

THE AMERICAN BOARD OF PEDIATRICS®

CONTENT OUTLINE

Pediatric Rheumatology

**Subspecialty In-Training, Certification,
and Maintenance of Certification (MOC) Examinations**

INTRODUCTION

This document was prepared by the American Board of Pediatrics Subboard of Pediatric Rheumatology for the purpose of developing in-training, certification, and maintenance of certification examinations. The outline defines the body of knowledge from which the Subboard samples to prepare its examinations. The content specification statements located under each category of the outline are used by item writers to develop questions for the examinations; they broadly address the specific elements of knowledge within each section of the outline.

Pediatric Rheumatology

Each Pediatric Rheumatology exam is built to the same specifications, also known as the blueprint. This blueprint is used to ensure that, for the initial certification and in-training exams, each exam measures the same depth and breadth of content knowledge. Similarly, the blueprint ensures that the same is true for each Maintenance of Certification exam form. The table below shows the percentage of questions from each of the content domains that will appear on an exam. Please note that the percentages are approximate; actual content may vary.

Content Domains	Initial Certification Exam	Maintenance of Certification Exam
1. Core Knowledge in Scholarly Activities	5%	4%
2. Etiology and Pathophysiology	8%	7%
3. Drug Therapy	10%	12%
4. Musculoskeletal Pain	4%	4%
5. Juvenile Arthritis	18%	18%
6. SLE and Related Disorders	12%	12%
7. Idiopathic Inflammatory Myositis	6.5%	6.5%
8. Vasculitis	7%	7%
9. Sclerodermas and Related Disorders	5%	5%
10. Autoinflammatory Diseases	5%	5%
11. Primary Immunodeficiencies and Other Disorders Associated With Inflammatory and Autoimmune Manifestations	2%	2%
12. Arthritis Related to Infection and Associated Conditions	3%	3%
13. Skeletal Lesions and Neoplasms That Mimic Rheumatic Disease	1.5%	1.5%
14. Bone and Connective Tissue Disorders	4%	4%
15. Musculoskeletal Manifestations of Other Chronic Diseases	3%	3%
16. Dermatologic Conditions and Mimics of Rheumatic Diseases	2%	2%
17. Functional Assessment and Rehabilitation	2%	2%
18. Psychosocial, Developmental, and Educational Issues	2%	2%

Rheumatology

1. Core Knowledge in Scholarly Activities

A. Principles of use of Biostatistics in Research

1. Types of variables
 - a. Distinguish types of variables (eg, continuous, categorical, ordinal, nominal)
 - b. Understand how the type of variable (eg, continuous, categorical, nominal) affects the choice of statistical test
2. Distribution of data
 - a. Understand how distribution of data affects the choice of statistical test
 - b. Differentiate normal from skewed distribution of data
 - c. Understand the appropriate use of the mean, median, and mode
 - d. Understand the appropriate use of standard deviation
 - e. Understand the appropriate use of standard error of the mean
3. Hypothesis testing
 - a. Distinguish the null hypothesis from an alternative hypothesis
 - b. Interpret the results of hypothesis testing
4. Statistical tests
 - a. Understand when to use and how to interpret the chi square test
 - b. Understand when to use and how to interpret tests comparing continuous variables between two groups (eg, t test, Mann Whitney U)
 - c. Understand when to use and how to interpret tests comparing continuous variables between three or more groups (eg, ANOVA, Kruskal-Wallis)
 - d. Understand when to use paired tests
 - e. Understand the appropriate use of parametric versus nonparametric tests
 - f. Interpret a p value
 - g. Interpret a p value when multiple comparisons have been made
 - h. Interpret a confidence interval
 - i. Identify a type I error
 - j. Identify a type II error
5. Measurement of association and effect
 - a. Understand how to interpret relative risk and absolute risk
 - b. Understand how to interpret odds ratio
 - c. Understand how to interpret number needed to treat or harm
 - d. Understand how to interpret hazard ratio
 - e. Understand when to use and how to interpret correlation coefficient
6. Regression
 - a. Understand when to use and how to interpret regression analysis (eg, linear, logistic)
 - b. Understand when to use and how to interpret survival analysis (eg, Kaplan Meier)
7. Diagnostic tests
 - a. Recognize the importance of an independent "gold standard" in evaluating a diagnostic test
 - b. Interpret sensitivity and specificity

- c. Interpret positive and negative predictive values
- d. Understand how disease prevalence affects the positive and negative predictive value of a test
- e. Interpret a receiver operating characteristic curve
- 8. Systematic reviews and meta-analysis
 - a. Understand the purpose of a systematic review
 - b. Understand the advantages of adding a meta-analysis to a systematic review
 - c. Interpret the results of a meta-analysis
- B. Principles of Epidemiology and Clinical Research Design
 1. Assessment of study design, performance and analysis (internal validity)
 - a. Recognize and understand the strengths and limitations of a cohort study, case control study, and randomized controlled clinical trial
 - b. Recognize the use and limitations of surrogate endpoints
 - c. Understand the use of intent-to-treat analysis
 - d. Understand how sample size affects the power of a study
 2. Assessment of generalizability (external validity)
 - a. Understand how nonrepresentative samples can bias results
 - b. Assess how the data source (eg, diaries, billing data, discharge diagnostic code) may affect study results
 3. Bias and confounding
 - a. Identify common strategies in study design to avoid or reduce bias
 - b. Identify common strategies in study design to avoid or reduce confounding
 4. Causation
 - a. Understand the difference between association and causation
 5. Incidence and prevalence
 - a. Distinguish disease incidence from disease prevalence
 6. Screening
 - a. Understand factors that affect the rationale for screening for a condition or disease (eg, prevalence, test accuracy, risk benefit, disease burden, presence of a presymptomatic state)
 7. Cost benefit, cost effectiveness, and outcomes
 - a. Interpret cost-effectiveness ratios
 - b. Distinguish costs from charges
 - c. Understand quality-adjusted life years
 8. Measurement
 - a. Understand the types of validity that relate to measurement (eg, face, construct, criterion, predictive, content)
 - b. Distinguish accuracy from precision
 - c. Understand when to use and how to interpret a kappa coefficient
- C. Ethics in Research
 1. Professionalism and misconduct in research
 - a. Identify and manage potential conflicts of interest in the funding, design, and/or execution of a research study
 - b. Identify various forms of research misconduct (eg, plagiarism, fabrication, falsification)
 - c. Know how, and to whom, to report concerns of research misconduct

2. Principles of research with human subjects
 - a. Understand and contrast the functions of an Institutional Review Board and a Data Safety Monitoring Board
 - b. Recognize the types of protections in designing research that might be afforded to children and other vulnerable populations
 - c. Understand the federal regulatory definitions regarding which activities are considered research and what constitutes human subjects research
 - d. Understand the federal regulatory definition of minimal risk and apply this to research involving children
 - e. Understand the ethical considerations of study design (eg, placebo, harm of intervention, deception, flawed design)
3. Principles of consent and assent
 - a. Understand what constitutes informed consent in research
 - b. Distinguish between consent and assent in research involving children
- D. Quality Improvement
 1. Design of a Project
 - a. Understand various models of quality improvement and recognize that all utilize a data-informed, iterative process using tests of change to achieve a stated aim
 - b. Understand that the aim of any quality improvement project should be specific, measurable, achievable, realistic, and time-limited
 - c. Understand strategies to optimize identification of key drivers and interventions to achieve a specific aim
 - d. Understand tools to facilitate completion of quality improvement work, including key driver diagrams and process maps
 - e. Understand each phase of a Plan-Do-Study-Act (PDSA) cycle
 2. Data and Measurement
 - a. Differentiate between process, outcome, and balancing measures
 - b. Interpret a run chart and identify shifts, trends, and outliers in data
 - c. Differentiate between a run chart and a control chart
 - d. Differentiate between common cause and special cause variation
2. **Etiology and Pathophysiology**
 - A. Musculoskeletal Systems
 1. Joints
 - a. Classification
 1. Know the differences between fibrous, cartilaginous, and synovial joints
 2. Know the locations of fibrous, cartilaginous, and synovial joints
 - b. Anatomy
 1. Know the anatomy of synovial and fibrous joints, including capsule, synovium, vascular supply, nerves, cartilage, and bone
 2. Know the factors that contribute to the stability of joints
 3. Understand the mechanics of joint loading and stress distribution to subchondral bone
 - c. Synovium
 1. Know the cellular composition and function of the synovial membrane, including the role of various cell types
 2. Know the principle components and functions of synovial fluid

- d. Articular cartilage
 - 1. Know the principle components, organization, and function of articular cartilage
 - 2. Know the principle components of the extracellular matrix of articular cartilage
- e. Bursa
 - 1. Know the structure, composition, location, and function of synovial bursae
- 2. Bone
 - a. Know the classification of bone based on mechanism of ossification
 - b. Know the structural and functional elements of growing bone
 - c. Know the cells involved in making and degrading bone and how homeostasis is maintained
 - d. Know the differences between cortical (compact) and trabecular (cancellous) bone, their relative proportions in the skeleton and turnover, including differences between children and adults
 - e. Know the regulators and signaling pathways that control bone formation and turnover
 - f. Know the metabolic, endocrine, and growth factors that regulate bone growth and turnover
 - g. Know the factors affecting bone synthesis and bone mass
 - h. Know the cytokines that influence osteoclast and osteoblast function and their effects on bone homeostasis
 - i. Know the principle serum and urinary biomarkers of bone formation and turnover
 - j. Know the clinical methods for measuring bone mineral content and bone density
 - k. Know the effects of activity and exercise on bone mass
- 3. Tendons, ligaments, and entheses
 - a. Know the function and major components of tendons, ligaments, and entheses
 - b. Recognize the differences between entheses in children and adults
- 4. Muscle
 - a. Know the major components of muscle tissue and the anatomic organization of skeletal muscle
 - b. Know the types and characteristics of muscle fibers
- 5. Vascular system
 - a. Know the development, structure, and function of the blood supply to the long bones and synovium
- B. Structure of Connective Tissue
 - 1. Collagens
 - a. Understand the structure and biosynthesis of collagen
 - b. Know the factors that control the production and degradation of collagen
 - 2. Proteoglycans
 - a. Know the general characteristics and composition of proteoglycans and hyaluronic acid
 - b. Know the factors that control production and degradation of proteoglycans and hyaluronic acid
 - 3. Other constituents of connective tissue
 - a. Know the properties and function of elastin, fibronectin, and laminin
- C. Inflammation and Immunity

1. Innate immunity
 - a. General
 1. Know the principal components of the innate immune system
 2. Know the function of pattern-recognition receptors
 - b. Phagocytes
 1. Know the function of mannose receptors on phagocytes
 2. Know the mechanisms that control phagocytosis, including the role of antibodies and Fc receptors, complement and other plasma proteins
 3. Know the mechanisms by which phagocytes kill microbes
 - c. Natural killer (NK) cells
 1. Know the function of NK lymphocytes, including recognition and killing of MHC I deficient cells
 2. Know the principle cytokines secreted by NK cells
 3. Know the mechanism by which NK cells kill target cells
 - d. Blood proteins
 1. Know the functions of complement proteins
 2. Understand the mechanisms of complement-mediated cytolysis
 3. Understand the pathways of complement activation
 4. Know the cells that produce complement proteins
 5. Understand how complement is regulated to prevent complement activation on host cells
 6. Know the origin, function, and regulation of acute-phase proteins
 7. Understand the function of the C1 inhibitor
2. Cytokines
 - a. General
 1. Know the general principles of cytokine families, and cytokine structure, function, and regulation
 2. Know which cytokines are involved in mediating and regulating innate and adaptive immune responses
 3. Know the principle cytokines produced by helper (Th) and regulatory (Treg) T lymphocytes
 4. Identify cytokines produced by monocytes, macrophages, and/or dendritic cells
 5. Know the mechanisms by which cytokines cause bone and tissue damage
 6. Know which cytokines influence bone formation and bone damage
 - b. Colony-stimulating factors
 1. Know the primary sources and actions of colony-stimulating factors (CSFs), including granulocyte CSF (G-CSF), granulocyte-macrophage CSF (GM-CSF), and macrophage CSF (M-CSF)
 - c. Interferons
 1. Recognize the types of interferons (IFNs), and know the significance, cellular sources, and principle actions of type I and type II IFNs
 2. Know the principles of IFN receptor signaling, including kinases and transcription factors that mediate their effects
 3. Understand the concept and relevance of an interferon signature
 - d. Interleukins

1. Know the interleukins involved in producing fever, the acute phase response, and macrophage activation
2. Know the cytokines that have anti-inflammatory properties
3. Know the interleukins involved in T helper (eg, Th1, Th2, Th17), regulatory (eg, Treg), and cytotoxic cell development and activation, including their source and regulation
4. Know the interleukins involved in natural killer (NK) and mast cell development and activation
5. Know the interleukins that influence B lymphocyte growth, differentiation, and activation
6. Know the interleukins that influence eosinophil growth, differentiation, and activation
7. Know the relevant naturally produced interleukin inhibitors
8. Know the interleukins that influence fibrosis
- e. Tumor necrosis factor (TNF) family
 1. Recognize TNF family members, including lymphotoxins (LT), CD40 ligand, Fas ligand, RANK ligand, TRAIL, APRIL, and BAFF
 2. Know the principle sources and functions of TNF family cytokines
 3. Know the actions of TNF family cytokines on various target cells
 4. Know the distribution of different TNF receptors and how this affects TNF responses
- f. Chemokines and leukocyte trafficking
 1. Know the biologic actions of chemokines, including recruitment of inflammatory cells to sites of infection and injury, and the regulation of leukocyte trafficking through peripheral lymphoid tissues
- g. Miscellaneous regulatory factors
 1. Know the principle sources and actions of transforming growth factor-beta (TGF- β) in the immune response
 2. Know the principle sources and actions of macrophage migration inhibitory factor (MIF)
3. Adaptive immunity
 - a. General
 1. Understand the concept and importance of somatic recombination in immature B and T lymphocytes
 2. Identify the intracellular pathways of T- and B-lymphocyte activation
 3. Recognize the types of adaptive immunity and their importance in an immune response
 4. Understand the importance of clonal selection in adaptive immunity
 5. Know what T lymphocyte and B lymphocyte receptors recognize during the adaptive immune response
 - b. Cell-mediated immunity
 1. Human leukocyte antigens (HLA) and the major histocompatibility complex (MHC)
 - a. Know the structure, function, and regulation of HLA molecules
 2. T-lymphocyte maturation

- a. Understand T-lymphocyte development, including positive and negative selection
 - 3. Antigen presentation
 - a. Recognize antigen presenting cells (APCs) including dendritic cells, macrophages, and B lymphocytes
 - b. Know the HLA class I and II pathways of antigen processing and presentation, including the importance of other gene products
 - 4. T-lymphocyte activation
 - a. Know the mechanisms of T-lymphocyte activation and proliferation
 - 5. T-lymphocyte effector function
 - a. Know the principal phenotypes, functions, and regulation of the various T lymphocytes, including helper, regulatory, and cytotoxic subsets
- c. Humoral immunity
 - 1. General
 - a. Understand the principles and primary targets of humoral immunity, and the role of antibodies and B lymphocytes
 - 2. Antibody
 - a. Know the structure and function of antibodies, including classes
 - 3. B-lymphocyte maturation
 - a. Understand B-lymphocyte development
 - 4. B-lymphocyte activation
 - a. Know the principal phenotypes, functions, and regulation of the various effector B lymphocytes
 - b. Understand the concepts of somatic mutation and affinity maturation in B lymphocytes
- D. Laboratory Techniques
 - 1. Understand the methodology, limitations, and uses of clinical laboratory techniques commonly used in rheumatology and immunology (eg, ELISA, Western blot, flow cytometry, immunofluorescence and immunohistochemistry, PCR, etc)
- E. Principles of Human Genetics
 - 1. The human genome
 - a. Organization and content
 - 1. Know the general structure, size, and organization of the human genome
 - 2. Know how genes are organized (eg, introns, exons, promoters, and enhancers)
 - b. Gene expression and regulation
 - 1. Understand how genes are regulated, including the role of the epigenome
 - 2. Know the products of DNA transcription and their roles in cellular function, including messenger RNA, long non-coding RNA, and micro RNA
 - c. Sequence variation
 - 1. Know the types of sequence variation in the population, including the frequency of single nucleotide polymorphisms (SNPs)
 - 2. Understand population stratification and its consequences
 - 3. Recognize allelic variation and its consequences
 - 4. Understand the consequence of single base DNA changes, including synonymous, missense, and nonsense substitutions
 - 5. Understand the consequences of DNA insertion and deletion variants

- d. Patterns of inheritance
 - 1. Recognize the patterns of inheritance for single gene disorders
 - 2. Recognize the patterns of inheritance for polygenic and complex genetic diseases
- 2. Functional genomics
 - a. Methods to assess the genome
 - 1. Understand the current methodology, limitations, and common uses of DNA sequencing
 - 2. Understand the current methodology, limitations, and common uses of high throughput SNP detection
 - 3. Understand the current methods to measure gene expression
 - b. Methods to alter the genome
 - 1. Understand the current methods available to alter the genome and their potential clinical applications, including transgenics, knockouts, and genome editing
- 3. **Drug Therapy**
 - A. General Principles of Pharmacology
 - 1. Understand the concept of bioavailability
 - 2. Understand that drug protein binding influences metabolism, drug interactions, and distribution
 - 3. Understand the factors that influence the distribution of drugs
 - 4. Understand the relevant pharmacokinetics, including half-life and elimination
 - 5. Recognize that adherence monitoring varies from drug to drug
 - 6. Apply principles of pharmacogenetics and pharmacogenomics when planning drug therapy
 - B. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)
 - 1. Understand the indications and contraindications for the use of NSAIDs
 - 2. Know the pharmacology of NSAIDs
 - 3. Know the side effects and toxicity of NSAIDs
 - 4. Know the drug interactions of NSAIDs with other drugs
 - 5. Understand the effects of NSAIDs on pregnancy and breast-feeding
 - C. Hydroxychloroquine
 - 1. Understand the indications and contraindications for the use of hydroxychloroquine
 - 2. Know the pharmacology of hydroxychloroquine
 - 3. Know the side effects and toxicity of hydroxychloroquine
 - 4. Know the interactions of hydroxychloroquine with other drugs
 - D. Sulfasalazine
 - 1. Understand the indications and contraindications for the use of sulfasalazine
 - 2. Know the pharmacology of sulfasalazine
 - 3. Know the side effects and toxicity of sulfasalazine
 - 4. Know the interactions of sulfasalazine with other drugs
 - E. Colchicine
 - 1. Understand the indications and contraindications for the use of colchicine
 - 2. Know the pharmacology of colchicine
 - 3. Know the side effects and toxicity of colchicine
 - 4. Know the interactions of colchicine with other drugs

5. Understand the effects of colchicine on pregnancy and breast-feeding
- F. Glucocorticoid Drugs (Oral, Intravenous and Intra-Articular)
1. Understand the indications and contraindications for the use of glucocorticoid drugs
 2. Know the pharmacology of glucocorticoid drugs
 3. Know the side effects and toxicity of glucocorticoid drugs
 4. Know the interactions of glucocorticoid drugs with other drugs
- G. Methotrexate
1. Understand the indications and contraindications for the use of methotrexate
 2. Know the pharmacology of methotrexate
 3. Know the side effects and toxicity of methotrexate
 4. Know the interactions of methotrexate with other drugs
 5. Understand the effects of methotrexate on pregnancy and breast-feeding
- H. Azathioprine
1. Understand the indications and contraindications for the use of azathioprine
 2. Know the pharmacology of azathioprine
 3. Know the side effects and toxicity of azathioprine
 4. Know the interactions of azathioprine with other drugs
 5. Understand the effects of azathioprine on pregnancy and breast-feeding
- I. Leflunomide
1. Understand the indications and contraindications for the use of leflunomide
 2. Know the pharmacology of leflunomide
 3. Know the side effects and toxicity of leflunomide
 4. Know the interactions of leflunomide with other drugs
 5. Understand the effects of leflunomide on pregnancy and breast-feeding
- J. Cyclophosphamide
1. Understand the indications and contraindications for the use of cyclophosphamide
 2. Know the pharmacology of cyclophosphamide
 3. Know the side effects and toxicity of cyclophosphamide
 4. Know the interactions of cyclophosphamide with other drugs
 5. Understand the effects of cyclophosphamide on pregnancy and breast-feeding
- K. Cyclosporin A/Calcineurin Inhibitors
1. Understand the indications and contraindications for the use of cyclosporin A/calcineurin inhibitors
 2. Know the pharmacology of cyclosporin A/calcineurin inhibitors
 3. Know the side effects and toxicity of cyclosporin A/calcineurin inhibitors
 4. Know the interactions of cyclosporin A/calcineurin inhibitors with other drugs
 5. Understand the effects of cyclosporin A/calcineurin inhibitors on pregnancy and breast-feeding
- L. Mycophenolate
1. Understand the indications and contraindications for the use of mycophenolate
 2. Know the pharmacology of mycophenolate
 3. Know the side effects and toxicity of mycophenolate
 4. Know the interactions of mycophenolate with other drugs
 5. Understand the effects of mycophenolate on pregnancy and breast-feeding
- M. Anti-TNF Agents
1. Understand the indications and contraindications for the use of anti-TNF agents

2. Know the pharmacology of anti-TNF agents
 3. Know the side effects and toxicity of anti-TNF agents
 4. Know the interactions of anti TNF agents with other drugs
- N. IL-1-Directed Therapy
1. Understand the indications and contraindications for the use of IL-1-directed therapy
 2. Know the pharmacology of IL-1-directed therapy
 3. Know the side effects and toxicity of IL-1 directed therapy
 4. Know the interactions of IL-1-directed therapy with other drugs
- O. IL-6-Directed Therapy
1. Understand the indications and contraindications for the use of IL-6-directed therapy
 2. Know the pharmacology of IL-6-directed therapy
 3. Know the side effects and toxicity of IL-6-directed therapy
 4. Know the interactions of IL-6-directed therapy with other drugs
- P. Abatacept
1. Understand the indications and contraindications for the use of abatacept
 2. Know the pharmacology of abatacept
 3. Know the side effects and toxicity of abatacept
 4. Know the interactions of abatacept with other drugs
- Q. B-lymphocyte-Directed Therapy
1. Understand the indications and contraindications for the use of B-lymphocyte-directed therapy
 2. Know the pharmacology of B-lymphocyte-directed therapy
 3. Know the side effects and toxicity of B-lymphocyte-directed therapy
 4. Know the interactions of B-lymphocyte-directed therapy with other drugs
- R. Immunoglobulin Therapy
1. Understand the indications and contraindications for the use of immunoglobulin therapy
 2. Know the pharmacology of immunoglobulin therapy
 3. Know the side effects and toxicity of immunoglobulin therapy
 4. Know the interactions of immunoglobulin therapy with other drugs
- S. Drugs Used in Pain Management
1. Understand the indications and contraindications for the use of drugs used in pain management
 2. Know the pharmacology of drugs used in pain management
 3. Know the side effects and toxicity of drugs used in pain management
 4. Know the interactions of drugs used in pain management with other drugs
- T. Vaccinations
1. Understand the indications and contraindications for the use of vaccinations in children with rheumatic illnesses
 2. Know the conclusions of various studies on the use of vaccinations in children with rheumatic illnesses
4. **Musculoskeletal Pain**
- A. Idiopathic Pain Syndromes
1. Pain amplification syndromes
 - a. Know the clinical presentation of children with pain amplification syndrome (including primary fibromyalgia syndrome and complex regional pain syndrome)

- b. Know the diagnostic evaluation of children with pain amplification syndrome (including primary fibromyalgia syndrome and complex regional pain syndrome)
 - c. Know the principles of management of children with pain amplification syndrome (including primary fibromyalgia syndrome and complex regional pain syndrome)
 - d. Know the prognosis and outcome of children with pain amplification syndrome (including primary fibromyalgia syndrome and complex regional pain syndrome)
 - e. Know the differential diagnosis for children with pain amplification syndrome (including primary fibromyalgia syndrome and complex regional pain syndrome)
 - f. Know the epidemiology of children with pain amplification syndrome (including primary fibromyalgia syndrome and complex regional pain syndrome)
2. Growing pains/benign pains
- a. Know the clinical presentation of children with growing pains/benign nocturnal pains
 - b. Know the diagnostic evaluation of children with growing pains/benign nocturnal pains
 - c. Know the principles of management of children with growing pains/benign nocturnal pains
 - d. Know the prognosis and outcome of children with growing pains/benign nocturnal pains
 - e. Know the differential diagnosis for children with growing pains/benign nocturnal pains
 - f. Know the epidemiology of children with growing pains/benign nocturnal pains
- B. Pain Associated With Overuse and Other Syndromes
1. Common overuse injuries
- a. Know the clinical presentation of children with overuse syndromes (including those from sports participation)
 - b. Know the appropriate diagnostic evaluation of children with overuse syndromes (including those from sports participation)
 - c. Know the principles of management of children with overuse syndromes (including those from sports participation)
2. Patellofemoral pain syndrome
- a. Know the clinical presentation of children with patellofemoral pain syndrome
 - b. Know the principles of management of children with patellofemoral pain syndrome
3. Plica syndromes
- a. Know the clinical presentation of children with plica syndromes
 - b. Know the diagnostic evaluation of children with plica syndromes
 - c. Know the principles of management of children with plica syndromes
4. Stress fractures
- a. Know the clinical presentation of children with stress fractures
 - b. Know the diagnostic evaluation of children with stress fractures
5. Slipped capital femoral epiphysis
- a. Know the clinical presentation of children with slipped capital femoral epiphysis
 - b. Know the diagnostic evaluation of children with slipped capital femoral epiphysis
 - c. Know the principles of management of children with slipped capital femoral epiphysis
6. Tenosynovitis

- a. Know the clinical presentation of children with tenosynovitis
 - b. Know the diagnostic evaluation of children with tenosynovitis
 - c. Know the principles of management of children with tenosynovitis
- C. Osteochondroses
- 1. General
 - a. Know the clinical characteristics of the most common osteochondroses
 - 2. Legg-Calve-Perthes disease
 - a. Know the clinical presentation and imaging characteristics of children with Legg-Calve-Perthes disease
 - b. Know the principles of management of children with Legg-Calve-Perthes disease
 - c. Know the prognosis and outcome of children with Legg-Calve-Perthes disease
 - 3. Avascular necrosis
 - a. Know the clinical presentation and imaging characteristics of children with avascular necrosis
 - 4. Osgood-Schlatter disease
 - a. Know the clinical presentation and imaging characteristics of children with Osgood-Schlatter disease
 - 5. Sinding-Larsen-Johansson syndrome
 - a. Know the clinical presentation and imaging characteristics of children with Sinding-Larsen-Johansson syndrome
 - 6. Scheuermann disease
 - a. Know the clinical presentation and imaging characteristics of children with Scheuermann disease
- D. Trauma
- 1. Osteochondritis dissecans
 - a. Know the clinical presentation of children with osteochondritis dissecans
 - b. Know the diagnostic evaluation of children with osteochondritis dissecans
 - c. Know the principles of management of children with osteochondritis dissecans
 - 2. Nonaccidental trauma
 - a. Know the clinical presentation and differential diagnosis for children with nonaccidental trauma
 - 3. Congenital indifference to pain
 - a. Know the clinical presentation of children with the syndromes of congenital indifference to pain
- E. Regional Pain Syndromes Affecting the Back, Chest, or Neck
- 1. Spondylolysis and spondylolisthesis
 - a. Know the clinical presentation of children with spondylolysis and spondylolisthesis
 - b. Know the principles of management of children with spondylolysis and spondylolisthesis
 - c. Recognize similarities and differences between spondylolysis and spondylolisthesis in children
 - 2. Intervertebral disk herniation
 - a. Know the clinical presentation of children with intervertebral disk herniation
 - 3. Slipping rib syndrome
 - a. Know the clinical presentation of children with slipping rib syndrome
 - 4. Costochondritis and Tietze syndrome

- a. Know the clinical presentation of children with costochondritis
- b. Know the clinical presentation of children with Tietze syndrome
- 5. Torticollis
 - a. Know the clinical presentation of children with torticollis
- F. Erythromelalgia
 - 1. Know the clinical presentation of children with erythromelalgia
 - 2. Know the etiology and pathogenesis of erythromelalgia
- 5. **Juvenile Arthritis**
 - A. General
 - 1. Understand the various current and historical classification criteria for chronic arthritis in children
 - B. Oligoarticular Juvenile Idiopathic Arthritis (JIA)
 - 1. Know the clinical presentation of children with oligoarticular JIA
 - 2. Know the diagnostic evaluation of children with oligoarticular JIA
 - 3. Know the principles of management of children with oligoarticular JIA
 - 4. Know the prognosis and outcome of children with oligoarticular JIA
 - 5. Know the differential diagnosis for children with oligoarticular JIA
 - 6. Know the epidemiology of oligoarticular JIA
 - 7. Know the current theories regarding the pathogenesis of oligoarticular JIA
 - C. RF-Positive Polyarticular Juvenile Idiopathic Arthritis (JIA)
 - 1. Know the clinical presentation of children with RF-positive polyarticular JIA
 - 2. Know the diagnostic evaluation of children with RF-positive polyarticular JIA
 - 3. Know the principles of management of children with RF-positive polyarticular JIA
 - 4. Know the prognosis and outcome of children with RF-positive polyarticular JIA
 - 5. Know the differential diagnosis for children with RF-positive polyarticular JIA
 - 6. Know the epidemiology of RF-positive polyarticular JIA
 - 7. Know the current theories regarding the pathogenesis of RF-positive polyarticular JIA
 - D. RF-Negative Polyarticular Juvenile Idiopathic Arthritis (JIA)
 - 1. Know the clinical presentation of children with RF-negative polyarticular JIA
 - 2. Know the diagnostic evaluation of children with RF-negative polyarticular JIA
 - 3. Know the principles of management of children with RF-negative polyarticular JIA
 - 4. Know the prognosis and outcome of children with RF-negative polyarticular JIA
 - 5. Know the differential diagnosis for children with RF-negative polyarticular JIA
 - 6. Know the epidemiology of RF-negative polyarticular JIA
 - 7. Know the current theories regarding the pathogenesis of RF-negative polyarticular JIA
 - E. Systemic Juvenile Idiopathic Arthritis (JIA)
 - 1. Know the clinical presentation of children with systemic JIA
 - 2. Know the diagnostic evaluation of children with systemic JIA
 - 3. Know the principles of management of children with systemic JIA
 - 4. Know the prognosis and outcome of children with systemic JIA
 - 5. Know the differential diagnosis for children with systemic JIA
 - 6. Know the epidemiology of systemic JIA
 - 7. Know the current theories regarding the pathogenesis of systemic JIA
 - F. Enthesitis-Related Juvenile Idiopathic Arthritis (JIA)
 - 1. Know the clinical presentation of children with enthesitis-related JIA
 - 2. Know the diagnostic evaluation of children with enthesitis-related JIA

3. Know the principles of management of children with enthesitis-related JIA
 4. Know the prognosis and outcome of children with enthesitis-related JIA
 5. Know the differential diagnosis for children with enthesitis-related JIA
 6. Know the epidemiology of children with enthesitis-related JIA
 7. Know current theories regarding the pathogenesis of enthesitis-related JIA
- G. Psoriatic Juvenile Idiopathic Arthritis
1. Know the clinical presentation of children with psoriatic JIA
 2. Know the diagnostic evaluation of children with psoriatic JIA
 3. Know the principles of management of children with psoriatic JIA
 4. Know the prognosis and outcome of children with psoriatic JIA
 5. Know the differential diagnosis for children with psoriatic JIA
 6. Know the epidemiology of children with psoriatic JIA
 7. Know current theories regarding the pathogenesis of psoriatic JIA
- H. Macrophage Activation Syndrome (MAS)
1. Know the clinical presentation of children with macrophage activation syndrome
 2. Know the diagnostic evaluation of children with macrophage activation syndrome
 3. Know the principles of management of children with macrophage activation syndrome
 4. Know the prognosis and outcome of children with macrophage activation syndrome
 5. Know the differential diagnosis for children with macrophage activation syndrome
 6. Know the epidemiology of macrophage activation syndrome
 7. Know current theories regarding the pathophysiology of macrophage activation syndrome
- I. JIA-Associated Uveitis
1. Know the clinical presentation of children with JIA-associated uveitis
 2. Know the diagnostic evaluation of children with JIA-associated uveitis
 3. Know the principles of management of children JIA-associated uveitis
 4. Know the prognosis and outcome of children with JIA-associated uveitis
 5. Know the differential diagnosis for children with JIA-associated uveitis
 6. Know the epidemiology of children with JIA-associated uveitis
 7. Know the current theories for pathogenesis of JIA-associated uveitis
- J. Idiopathic Uveitis
1. Know the principles of management of children with idiopathic uveitis
 2. Know the differential diagnosis for children with idiopathic uveitis
- K. Inflammatory Bowel Disease and Related Arthropathies
1. Know the clinical presentation and differential diagnosis of children with inflammatory bowel disease-associated arthropathies
 2. Know the diagnostic evaluation of children with inflammatory bowel disease-associated arthropathies
 3. Know the principles of management of children with inflammatory bowel disease-associated arthropathies
- L. Reactive Arthritis
1. Know the clinical presentation and differential diagnosis of children with reactive arthritis
 2. Know the diagnostic evaluation of children with reactive arthritis
 3. Know the principles of management of children with reactive arthritis
 4. Know the prognosis and outcome of children with reactive arthritis

M. Juvenile Ankylosing Spondylitis

1. Know the classification criteria for juvenile ankylosing spondylitis
2. Know the clinical presentation of children with juvenile ankylosing spondylitis
3. Know the diagnostic evaluation of children with juvenile ankylosing spondylitis
4. Know the principles of management of children with juvenile ankylosing spondylitis
5. Know the prognosis and outcome of children with juvenile ankylosing spondylitis
6. Know the differential diagnosis for children with juvenile ankylosing spondylitis
7. Know the epidemiology of children with juvenile ankylosing spondylitis
8. Know current theories regarding the pathogenesis of juvenile ankylosing spondylitis

6. Systemic Lupus Erythematosus (SLE) and Related Disorders

A. General

1. Know the clinical presentation of children with SLE
2. Know the classification criteria of children with SLE
3. Know the diagnostic evaluation of children with SLE
4. Know the principles of management of children with SLE
5. Know the prognosis and outcome of children with SLE
6. Know the differential diagnosis for children with SLE
7. Know the epidemiology of children with SLE
8. Know the pathophysiology of children with SLE

B. Renal

1. Know the clinical presentation of children with lupus nephritis
2. Know the diagnostic evaluation of children with lupus nephritis
3. Know the renal pathophysiology of children with lupus nephritis
4. Know the principles of management of children with lupus nephritis
5. Know the prognosis and outcome of children with lupus nephritis
6. Know the epidemiology of children with lupus nephritis
7. Know the WHO histologic classification system for lupus nephritis

C. Central Nervous System

1. Know the clinical presentation of children with central nervous system lupus
2. Know the diagnostic evaluation of children with central nervous system lupus
3. Know the principles of management of children with central nervous system lupus
4. Know the prognosis and outcome of children with central nervous system lupus
5. Know the differential diagnosis for children with central nervous system lupus
6. Know the epidemiology of children with central nervous system lupus

D. Mucocutaneous

1. Know the mucocutaneous manifestations of SLE in children
2. Know the diagnostic evaluation of mucocutaneous lesions in children with SLE
3. Know the histology of dermatologic lesions in children with SLE
4. Know the principles of management of mucocutaneous lesions in children with SLE
5. Know the differential diagnosis of mucocutaneous lesions in children with SLE

E. Cardiac Disease

1. Know the clinical presentation of cardiac disease in children with SLE
2. Know the diagnostic evaluation of cardiac disease in children with SLE
3. Know the principles of management of cardiac disease in children with SLE
4. Know the prognosis and outcome of cardiac disease in children with SLE
5. Know the differential diagnosis of cardiac disease in children with SLE

6. Know the epidemiology of cardiac disease in children with SLE
- F. Pulmonary Disease
1. Know the clinical presentation of pulmonary disease in children with SLE
 2. Know the diagnostic evaluation of pulmonary disease in children with SLE
 3. Know the principles of management of pulmonary disease in children with SLE
 4. Know the prognosis and outcome of pulmonary disease in children with SLE
 5. Know the differential diagnosis of pulmonary disease in children with SLE
- G. Gastrointestinal and Hepatic Disease
1. Know the clinical presentation of gastrointestinal and hepatic disease in children with SLE
 2. Know the diagnostic evaluation of gastrointestinal and hepatic disease in children with SLE
 3. Know the principles of management of gastrointestinal and hepatic disease in children with SLE
 4. Know the differential diagnosis of gastrointestinal and hepatic disease in children with SLE
- H. Hematologic
1. Know the hematologic manifestations in children with SLE
 2. Know the principles of management of hematologic involvement in children with SLE
 3. Know the differential diagnosis of hematologic manifestations in children with SLE
- I. Musculoskeletal
1. Know the clinical presentation of the musculoskeletal manifestations of arthritis in children with SLE
 2. Know the diagnostic evaluation of the musculoskeletal manifestations of arthritis in children with SLE
 3. Know the principles of management of the musculoskeletal manifestations of arthritis in children with SLE
 4. Know the differential diagnosis of joint pain in children with SLE
- J. Pregnancy
1. Know the prognosis and outcome of pregnancy in children with SLE
- K. Neonatal
1. Know the clinical presentation of neonatal lupus
 2. Know the diagnostic evaluation of neonatal lupus
 3. Know the principles of management of neonatal lupus
 4. Know the prognosis and outcome of neonatal lupus
 5. Know the differential diagnosis of neonatal lupus
 6. Know the epidemiology of neonatal lupus
 7. Know the pathophysiology of neonatal lupus
 8. Know the recurrence risk and management strategies for neonatal lupus
- L. Antiphospholipid Antibody Syndrome
1. Know the clinical presentation of antiphospholipid antibody syndrome
 2. Know the diagnostic evaluation of children with antiphospholipid antibody syndrome
 3. Know the principles of management of children with antiphospholipid antibody syndrome
 4. Know the prognosis and outcome of children with antiphospholipid antibody syndrome

5. Know the differential diagnosis for children with antiphospholipid antibody syndrome
6. Know the epidemiology of children with antiphospholipid antibody syndrome
7. Know the pathophysiology of antiphospholipid antibody syndrome

M. Sjögren Syndrome

1. Know the clinical presentation of children with Sjögren syndrome
2. Know the diagnostic evaluation of children with Sjögren syndrome
3. Know the principles of management of children with Sjögren syndrome
4. Know the prognosis and outcome of children with Sjögren syndrome
5. Know the differential diagnosis for children with Sjögren syndrome
6. Know the epidemiology of children with Sjögren syndrome
7. Know the pathophysiology of Sjögren syndrome

N. Mixed Connective Tissue Disease

1. Know the clinical presentation and course of children with mixed connective tissue disease
2. Know the diagnostic evaluation of children with mixed connective tissue disease

O. Thrombotic Thrombocytopenic Purpura

1. Know the clinical presentation of children with thrombotic thrombocytopenic purpura
2. Know the diagnostic evaluation of children with thrombotic thrombocytopenic purpura
3. Know the principles of management of children with thrombotic thrombocytopenic purpura
4. Know the prognosis and outcome of children with thrombotic thrombocytopenic purpura
5. Know the differential diagnosis for children with thrombotic thrombocytopenic purpura
6. Know the pathophysiology of thrombotic thrombocytopenic purpura

P. Drug-Induced Lupus

1. Know the clinical presentation of drug-induced lupus in children
2. Know the diagnostic evaluation of drug-induced lupus in children
3. Know the principles of management of drug-induced lupus in children
4. Know the prognosis and outcome of drug-induced lupus in children
5. Know the differential diagnosis for drug-induced lupus in children

7. **Idiopathic Inflammatory Myositis (IIM)**

A. Juvenile Dermatomyositis

1. Know the clinical presentation of children with dermatomyositis
2. Know the epidemiology of childhood dermatomyositis
3. Know the differential diagnosis in children with dermatomyositis
4. Know the pathophysiology of childhood dermatomyositis
5. Know the diagnostic evaluation of children with dermatomyositis
6. Know the principles of management of children with dermatomyositis
7. Know the prognosis and outcome of children with dermatomyositis

B. Juvenile Polymyositis

1. Know the clinical presentation of children with polymyositis
2. Know the differential diagnosis in children with polymyositis
3. Know the diagnostic evaluation of children with polymyositis
4. Know the principles of management of children with polymyositis
5. Know the prognosis and outcome of children with polymyositis

C. Organ Involvement in IIM

1. Know the clinical presentation and management of the gastrointestinal manifestations of IIM
2. Know the clinical presentation and management of the pulmonary manifestations of IIM

D. Calcinosis

1. Know the clinical presentation of children with calcinosis
2. Know the differential diagnosis in children with calcinosis
3. Know the principles of management of children with calcinosis
4. Know the prognosis and outcome of children with calcinosis

8. **Vasculitis**

A. Polyarteritis Nodosa

1. Know the epidemiology of children with polyarteritis nodosa
2. Know the current theories regarding pathogenesis of polyarteritis nodosa
3. Know the clinical presentation of children with polyarteritis nodosa
4. Know the diagnostic evaluation of children with polyarteritis nodosa
5. Know the differential diagnosis for children with polyarteritis nodosa
6. Know the principles of management of children with polyarteritis nodosa
7. Know the prognosis and outcome of children with polyarteritis nodosa

B. Cutaneous Polyarteritis Nodosa

1. Know the epidemiology of children with cutaneous polyarteritis nodosa
2. Know the current theories regarding the pathogenesis of cutaneous polyarteritis nodosa
3. Know the clinical presentation of children with cutaneous polyarteritis nodosa
4. Know the diagnostic evaluation of children with cutaneous polyarteritis nodosa
5. Know the differential diagnosis for children with cutaneous polyarteritis nodosa
6. Know the principles of management of children with cutaneous polyarteritis nodosa
7. Know the prognosis and outcome of children with cutaneous polyarteritis nodosa

C. Kawasaki Disease

1. Know the epidemiology of children with Kawasaki disease
2. Know the current theories regarding the pathogenesis of Kawasaki disease
3. Know the clinical presentation of children with Kawasaki disease
4. Know the diagnostic evaluation of children with Kawasaki disease
5. Know the differential diagnosis for children with Kawasaki disease
6. Know the principles of management of children with Kawasaki disease
7. Know the prognosis and outcome of children with Kawasaki disease

D. Henoch-Schönlein Purpura

1. Know the epidemiology of children with Henoch-Schönlein purpura
2. Know the current theories regarding the pathogenesis of Henoch-Schönlein purpura
3. Know the clinical presentation of children with Henoch-Schönlein purpura
4. Know the diagnostic evaluation of children with Henoch-Schönlein purpura
5. Know the differential diagnosis for children with Henoch-Schönlein purpura
6. Know the principles of management of children with Henoch-Schönlein purpura
7. Know the prognosis and outcome of children with Henoch-Schönlein purpura

E. Hypersensitivity Vasculitis and Serum Sickness

1. Know the epidemiology of children with hypersensitivity vasculitis and serum sickness
 2. Know the current theories regarding the pathogenesis of hypersensitivity vasculitis and serum sickness
 3. Know the clinical presentation of children with hypersensitivity vasculitis and serum sickness
 4. Know the diagnostic evaluation of children with hypersensitivity vasculitis and serum sickness
 5. Know the differential diagnosis for children with hypersensitivity vasculitis and serum sickness
 6. Know the principles of management of children with hypersensitivity vasculitis and serum sickness
 7. Know the prognosis and outcome of children with hypersensitivity vasculitis and serum sickness
- F. Hypocomplementemic Urticarial Vasculitis
1. Know the clinical and laboratory presentation of children with hypocomplementemic urticarial vasculitis
- G. Vasculitis Associated with Mixed Cryoglobulinemia
1. Know the epidemiology of children with vasculitis associated with mixed cryoglobulinemia
 2. Know the clinical presentation and diagnostic evaluation of children with vasculitis associated with mixed cryoglobulinemia
- H. Eosinophilic Granulomatosis with Polyangiitis (Churg-Strauss) Syndrome
1. Know the epidemiology of children with Churg-Strauss syndrome
 2. Know the current theories regarding the pathogenesis of Churg-Strauss syndrome
 3. Know the clinical presentation of children with Churg-Strauss syndrome
 4. Know the diagnostic evaluation of children with Churg-Strauss syndrome
 5. Know the differential diagnosis for children with Churg-Strauss syndrome
 6. Know the principles of management of children with Churg-Strauss syndrome
 7. Know the prognosis and outcome of children with Churg-Strauss syndrome
- I. Microscopic Polyangiitis
1. Know the epidemiology of children with microscopic polyangiitis
 2. Know the current theories regarding the pathogenesis of microscopic polyangiitis
 3. Know the clinical presentation of children with microscopic polyangiitis
 4. Know the diagnostic evaluation of children with microscopic polyangiitis
 5. Know the differential diagnosis for children with microscopic polyangiitis
 6. Know the principles of management of children with microscopic polyangiitis
 7. Know the prognosis and outcome of children with microscopic polyangiitis
- J. Granulomatosis with Polyangiitis
1. Know the epidemiology of children with granulomatosis with polyangiitis
 2. Know the current theories regarding the pathogenesis of granulomatosis with polyangiitis
 3. Know the clinical presentation of children with granulomatosis with polyangiitis
 4. Know the diagnostic evaluation of children with granulomatosis with polyangiitis
 5. Know the differential diagnosis for children with granulomatosis with polyangiitis
 6. Know the principles of management of children with granulomatosis with polyangiitis

7. Know the prognosis and outcome of children with granulomatosis with polyangiitis

K. Primary Angiitis of the Central Nervous System

1. Know the epidemiology of children with primary angiitis of the central nervous system
2. Know the current theories regarding the pathogenesis of primary angiitis of the central nervous system
3. Know the clinical presentation of children with primary angiitis of the central nervous system
4. Know the diagnostic evaluation of children with primary angiitis of the central nervous system
5. Know the differential diagnosis for children with primary angiitis of the central nervous system
6. Know the principles of management of children with primary angiitis of the central nervous system
7. Know the prognosis and outcome of children with primary angiitis of the central nervous system

L. Takayasu Arteritis

1. Know the epidemiology of children with Takayasu arteritis
2. Know the current theories regarding the pathogenesis of Takayasu arteritis
3. Know the clinical presentation of children with Takayasu arteritis
4. Know the diagnostic evaluation of children with Takayasu arteritis
5. Know the differential diagnosis for children with Takayasu arteritis
6. Know the principles of management of children with Takayasu arteritis
7. Know the prognosis and outcome of children with Takayasu arteritis

M. Behçet Syndrome

1. Know the epidemiology of children with Behçet syndrome
2. Know the current theories regarding the pathogenesis of Behçet syndrome
3. Know the clinical presentation of children with Behçet syndrome
4. Know the diagnostic evaluation of children with Behçet syndrome
5. Know the differential diagnosis for children with Behçet syndrome
6. Know the principles of management of children with Behçet syndrome
7. Know the prognosis and outcome of children with Behçet syndrome

N. Cogan Syndrome

1. Know the clinical presentation and differential diagnosis of children with Cogan syndrome

9. Scleroderma and Related Disorders

A. Localized Scleroderma

1. Know the clinical presentation of children with localized scleroderma
2. Know the diagnostic evaluation of children with localized scleroderma
3. Know the principles of management of children with localized scleroderma
4. Know the prognosis and outcome of children with localized scleroderma
5. Know the differential diagnosis for children with localized scleroderma
6. Know the epidemiology of children with localized scleroderma
7. Know the pathogenesis of localized scleroderma

B. Systemic Sclerosis

1. Know the epidemiology of systemic sclerosis in children

2. Know the diagnostic evaluation of systemic sclerosis in children
 3. Know the pathophysiology of systemic sclerosis
 4. Know the differential diagnosis for children with systemic sclerosis
 5. Systemic sclerosis skin disease
 - a. Know the clinical presentation of children with systemic sclerosis skin disease
 - b. Know the principles of management of children with systemic sclerosis skin disease
 - c. Know the prognosis and outcome of children with systemic sclerosis skin disease
 6. Systemic sclerosis lung disease
 - a. Know the clinical presentation of children with systemic sclerosis lung disease
 - b. Know the principles of management of children with systemic sclerosis lung disease
 - c. Know the prognosis and outcome of children with systemic sclerosis lung disease
 7. Systemic sclerosis gastrointestinal disease.
 - a. Know the clinical presentation of children with systemic sclerosis gastrointestinal disease
 - b. Know the principles of management of children with systemic sclerosis gastrointestinal disease
 - c. Know the prognosis and outcome of children with systemic sclerosis gastrointestinal disease
 8. Systemic sclerosis heart disease
 - a. Know the clinical presentation of children with systemic sclerosis heart disease
 - b. Know the principles of management of children with systemic sclerosis heart disease
 - c. Know the prognosis and outcome of children with systemic sclerosis heart disease
- C. Eosinophilic Fasciitis
1. Know the clinical presentation of children with eosinophilic fasciitis
 2. Know the diagnostic evaluation of children with eosinophilic fasciitis
 3. Know the principles of management of children with eosinophilic fasciitis
 4. Know the prognosis and outcome of children with eosinophilic fasciitis
 5. Know the differential diagnosis for children with eosinophilic fasciitis
 6. Know the epidemiology of children with eosinophilic fasciitis
 7. Know the pathophysiology of eosinophilic fasciitis
- D. Nephrogenic Systemic Fibrosis
1. Understand the risk factors for development of nephrogenic systemic fibrosis
 2. Understand the clinical manifestations of nephrogenic systemic fibrosis
- E. Idiopathic Fibrosing Disorders
1. Know the clinical features of the idiopathic fibrosing disorders, including retroperitoneal fibrosis, lipogranulomatosis subcutanea, sclerosing mediastinitis, and IgG4-related sclerosing disease
- F. Raynaud Phenomenon
1. Know the clinical presentation of children with Raynaud phenomenon
 2. Know the diagnostic evaluation of children with Raynaud phenomenon
 3. Know the principles of management of children Raynaud phenomenon
 4. Know the prognosis and outcome of children with Raynaud phenomenon
 5. Know the differential diagnosis for children with Raynaud phenomenon

6. Know the epidemiology of children with Raynaud phenomenon
7. Know the pathogenesis of Raynaud phenomenon

10. Autoinflammatory Diseases

A. Sarcoidosis and Blau Syndrome

1. Know the clinical presentation of children with sarcoid and Blau syndrome
2. Know the diagnostic evaluation of children with sarcoid and Blau syndrome
3. Know the principles of management of children with sarcoid and Blau syndrome
4. Know the prognosis and outcome of children with sarcoid and Blau syndrome
5. Know the differential diagnosis for children with sarcoid and Blau syndrome
6. Know the epidemiology of children with sarcoid and Blau syndrome
7. Know the pathogenesis of sarcoidosis and Blau syndrome

B. Tumor Necrosis Factor Receptor-Associated Periodic Syndrome (TRAPS)

1. Know the clinical presentation of children with TRAPS
2. Know the diagnostic evaluation of children with TRAPS
3. Know the principles of management of children with TRAPS
4. Know the prognosis and outcome of children with TRAPS
5. Know the differential diagnosis for children with TRAPS
6. Know the epidemiology of children with TRAPS
7. Know the pathogenesis of TRAPS

C. Familial Mediterranean Fever (FMF)

1. Know the clinical presentation of children with FMF
2. Know the diagnostic evaluation of children with FMF
3. Know the principles of management of children with FMF
4. Know the prognosis and outcome of children with FMF
5. Know the differential diagnosis for children with FMF
6. Know the epidemiology of children with FMF
7. Know the pathogenesis of FMF

D. Hyper IgD Syndrome (HIDS)

1. Know the diagnostic evaluation of children with HIDS
2. Know the principles of management of children with HIDS
3. Know the prognosis and outcome of children with HIDS
4. Know the differential diagnosis for children with HIDS
5. Know the epidemiology of children with HIDS
6. Know the pathogenesis of HIDS

E. Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis Syndrome (PFAPA)

1. Know the diagnostic evaluation of children with PFAPA
2. Know the principles of management of children with PFAPA
3. Know the prognosis and outcome of children with PFAPA
4. Know the differential diagnosis for children with PFAPA
5. Know the epidemiology of children with PFAPA

F. Cryopyrin-Associated Periodic Fever Syndromes (eg, NOMID, MW, FCAS)

1. Know the diagnostic evaluation of children with NLRP3-related diseases
2. Know the principles of management of children with NLRP3-related diseases
3. Know the prognosis and outcome of children with NLRP3-related diseases
4. Know the differential diagnosis for children with NLRP3-related diseases
5. Know the epidemiology of children with NLRP3-related diseases

6. Know the pathogenesis of NLRP3-related diseases
- G. Miscellaneous Autoinflammatory Diseases (eg, DIRA, CANDLE, SAVI, DADA2, NLRC4, Aicardi-Goutieres)
 1. Know the epidemiology of miscellaneous autoinflammatory diseases in children
 2. Know the pathogenesis of miscellaneous autoinflammatory diseases in children
- H. Undefined Autoinflammatory Disease
 1. Know the diagnostic evaluation of children with undefined autoinflammatory diseases
 2. Know the differential diagnosis for children with undefined autoinflammatory diseases
 3. Know the principles of management of children with undefined autoinflammatory diseases
- I. Idiopathic Inflammatory Disease of the Bone (Chronic Recurrent Multifocal Osteomyelitis (CRMO)/Chronic Non-infectious Osteomyelitis (CNO), Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis Syndrome (SAPHO))
 1. Know the clinical characteristics of children with idiopathic inflammatory disease of the bone
 2. Know the diagnostic evaluation of children with idiopathic inflammatory disease of the bone
 3. Know the principles of management of children with idiopathic inflammatory disease of the bone
 4. Know the prognosis and outcome of children with idiopathic inflammatory disease of the bone
 5. Know the differential diagnosis for children with idiopathic inflammatory disease of the bone
 6. Know the epidemiology of children with idiopathic inflammatory disease of the bone
 7. Know the pathogenesis of idiopathic inflammatory disease of the bone
- 11. Primary Immunodeficiencies and Other Disorders Associated With Inflammatory and Autoimmune Manifestations**
 - A. Complement Deficiencies
 1. Know the clinical presentation of children with complement deficiencies
 2. Know the diagnostic evaluation of children with complement deficiencies
 - B. Disorders Characterized by Immunoglobulin Deficiencies
 1. Know the clinical presentation and differential diagnosis of children with immunoglobulin deficiencies
 2. Know the diagnostic evaluation of children with immunoglobulin deficiencies
 - C. Immune Deficiency Disorders Presenting as Autoimmune Disorders
 1. Know the clinical presentation of autoimmunity in children with immune deficiency disorders presenting as autoimmune disorders
 - D. Autoimmune Lymphoproliferative Syndrome
 1. Know the clinical presentation and differential diagnosis of children with autoimmune lymphoproliferative syndrome
 2. Know the diagnostic evaluation of children with autoimmune lymphoproliferative syndrome
 - E. Hemophagocytic Lymphohistiocytosis
 1. Know the clinical presentation and differential diagnosis of children with hemophagocytic lymphohistiocytosis
 2. Know the diagnostic evaluation of children with hemophagocytic lymphohistiocytosis

3. Know the pathogenesis of hemophagocytic lymphohistiocytosis
 - F. Immunodysregulation Polyendocrinopathy Enteropathy X-Linked Syndrome (IPEX) and Autoimmune Polyendocrinopathy-Candidiasis-Ectodermal Dystrophy (APECED)
 1. Know the clinical characteristics of IPEX and APECED
 2. Know the pathogenesis of IPEX and APECED
 - G. Autoimmune Neurologic Diseases (eg, Autoimmune Encephalitis, Hashimoto Encephalitis)
 1. Know the clinical presentation of children with autoimmune neurologic diseases
 2. Know the diagnostic evaluation of children with autoimmune neurologic diseases
 3. Know the principles of management of children autoimmune neurologic diseases
 4. Know the differential diagnosis for children with autoimmune neurologic diseases
 - H. Relapsing Polychondritis
 1. Know the clinical presentation of children with relapsing polychondritis
 2. Know the diagnostic evaluation of children with relapsing polychondritis
 3. Know the principles of management of children with relapsing polychondritis
 4. Know the prognosis and outcome of children with relapsing polychondritis
 5. Know the differential diagnosis for children with relapsing polychondritis
 6. Know the pathogenesis of relapsing polychondritis
 - I. Castleman Disease
 1. Know the clinical presentation of Castleman disease
 2. Know the diagnostic evaluation of children with Castleman disease
 - J. Goodpasture Syndrome
 1. Know the clinical presentation of children with Goodpasture syndrome
 2. Know the diagnostic evaluation of children with Goodpasture syndrome
 3. Know the pathogenesis of Goodpasture syndrome
 - K. Kikuchi-Fujimoto Disease
 1. Know the clinical presentation of children with Kikuchi-Fujimoto disease
 2. Know the diagnostic evaluation of children with Kikuchi-Fujimoto disease
- 12. Arthritis Related to Infection and Associated Conditions**
- A. Classification and Definitions
 1. Appreciate the differences between septic, post-infectious and reactive arthritis
 - B. Transient Synovitis of the Hip
 1. Know the clinical presentation of children with transient synovitis
 2. Know the diagnostic evaluation of children with transient synovitis
 3. Know the principles of management of children with transient synovitis
 4. Know the prognosis and outcome of children with transient synovitis
 5. Know the differential diagnosis for children with transient synovitis
 6. Know the epidemiology of children with transient synovitis
 - C. Arthritis Caused by Bacteria
 1. Know the clinical presentation of children with bacterial arthritis
 2. Know the diagnostic evaluation of children with bacterial arthritis
 3. Know the differential diagnosis for children with bacterial arthritis
 4. Know the principles of management of children with bacterial arthritis
 - D. Arthritis Caused by Viruses
 1. Know the clinical presentation of children with arthritis associated with viruses
 2. Know the diagnostic evaluation of children with arthritis associated with viruses

3. Know the principles of management of children with arthritis associated with viruses
4. Know the prognosis and outcome of children with arthritis associated with viruses
5. Know the differential diagnosis for children with arthritis associated with viruses
- E. Arthritis Caused by Fungi
 1. Know the clinical presentation of children with arthritis caused by fungi
 2. Know the differential diagnosis for children with arthritis caused by fungi
 3. Know the epidemiology of children with arthritis caused by fungi
- F. Arthritis Caused by Borrelia Species
 1. Know the clinical presentation of children with arthritis caused by Borrelia species
 2. Know the diagnostic evaluation of children with arthritis caused by Borrelia species
 3. Know the principles of management of children with arthritis caused by Borrelia species
 4. Know the prognosis and outcome of children with arthritis caused by Borrelia species
 5. Know the differential diagnosis for children with arthritis caused by Borrelia species
 6. Know the epidemiology of children with arthritis caused by Borrelia species
 7. Know the pathogenesis of spirochetal arthritis
- G. Diskitis
 1. Know the clinical presentation of children with diskitis
 2. Know the diagnostic evaluation of children with diskitis
- H. Osteomyelitis
 1. Know the clinical presentation of children with osteomyelitis
 2. Know the diagnostic evaluation of children with osteomyelitis
 3. Know the differential diagnosis for children with osteomyelitis
- I. Acute Rheumatic Fever and Post-Streptococcal Arthritis
 1. Know the clinical presentation of children with acute rheumatic fever and post-streptococcal arthritis
 2. Know the diagnostic evaluation of children with acute rheumatic fever and post-streptococcal arthritis
 3. Know the principles of management of children with acute rheumatic fever and post-streptococcal arthritis
 4. Know the prognosis and outcome of children with acute rheumatic fever and post-streptococcal arthritis
 5. Know the differential diagnosis for children with acute rheumatic fever and post-streptococcal arthritis
 6. Know the epidemiology of children with acute rheumatic fever and post-streptococcal arthritis
 7. Know the pathogenesis of acute rheumatic fever and post-streptococcal arthritis
- J. Foreign Body Synovitis
 1. Know the clinical presentation of children with foreign body synovitis
13. **Skeletal Lesions and Neoplasms That Mimic Rheumatic Disease**
 - A. Solid Tumors
 1. Know the manifestations of solid tumors that mimic rheumatic illnesses
 2. Know the diagnostic evaluation of solid tumors that mimic rheumatic illnesses
 - B. Skeletal Lesions
 1. Know the manifestations of skeletal lesions that mimic rheumatic illnesses
 2. Know the diagnostic evaluation of skeletal lesions that mimic rheumatic illnesses

C. Hematologic Malignancies

1. Know the manifestations of hematologic malignancies that mimic rheumatic illnesses
2. Know the diagnostic evaluation of hematologic malignancies that mimic rheumatic illnesses

14. Bone and Connective Tissue Disorders

A. Dysplasias

1. Know the diagnostic evaluation of children with skeletal dysplasias
2. Know the differential diagnosis for children with skeletal dysplasias

B. Osteoporosis/Osteopenia

1. Know the clinical characteristics of children with osteoporosis/osteopenia
2. Know the risk factors for osteoporosis/osteopenia in children
3. Know the diagnostic evaluation of children with osteoporosis/osteopenia
4. Know the principles of management of children with osteoporosis/osteopenia
5. Know the prognosis and outcome of children with osteoporosis/osteopenia
6. Know the pathogenesis of osteoporosis/osteopenia

C. Nutritional Disorders (eg, Vitamin A, C, D)

1. Know the clinical characteristics of children with nutritional disorders that mimic rheumatic disorders
2. Know the diagnostic evaluation of children with nutritional disorders that mimic rheumatic disorders

D. Gout

1. Know the clinical characteristics of children with gout
2. Know the diagnostic evaluation of children with gout
3. Know the principles of management of children with gout
4. Know the pathogenesis of gout

E. Hypermobility Syndrome

1. Know the clinical characteristics of children with joint hypermobility syndrome
2. Know the diagnostic evaluation of children with joint hypermobility syndrome
3. Know the principles of management of children with joint hypermobility syndrome

F. Patellofemoral Instability

1. Know the clinical presentation of children with patellofemoral instability

G. Pes Planus

1. Know the clinical presentation of children with pes planus
2. Know the diagnostic evaluation of children with pes planus
3. Know the principles of management of children with pes planus
4. Know the prognosis and outcome of children with pes planus

H. Soft Tissue Calcification

1. Know the clinical characteristics of children with diseases leading to soft tissue calcification and ectopic bone (fibrodysplasia ossificans progressiva, tumoral calcinosis)

I. Trichorhinophalangeal Syndrome

1. Know the clinical characteristics of children with trichorhinophalangeal syndrome

J. Chromosomal Disorders (eg, trisomy 21, 22q Deletion, Turner Syndrome)

1. Know the clinical characteristics of children with musculoskeletal manifestations with chromosomal disorders

K. Hyperostoses

1. Know the clinical characteristics of children with hyperostosis
- L. Chondrolysis Syndromes (eg, Hip, Jaw)
 1. Understand the clinical and imaging characteristics of chondrolysis syndromes
- 15. Musculoskeletal Manifestations of Other Chronic Diseases**
 - A. Endocrine Disease
 1. Know the clinical characteristics of children with endocrinologic disorders that mimic rheumatic disorders (eg, thyroid, parathyroid, diabetes)
 2. Know the diagnostic evaluation of children with endocrinologic disorders that mimic rheumatic disorders (eg, thyroid, parathyroid, diabetes)
 - B. Cystic Fibrosis
 1. Know the musculoskeletal manifestations of children with cystic fibrosis
 - C. Bleeding Disorders
 1. Know the rheumatologic manifestations of bleeding disorders
 - D. Celiac Disease
 1. Know the rheumatologic manifestations of celiac disease
 2. Know the diagnostic evaluation of children with celiac disease
 - E. Storage Diseases (eg, Gaucher disease, Fabry Disease, Mucopolysaccharidosis, Mucopolipidoses)
 1. Know the clinical characteristics of children with storage diseases
 2. Know the diagnostic evaluation of children with storage diseases
 3. Know the differential diagnosis for children with storage diseases
- 16. Dermatologic Conditions and Mimics of Rheumatic Diseases**
 - A. Stevens-Johnson Syndrome
 1. Know the clinical presentation of children with Stevens-Johnson syndrome
 2. Know the diagnostic evaluation of children with Stevens-Johnson syndrome
 3. Know the principles of management of children with Stevens-Johnson syndrome
 4. Know the differential diagnosis for children with Stevens-Johnson syndrome
 - B. Panniculitis/Erythema Nodosum
 1. Know the clinical presentation of children with panniculitis, including erythema nodosum
 2. Know the diagnostic evaluation of children with panniculitis, including erythema nodosum
 3. Know the principles of management of children panniculitis, including erythema nodosum
 4. Know the differential diagnosis for children with panniculitis, including erythema nodosum
 5. Know the pathogenesis of panniculitis, including erythema nodosum
 - C. Pernio
 1. Know the clinical presentation of children with pernio
 2. Know the diagnostic evaluation of children with pernio
 3. Know the principles of management of children pernio
 - D. Neutrophilic Dermatoses (eg, Sweet Syndrome, Pyoderma Gangrenosum)
 1. Know the clinical presentation of children with neutrophilic dermatoses
 2. Know the diagnostic evaluation of children with neutrophilic dermatoses
 3. Know the principles of management of children neutrophilic dermatoses
 - E. Granuloma Annulare/Benign Rheumatoid Nodules

1. Know the clinical presentation of granuloma annulare or benign rheumatoid nodules
2. Know the diagnostic evaluation of children with granuloma annulare or benign rheumatoid nodules

F. Complex Aphthosis

1. Know the clinical presentation of children with complex aphthosis
2. Know the diagnostic evaluation of children with complex aphthosis
3. Know the principles of management of children complex aphthosis
4. Know the differential diagnosis for children with complex aphthosis

G. Lymphedema

1. Know the clinical presentation of children with lymphedema
2. Know the diagnostic evaluation of children with lymphedema
3. Know the principles of management of children lymphedema
4. Know the prognosis and outcome of children with lymphedema

17. Functional Assessment and Rehabilitation

A. General

1. Recognize the common patterns of joint limitations and their functional implications in childhood musculoskeletal diseases
2. Understand indications for referral to physical and occupational therapy
3. Know the normal range of motion for the joints
4. Understand the role for splints and assistive devices (eg, risks, indications, and contraindications)

B. Surgery

1. Recognize the indications for surgical intervention (soft tissue releases, joint replacements, and soft tissue repair)
2. Understand the expectations for surgical intervention, including soft tissue releases, joint replacements, and soft tissue repair

C. Recognition of Clinical and Gait Analysis Patterns

1. Recognize normal and abnormal gait patterns in children
2. Understand the mechanism of gait abnormalities

18. Psychosocial, Developmental, and Educational Issues

A. Impact of Chronic Illness

1. Know the clinical characteristics of psychological issues of chronic illnesses on the child and family
2. Know the principles of management of psychological issues of chronic illnesses on the child and family
3. Know the differential diagnosis for children presenting with psychological issues

B. Adherence

1. Know the factors that can contribute to adherence (eg, dosing schedule, side effects, pill versus liquid, cost, age, psychosocial maturity, cosmetic effects)
2. Know how to evaluate adherence to a treatment program (eg, pill counting, lack of side effects, drug concentrations, and physical therapy cancellations)

C. Physical Education

1. Know the risks and benefits of physical education and sports in children with rheumatic illnesses

D. Individualized Educational and 504 Plans

1. Know the difference between an Individualized Educational Plan versus a 504 Plan

2. Know the rights of the child and parents with regard to an Individualized Educational Plan and a 504 Plan
- E. Growth and Developmental Issues
1. Know the effects of chronic inflammatory disease and drug therapy on growth and development
 2. Know the management of impaired growth and development
- F. Independence and Transition
1. Know the appropriate steps to help an adolescent with a rheumatic disease transition to adult health care providers
 2. Know the factors and consequences associated with poor transition
- G. Sexual Counseling and Pregnancy
1. Know the contraceptive methods available to adolescents with rheumatic diseases
 2. Be aware of the effects of rheumatic diseases and treatments on fertility
- H. Government Support for Individuals with Disabilities
1. Be aware of the requirements for patients with rheumatic diseases to qualify for government support
 2. Know the legal rights of the disabled