA in childhood and adolescence	H
5	Extra-articular manifestations of JIA	H
6	Assessment of eye inflammation and management of chronic uveitis	H
7	The role of laboratory examinations in JIA	H
8	Radiographic abnormalities in JIA	H
9	The role of ultrasound and MRI imaging in the management of JIA	H
10	Monitoring of disease activity, outcome measures, indications for treatment and treatment goals	H
11	Pharmacological management of JIA	H
12	Efficacy and safety of methotrexate and other disease-modifying anti-rheumatic drugs	H
13	Efficacy and safety of biologics	H
14	Duration and discontinuation of pharmacological therapy in JIA	H
15	Physical and occupational therapy in JIA	H
16	The role of orthopaedic surgery in JIA	H
17	Features of poor prognosis and prognostic indicators	H
18	Develop multidisciplinary team approach to management of JIA – to include nurse specialist, physical therapist, occupational therapist, social worker, ophthalmologist, psychologist, orthopaedic surgeon and dentist	H
19	Appreciate the impact of JIA for the family and community (i.e. school, sports club, travel)	H
G	**CHILDHOOD-ONSET SYSTEMIC LUPUS ERYTHEMATOSUS (cSLE) AND OTHER RARE SYSTEMIC CONNECTIVE TISSUE DISEASES**	
1	Classification and diagnosis of cSLE	H
2	Epidemiology, aetiology, immunopathogenesis and genetics of cSLE	H
3	Clinical presentation of cSLE in childhood and adolescence	H
4	Mucocutaneous and musculoskeletal manifestations of cSLE	H
5	Classification of lupus glomerulonephritis	H
6	Neuropsychiatric manifestations of cSLE	H
7	General laboratory examinations and autoantibodies in cSLE	H
8	The role of histopathology and imaging in the diagnosis and management of cSLE	H
9	Monitoring of disease activity, severity and damage in cSLE	H
10	Differential diagnosis of clinical manifestations in cSLE	H
11	General management of cSLE	H
12	Pharmacological management of cSLE taking into account disease severity and manifestations	H
13	Efficacy and safety of immunosuppressive drugs for treatment of cSLE	H
14	Efficacy and safety of biologics for treatment of cSLE	H
15	Long term outcome, morbidities and co-morbidities associated with cSLE	H

16	Epidemiology, aetiology, immunopathogenesis and genetics of neonatal lupus erythematosus (NLE)	H
17	Clinical features of NLE	H
18	Management of cardiac and other manifestations of NLE	H
19	Classification and diagnosis of anti-phospholipid syndrome (APS)	H
20	Epidemiology, aetiology, immunopathogenesis and genetics of APS	H
21	Clinical presentation of APS in childhood and adolescence	H
22	Laboratory examinations in APS including the pathogenic role of various subtypes of anti-phospholipid antibodies	H
23	General management of APS	H
24	Primary and secondary thromboprophylaxis in children with APS	H
25	Perinatal complications associated with anti-phospholipid antibodies	H
26	Classification and diagnosis of mixed connective tissue disease and undifferentiated connective tissue disease	H
27	Epidemiology, aetiology, immunopathogenesis and genetics of mixed connective tissue disease	H
28	Clinical manifestations of mixed connective tissue disease	H
29	Laboratory examinations in mixed connective tissue disease	H
30	Management of mixed connective tissue disease and long term outcome	H
31	Clinical presentation and management of undifferentiated connective tissue disease and overlap syndromes	H
32	Classification and diagnosis of Sjögren's syndrome	H
33	Epidemiology, aetiology, immunopathogenesis and genetics of Sjögren's syndrome	H
34	Clinical manifestations of Sjögren's syndrome	H
35	Laboratory examinations in Sjögren's syndrome	H
36	The role of salivary gland biopsy and imaging in the diagnosis and management of Sjögren's syndrome	H
37	Management of Sjögren's syndrome and long term outcome	H
H	**JUVENILE DERMATOMYOSITIS (JDM)**	
1	Classification and diagnosis of JDM	H
2	Epidemiology, aetiology, immunopathogenesis and genetics of JDM	H
3	Clinical presentation of JDM in childhood and adolescence	H
4	Monitoring of disease activity, severity and damage in JDM (including CMAS and MMT8 examination techniques)	H
5	Differential diagnosis of JDM including inflammatory and non-inflammatory myopathies	H
6	Laboratory examinations in JDM	H
7	The role of muscle biopsy, electromyography and imaging in the diagnosis and management of JDM	H
8	General management of JDM	H

9	Efficacy and safety of immunosuppressive and biologic drugs for treatment of JDM	H
10	Physical and occupational therapy in JDM	H
11	Course of the disease and prognosis of JDM	H
I	**SYSTEMIC AND LOCALIZED SCLERODERMAS**	
1	Classification and diagnosis of systemic and localised scleroderma and scleroderma-like disorders	H
2	Epidemiology, aetiology, immunopathogenesis and genetics of diffuse systemic sclerosis and localised sclerodermas	H
3	Clinical manifestations of diffuse systemic sclerosis in children	H
4	Clinical manifestations of localised sclerodermas	H
5	Clinical presentation of scleroderma-like disorders	H
6	Laboratory examinations in systemic and localised sclerodermas including functional testing	H
7	The role of histopathology and imaging in the diagnosis and management of systemic and localised scleroderma	H
8	Monitoring of disease activity, severity and damage in systemic and localised scleroderma	H
9	General management and organ-based treatment in children with diffuse systemic sclerosis	H
10	Treatment of localised scleroderma	H
11	Course of the disease and prognosis of systemic and localised sclerodermas	H
12	Clinical features of primary and secondary Raynaud's phenomenon	H
13	The role of nail fold capillary microscopy in the diagnosis and management of Raynaud's phenomenon	H
14	General measures and pharmacological therapy in children and adolescents with Raynaud's phenomenon	H
J	**CHILDHOOD VASCULITIS**	
1	Classification and differential diagnosis of systemic vasculitides in children	H
2	Epidemiology, aetiology, immunopathogenesis and genetics of systemic vasculitides	H
3	Clinical manifestations of systemic vasculitides and vasculitis mimics	H
4	Clinical presentation, disease course and complications in childhood major vasculitides (Henoch–Schönlein purpura, Kawasaki disease, Takayasu's arteritis, polyarteritis nodosa, Behçet's disease, granulomatosis with polyangiitis)	H
5	Laboratory examinations in systemic vasculitides	H
6	ANCA testing and it's clinical value	H
	The role of histopathology and imaging in the diagnosis and management of systemic vasculitides	H

7	Monitoring of disease activity, severity and damage in systemic vasculitides	H
	Therapeutic approaches to different systemic vasculitides in childhood	
8	Treatment of refractory vasculitis in childhood	H
9	Course of the disease and prognosis of systemic vasculitides	H
10	Epidemiology, aetiology and pathogenesis of cutaneous vasculitis and vasculopathies	H
11	Clinical manifestations, investigations, differential diagnosis and treatment of cutaneous vasculitis and vasculopathies	H
12	Epidemiology, aetiology and pathogenesis of central nervous system vasculitis	H
13	Clinical manifestations, investigations, differential diagnosis and treatment of central nervous system vasculitis	H
K	**OTHER RARE SYSTEMIC INFLAMMATORY DISEASES**	
1	Epidemiology, aetiology, immunopathogenesis and genetics of paediatric sarcoidosis	H
2	Clinical features and differential diagnosis of sarcoidosis in children	H
3	Laboratory examinations, histopathology and imaging in sarcoidosis	H
4	Management of paediatric sarcoidosis and long term outcome	H
5	Musculoskeletal manifestations, pathogenesis, laboratory examination and management of non-rheumatic systemic disorders (e.g. vitamin deficiency or excess, metabolic diseases, hematologic disorders, disorders of endocrine and exocrine glands, cystic fibrosis, coeliac disease, hyperostosis)	B
6	Musculoskeletal manifestations, pathogenesis, laboratory examination and management of rheumatic diseases associated with primary immunodeficiencies	B
L	**ARTHRITIS RELATED TO INFECTION**	
1	Epidemiology, aetiology and pathogenesis of infectious arthritis and osteomyelitis	B
2	Clinical features, diagnosis and differential diagnosis of infectious arthritis and osteomyelitis in children	B
3	Management of infectious arthritis and osteomyelitis in children	B
4	Unusual presentations of infections in immunocompromised patients	B
5	Epidemiology, pathogenesis, clinical features, differential diagnosis and management of infectious discitis	B
6	Epidemiology, aetiology and pathogenesis of Lyme disease	B
7	Clinical features, diagnosis and differential diagnosis of Lyme disease in children	B
8	Management of Lyme disease in children	B
9	Classification and differential diagnosis of reactive arthritis	H
10	Epidemiology, aetiology, pathogenesis and genetic background of reactive arthritis	H
11	Articular and extra-articular manifestations of reactive arthritis in children	H
12	Laboratory examinations and imaging studies in reactive arthritis	H

13	Treatment and outcome of reactive arthritis in childhood	H
14	Epidemiology, aetiology, pathogenesis and genetic background of acute rheumatic fever and post streptococcal reactive arthritis	H
15	Clinical features, diagnosis and differential diagnosis of acute rheumatic fever and post streptococcal reactive arthritis	H
16	Management and prophylaxis of acute rheumatic fever and post streptococcal reactive arthritis	H
17	Course and prognosis of acute rheumatic fever and post streptococcal reactive arthritis	H
M	**AUTOINFLAMMATORY DISEASES**	
1	Classification and differential diagnosis of hereditary periodic fever syndromes	H
2	Epidemiology, genetics and pathogenesis of hereditary periodic fever syndromes (Familial Mediterranean fever [FMF], Tumor necrosis factor receptor-associated periodic syndrome [TRAPS], Hyperimmunoglobulinemia D [HIDS] with periodic fever syndrome, Cryopyrin-associated periodic fever syndromes [CAPS])	H
3	Clinical manifestations and complications of hereditary periodic fever syndromes (FMF, TRAPS, HIDS, CAPS)	H
4	Treatment and course of the disease of hereditary periodic fever syndromes (FMF, TRAPS, HIDS, CAPS)	H
5	Epidemiology, pathogenesis, clinical manifestations and diagnosis of Periodic fever with aphthous stomatitis, pharyngitis and adenitis (PFAPA)	H
6	Laboratory examination, treatment and prognosis of PFAPA	H
7	Genetics, pathogenesis, clinical features and management of other inherited autoinflammatory diseases (e.g PAPA, DIRA, DITRA, CANDLE, DADA2, cyclic neutropenia). This list is not exhaustive, and the diseases mentioned are just examples given the growing number of known and characterized autoinflammatory diseases	H
8	Epidemiology, genetics and pathogenesis of chronic recurrent multifocal osteomyelitis (CRMO)	H
	Clinical manifestations, investigations, differential diagnosis and treatment of CRMO	H
N	**EMERGENCIES IN PAEDIATRIC RHEUMATIC DISEASES**	
1	Differential diagnosis, investigation and practical inpatient and outpatient management of rheumatological emergencies in children. This includes diseases where the child is systemically unwell such as acute arthritis, cSLE, dermatomyositis, vasculitis and other conditions presenting with rheumatological symptoms such as leukaemia, other malignancies, non-accidental injuries, macrophage activation syndrome and catastrophic APS.	H

2	Classification and diagnosis of haemophagocytic lymphohistiocytosis	H
3	Epidemiology, pathogenesis and genetics of macrophage activation syndrome (MAS)	H
4	Clinical features, diagnosis and differential diagnosis of MAS including distinguishing MAS from a flare of an underlying rheumatologic disease	H
5	The role of laboratory and bone marrow examinations in MAS	H
6	Management and outcome of MAS	H
O	**NON-INFLAMMATORY MUSCULOSKELETAL PAIN**	
1	Pain associated with hypermobility (diagnostic criteria for hypermobility, differential diagnosis of conditions associated with hypermobility and their management)	B
2	Pain associated with hypomobility (differential diagnosis and management of conditions associated with hypomobility, joint contractures)	B
3	Clinical presentation, differential diagnosis and management of common overuse injuries (patellofemoral pain syndrome, osteochondritis dissecans, tennis elbow)	B
4	Clinical presentation, differential diagnosis, investigations and treatment of chondromalacia patellae	B
5	Clinical presentation, differential diagnosis, investigations and management of back pain in children	B
6	Clinical presentation, differential diagnosis and management of orthopaedic conditions including Scheuermann disease, osteochondroses, Legg-Calve-Perthes disease, slipped capital femoral epiphyses and chondrolysis	B
7	Clinical presentation, differential diagnosis and management of growing pains	H
P	**PAIN AMPLIFICATION SYNDROMES**	
1	Classification and diagnosis of childhood fibromyalgia	H
2	Epidemiology, aetiology, pathogenesis and genetics of childhood fibromyalgia	H
3	Evaluation of musculoskeletal pain	H
4	Differential diagnoses in children presenting with marked musculoskeletal pain	H
5	Management and outcome of childhood fibromyalgia	H
6	Classification and diagnosis of complex regional pain syndromes (CRPS)	B
7	Management and outcome of CRPS	B
R	**TRANSITIONAL CARE FOR PATIENTS WITH CHRONIC PAEDIATRIC RHEUMATIC DISEASES**	
1	Work with adult rheumatology multidisciplinary team to provide transitional care and understand the differences and similarities between adult, adolescent and paediatric care.	H

2	Understand the physiological and psychological principles of puberty	B
3	Be aware of the educational, vocational and social issues in normal adolescence	B
4	Understand the unique nature of adolescent maturity and the impact of paediatric rheumatic diseases on the adolescent development.	H
5	Understand the impact of puberty on the pharmacology of the spectrum of commonly used anti-rheumatic drugs	H
6	Understand and have experience of transitional care process for adolescents with musculoskeletal and rheumatic diseases	H
S	**MULTIDISCIPLINARY APPROACH TO THE CARE OF CHILDREN WITH MUSCULOSKELETAL DISORDERS**	
1	Be able to use the team approach to rheumatic diseases: understand advantages and limitations	H
2	Understand methods used by nurses, occupational therapists and physiotherapists, dieticians and social workers in the rehabilitation of children with rheumatic diseases including chronic pain	B
3	Be able to organize patient/parent education sessions together with the multidisciplinary team	H
4	Understand school, community and social consequences of paediatric rheumatic diseases	H
5	Understand the benefits and allowances available to children with rheumatic diseases	H
6	Understand the importance of co-operation with other specialties in the management of paediatric rheumatic diseases. This will usually occur during the course of attendances at sub-specialist combined outpatient clinics or in close contact with other sub-specialists (such as nephrologists, opthalmologists, dermatologists, paediatric orthopaedic and hand surgeons, dentists, endocrinologists, gastroenterologists, psychiatrists and adult rheumatologists)	H
7	Understand how to effectively involve children, adolescents, parents and the wider paediatric rheumatology team in the therapeutic decision making	H
T	**INVESTIGATIONS IN RHEUMATIC DISEASES**	
1	Understand haematological changes, acute phase reactants and biochemical changes that may accompany rheumatic diseases in children	H
2	Understand immunological basis of such diseases: methodology of investigations for inflammation and autoimmunity, and the interpretation of auto-antibodies in their clinical context	H
3	Understand genetic basis of musculoskeletal and rheumatic diseases, and the role of molecular genetic investigations in the diagnosis of such conditions	H

4	Understand the role of tissue biopsy of muscle, skin and kidney. Interpretation of histological abnormalities in children with rheumatic diseases	H
5	Understand the value and limitations of synovial fluid examination and synovial biopsy	H
6	Understand the place of radiological investigations including ultrasound, nuclear medicine scans, bone density, CT and MRI scans (with and without contrast) in the diagnosis of rheumatic disease in children	H
7	Understand the role of electromyography and nerve conduction studies in children with rheumatic disease	H
8	Understand the use of investigations to follow the progress of disease andto assess the extent of damage to target organs, individual joints or other structures in the locomotor system and other systems directly or indirectly affected by rheumatic disease.	H
U	**PHARMACOLOGY OF DRUGS USED FOR CHILDREN AND ADOLESCENTS WITH RHEUMATIC DISEASE**	
1	Gain a thorough knowledge of non-steroidal anti-inflammatory drugs (NSAIDs), disease modifying anti-rheumatic drugs (DMARDs), intra-articular, intravenous and oral corticosteroids, gastroprotective drugs, immunosuppressive and cytotoxic drugs, biologic agents, growth inducing drugs, treatment of osteoporosis and in particular the evidence base for their use in children	H
2	Be aware of the range and potential consequences of unconventional remedies and therapies given to children with rheumatic disease	H
3	Understand the pharmacology of the range of drugs used for control of pain in children	H
4	Be aware of the use and risks of sedation for painful procedures in children	B
5	Understand the importance of clinical trials in advancing therapeutic knowledge about rheumatic diseases	H
6	Be aware of the benefit and risks of, and the indications for autologous stem cell transplantation in the management of chronic inflammatory diseases in children and adolescents.	B
V	**OTHER**	
1	Skeletal malignancies	B
2	Osteoporosis in paediatric rheumatic disorders	B
3	Primary disorders of connective tissue	B
4	Primary immunodeficiencies	B
5	Metabolic bone diseases and skeletal dysplasias	B
6	Metabolic diseases and musculoskeletal features (e.g. mucopolysaccharidoses)	B

7	Chromosomal disorders and musculoskeletal features (e.g. Down's syndrome)	B