



THE EUROPEAN RHEUMATOLOGY CURRICULUM FRAMEWORK

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BACKGROUND

The European Board of Rheumatology (<http://www.uems-rheumatology.net/>) is the representative body of rheumatologists within **UEMS (Union Européenne des Médecins Spécialistes)**. One of its statutory purposes is the formulation of a common policy in the field of training aiming at the highest standards of rheumatological medical care throughout Europe. Members of the UEMS Section of Rheumatology are appointed by the appropriate professional organizations of the specialties in the EC member states and EFTA countries in accordance with UEMS rules of procedure.

The Board has recently published recommendations on what a rheumatology service should be expected to offer in order to provide appropriate healthcare for patients with musculoskeletal conditions¹. The Charter for Rheumatology training in the EU, was also revised and approved in December 2006².

This document takes the process one step further towards the harmonization of rheumatology specialist training within the European Union, by providing a reference framework to the development and benchmarking of National Curricula for the Specialist Training of Rheumatologists.

It represents a major revision of the UEMS Rheumatology Specialist Core Curriculum produced in 2003. We adopted the CanMEDS 2005 Physician Competency Framework³, (Copyright 2005-2007 The Royal College of Physicians and Surgeons of Canada. Reproduced with permission). Other sources were the Core Curriculum Outline for Rheumatology Fellowship Programs published by the American College of Rheumatology⁴, and some European National Rheumatology Curricula⁵.

¹ Anthony D Woolf and The European Union of Medical Specialists Section of Rheumatology/European Board of Rheumatology. Health Care Services for those with musculoskeletal conditions: a rheumatology service. Recommendations of the European Union of Medical Specialists Section of Rheumatology/European Board of Rheumatology 2006. *Ann Rheum Dis* 2007;66:293–301.

² José A. P. Da Silva, Karen-Lisbeth Faarvang, Klaus Bandilla and Anthony D Woolf on behalf of the UEMS Section and Board of Rheumatology. UEMS charter on training of rheumatologists in Europe. *Ann Rheum Dis* 2008. In Press.

³ Frank, JR. (Ed). 2005. The CanMEDS 2005 physician competency framework. Better standards. Better physicians. Better care. Ottawa: The Royal College of Physicians and Surgeons of Canada. http://rcpsc.medical.org/canmeds/CanMEDS2005/CanMEDS2005_e.pdf

⁴ American College of Rheumatology. Core Curriculum Outline for Rheumatology Fellowship Programs. A Competency-Based Guide to Curriculum Development. <http://www.rheumatology.org/educ/training/CCO.pdf>

Expert educational input was provided by Professor Reg Dennick, Assistant Director of the Medical Education Department of the University of Nottingham, UK.

The content of this document was consensually adopted through discussions and consultations with the representatives of all member countries in the UEMS Board of Rheumatology⁶ and participation of the Permanent Working Group of Junior Physicians of the EU.

It should be considered in conjunction with European Board of Rheumatology Education Guide, which presents recommendation on how best to organize, deliver and assess the curriculum while respecting national preferences.

AIMS

It is recognized that conditions and regulations under which medicine and rheumatology are practiced are extremely variable between different countries and will remain so. Definition of medical curriculum aims, structure and contents remain under the exclusive domain of national authorities.

However, harmonization of specialist training in Europe is deemed essential to guarantee standards of care and support freedom of movement of medical specialists among member countries. Guidelines on specialist training provide an important opportunity to increase quality standards on behalf of people with musculoskeletal conditions.

The UEMS Board of Rheumatology does not hold either the intent nor the authority to impose a defined curriculum structure, content or aims to individual countries. This document aims solely to provide national authorities and professional bodies involved in the development of curricula for the training of rheumatologists with a comprehensive reference framework of core competencies to be achieved by the end of rheumatology specialised training in Europe. Trainees may

⁵ The Danish, Curriculum for Specialist Training in Internal Medicine: Rheumatology. National Board of Health. Danish Society for Rheumatology. January 2004. Edited in January 2005. The British, Specialty Training Curriculum For Rheumatology. Joint Royal Colleges of Physicians Training Board. May 2007 (<http://www.uems-rheumatology.net/> ; www.jrcptb.org.uk).

⁶ Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom.

use it as a source of reference and benchmarking, for appreciation of their own training standards and as source of inspiration to promote positive change where appropriate.

Many different educational strategies can be adopted to achieve these competencies. The choice of curriculum strategy will largely depend on national traditions and resources. It was decided, therefore, to refrain from prescribing any specific curriculum structure. However, it was felt that harmonization and quality promotion could be served by a contextualized review of good practices in curriculum planning and development. This has been compiled into a resource document addressing the qualities and limitations of different teaching and assessment methods – the European Board of Rheumatology Educational Guide, provided as an independent document (<http://www.uems-rheumatology.net/>).

COMPETENCY FRAMEWORK. THE PHYSICIAN'S ROLES

The Seven Roles of Physicians, as defined by the CanMeds framework, form the structure for the organization of competencies. This was chosen in recognition of its ability to encompass the complex and ever-evolving roles the physician is expected to play in present day medicine. It underlines the need to bring crucial but previously ignored competencies, such as communication and professionalism, to the forefront of medical training objectives. Such competencies need to be fully recognized as central to the medical profession and can no longer be left to unchecked individual determination.

Certainly, the role of **Medical Expert** will continue to deserve a central place in medical education and training, but also the competencies of **Communicator**, **Collaborator**, **Manager**, **Health advocate**, **Scholar**, and **Professional** should be clearly represented in educational programmes.

The CanMEDS framework was adopted because it also embodies the educational move from the definition of objectives in terms of knowledge and skills to a definition based around competencies. Competencies are understood as the ability to use knowledge, skills and appropriate attitudes to solve clinical problems in a professional, ethical and proficient way for optimal patient and societal outcomes.

Each section starts with a short **definition** of the role and a more extensive **description** of its nature in the perspective of the Rheumatologist. This is followed by a listing of key **elements**, which are meant to rise to consideration the diverse variety of dimensions which may be considered within that specific role. **Key competencies** deemed necessary for accomplishing the role are described at the levels expected by the end of the training and this is followed by a more detailed description of **Specific training requirements** within these competencies. Suggestions on appropriate **Teaching and Learning** as well as **Assessment methods** for each of the roles competencies are presented. In-depth description of these methods can be found in the European Board of Rheumatology Educational Guide.

MEDICAL EXPERT/CLINICAL DECISION-MAKER

Definition

As *Medical Experts*, rheumatologists integrate all of the Roles and competencies listed in this document, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centred care. Medical Expert is the central physician role in rheumatology practice.

Description

Rheumatologists possess a defined body of knowledge, clinical skills, procedural skills and professional attitudes, which are directed to effective care of patients with musculoskeletal conditions. Their care is characterized by up-to-date, ethical, and resource efficient clinical practice as well as by effective communication in partnership with patients, other health care providers and the community. The Role of Medical Expert is central to the function of rheumatologists and draws on the competencies included in the Roles of Communicator, Collaborator, Manager, Health Advocate, Scholar and Professional.

Elements

- Core medical knowledge
- In-depth knowledge of musculoskeletal problems and conditions
- Medical history and examination
- Diagnostic reasoning
- Clinical judgment
- Clinical decision-making
- Risk-benefit and pharmaco-economic consideration
- Assessment of the impact of musculoskeletal conditions
- Application of appropriate management
- Procedural skill proficiency
- Team leadership
- Evidence-based practice
- Empathic care
- Integration of all competencies to achieve optimal patient care
- Application of ethical principles for patient care

Key Competencies

By the end of their training a Rheumatologist must be able to...

- Demonstrate diagnostic, management and therapeutic skills for ethical and cost effective patient care in the complete array of musculoskeletal and connective tissue problems and conditions.
- Work in a multiprofessional and multidisciplinary team, recognizing the limits of their own expertise.
- Access, appraise and apply information that is relevant to clinical practice.
- Provide efficient support to the development of services related to disease prevention, patient care, patient and family education, social support, medical education and legal opinions.

Specific training requirements

To acquire and demonstrate the competencies above, the trainee must exhibit, at the completion of training the following specific knowledge, skills and attitudes.

Section A. KNOWLEDGE REQUIREMENTS

A.1. General Knowledge

Upon completion of training, the trainee will be required to demonstrate operational knowledge⁷ as applied to musculoskeletal conditions, of:

- A.1.1 Classification of musculoskeletal conditions
- A.1.2 Epidemiological methods in the study of rheumatic disease
- A.1.3 Basic statistics for medical sciences
- A.1.4 Principles of evidence-based practice
- A.1.5 Economic, psychological and social consequences of rheumatic disease
- A.1.6 Regulation their local health system, including allocation of resources and social policies specific to musculoskeletal conditions

⁷ Operational knowledge: information at the depth needed for the skilful performance of all listed competencies, in the perspective of the practising rheumatologist in their national setting.

A.2. Basic Sciences

Upon completion of training, the trainee will be required to demonstrate operational knowledge as applied to musculoskeletal conditions, of:

- A.2.1 Anatomy and physiology of musculoskeletal tissues, including structure and function of bone, joints, connective tissue, muscle, tendons, nerves and blood vessels, in health.
- A.2.2 Immunology, including basic structure and function of central and peripheral lymphoid organs, cellular and molecular components of the immune system in health and musculoskeletal conditions.
- A.2.3 Pathophysiology, as applicable to the understanding of the mechanisms and the treatment of musculoskeletal conditions, including: cellular and molecular biology, biomechanics, pathophysiology of pain, genetics, immune mechanisms (auto-immunity, immune complexes, graft versus host disease), infectious agents, ageing.
- A.2.4 Pharmacology, including, among others, basic principles of drug management, pharmacology of agents used in rheumatic disease and their interactions with other medications.

A.3. Clinical Sciences

A.3.1. Adult musculoskeletal conditions and problems.

- A.3.1.1 Upon completion of training, the trainee will be required to demonstrate deep and updated knowledge of the musculoskeletal conditions listed at the end.

This will include, for each disease, the epidemiology, genetics, natural history, clinical expression including clinical subtypes, pathology and disease pathogenesis. The depth of knowledge expected shall mirror proportionally not only the prevalence but also the potential seriousness of each condition in current national rheumatology practice.

- A.3.1.2 The trainee will be required to demonstrate operational knowledge of non-musculoskeletal conditions involved in differential diagnosis or having implications for the management of musculoskeletal conditions, such as cardiovascular and renal disease, muscle dystrophies, interstitial lung diseases, diabetes, hypertension, glaucoma, hypercoagulable states, infections, etc.

A.3.2. Paediatric musculoskeletal and connective tissue conditions and problems.

A.3.2.1 In European countries, paediatric rheumatology is a separate medical specialty, a regulated rheumatology competence or shared between paediatricians and rheumatologists. These recommendations are aimed at the minimum competence for all rheumatologists. Rheumatologists will often be responsible for continued care for children with musculoskeletal conditions through adolescence to adulthood and must, therefore, be well trained in dealing with adolescents and paediatric diseases persisting into adulthood and their sequelae.

Upon completion of training rheumatologists should be able to

A.3.2.2 Assess and formulate a limited differential diagnosis for the conditions listed under n° 15 of the list of diseases, including consideration of non-musculoskeletal conditions in children that can mimic musculoskeletal conditions (n°16 of the list of diseases)

A.3.2.3 Know the principles of management of the child with a musculoskeletal condition and of specific diseases as listed under n° 15 of the list of diseases).

A.3.2.4 Describe the natural history of paediatric musculoskeletal conditions (n°15 of the list of diseases) and their major complications (n°17 of the list of diseases).

A.3.3 Investigations.

A.3.3.1. At completion of training, the physician should demonstrate full understanding of the biologic rationale, utility, cost, limitations and interpretation of all investigations used in the regular management of musculoskeletal conditions and syndromes.

This will include consideration of test-performance characteristics: sensitivity, specificity, and predictive value.

The trainee will have an operational knowledge of the methods used for such tests.

A.3.3.2. Investigations include:

Laboratory (including specialized immunology tests)

Imaging (Including plain radiographs, computed tomography, magnetic resonance imaging, ultrasonography and radionuclide scanning of bones, joints, and periarticular and vascular structures.)

Measurement techniques using imaging (bone densitometry, quantitative ultrasound)

Neurophysiology

Capillaroscopy

Arthroscopy

Biopsies

Synovial fluid analysis including polarized light microscopy

A.4. Therapeutics

A.4.1 Indications/contraindications, administration, cost, monitoring and complications of all pharmacological agents and techniques, such as injections, regularly used in the treatment of musculoskeletal conditions and syndromes.

A.4.2 Demonstrate operational knowledge of indications, risks and limitations of physical therapy and rehabilitation, including: exercise (range of motion, strengthening, conditioning, and stretching), rest and splinting, hydrotherapy, spa therapy, joint protection and energy conservation techniques, adaptive equipment and assistive devices, footwear and orthotics.

A.4.3 Demonstrate operational knowledge of methods used in the prevention of musculoskeletal conditions including work-related, life-style and nutritional issues and patient education.

A.4.4 Appropriate use of and referral to rehabilitation specialists and pain clinics.

A.4.5 Demonstrate an understanding of the psychosocial aspects of disease and disability and their impact upon the management plan. This will include consideration of psychological and emotional factors, including sexuality, family and work relationships, vocational issues, costs of therapy and monitoring.

A.4.6 Surgical Interventions: for common surgical procedures employed in the treatment of musculoskeletal conditions, the trainee should demonstrate operational knowledge of indications, preoperative evaluation and medication adjustments, contraindications, complications, postoperative management and expected outcome.

A.4.7 Complementary Medicine: the trainee should demonstrate operational knowledge of alternative practices, including diet, nutritional supplements, antimicrobials, acupuncture, chiropractic, topicals, homeopathic remedies, venoms and others.

Section B. CLINICAL SKILLS AND PRACTICE REQUIREMENTS

The core clinical skills required from the new rheumatologist include the ability to collect and interpret relevant information about a person with a musculoskeletal problem (history, physical examination, laboratory and imaging studies). They should be able to use it in the light of medical knowledge to perform differential diagnosis, assess the patient's global status, plan further evaluation and organize and implement a comprehensive management plan for the patient and assess its effect.

This may include children, depending on the circumstances of practice at a national level.

Upon completion of training the trainee will demonstrate the ability to:

- B.1. Elicit a history, from patients or relatives, that is relevant, concise, accurate and appropriate to the patient's problem(s), including consideration of the patient's perspective.
- B.2. Perform physical examination, including full detailed assessment of the musculoskeletal system, that is appropriate to the patient's problems.

History and physical examination must recognize non-articular manifestations, especially those with potential implications in the diagnosis and/or management of musculoskeletal conditions.
- B.3. Use, apply and interpret measures of disease activity, functional status, and cumulative damage that are appropriate for the patient's condition.
- B.4. Elaborate an appropriate differential diagnosis and an investigational plan, which demonstrates a rational and cost-effective use and interpretation of relevant investigations.
- B.5. Analyze and interpret clinical, laboratory and imaging data derived by the above processes to establish the most likely diagnosis(es) and a comprehensive assessment of the patient's status.
- B.6. Develop an appropriate management plan based on up-to-date scientific information as well as clinical judgment, that accounts for cost and patient preferences and circumstances.

This will include demonstration of the ability to use medications and other therapeutic options, perform patient and family education and support, employment of preventive care and incorporation of the expertise of other health professionals.

The new rheumatologist will demonstrate appropriate use of medications under special circumstances like childhood, pregnancy, lactation, renal insufficiency and others.

- B.7. Recognize, and appropriately assess and manage emergency rheumatological situations, such as scleroderma renal crisis, pulmonary arterial hypertension, atlantoaxial dislocation, catastrophic phospholipids syndrome and temporal arteritis, among others.
- B.8. Design an appropriate follow-up plan including the assessment of response to treatment, in the knowledge of expectations, and recognition of adverse events.
- B.9. Demonstrate effective, appropriate and timely cooperation with other health professionals as needed for optimal patient care.

B.10. Technical skills⁸:

Upon completion of training the trainee should be able to routinely and safely perform without supervision the following technical procedures:

- B.9.1. Aspiration of joints and bursae
- B.9.2. Injection of joints and soft tissue
- B.9.3. Synovial fluid analysis under polarized light
- B.9.4. Interpretation of musculoskeletal imaging, bone scintigraphy and bone densitometry

Optional skills

- B.9.5. The performance of the following procedures are considered **optional** and may be the object of specific regulation at a national level:

⁸ The National curriculum should clarify which technical skills are considered obligatory and at which level of performance they should be demonstrated upon completion of training.

- Biopsies of relevant tissues and organs (synovium, skin, subcutaneous fat, minor salivary glands, bone, muscle, nerves, kidney, temporal artery, etc.)
- Bone densitometry
- Musculoskeletal ultrasound
- Capillaroscopy
- Electromyography
- Arthroscopy
- Injection techniques under imaging guidance
- Radioactive or chemical synoviorthesis
- Other

B.10. Demonstrate effective use of competencies and attitudes listed under the following chapters in order to convey the highest standards of care for patients and valuable contributions to the professional development of self and others. This includes the ability to

- provide compassionate and humane care;
- work in a multidisciplinary and multiprofessional team.
- provide timely well-documented assessments and recommendations in written and/or verbal forms;
- perform disability determination and measurement in the field of social security disability, workmen's compensation and other;
- access, retrieve, critically evaluate, and apply information from all sources in maintaining the highest standard of patient evaluation, care, and management;
- show insight into his/her own limitations of expertise by self-assessment;
- identify and respond appropriately to ethical issues relevant to rheumatology practice;
- demonstrate medical expertise in situations other than those involving direct patient care (e.g. medical presentations, teaching, patient and referring physician education, and medico-legal opinions);

Teaching and Learning Methods

A. Knowledge

Methods and resources for acquiring the recommended body of knowledge include, but are not limited to:

- Independent reading - recommended textbooks, journal articles and internet based research and study
 - Didactic teaching - conferences, lectures, or discussions
 - Clinical laboratory experience
 - Dedicated courses
 - Clinical rounds
 - Involvement in teaching
 - Critical review of literature – journal clubs, etc

B. Clinical skills and practice

Active involvement in patient care, in both the outpatient clinic as well as the inpatient (hospitalized) settings, is the central pillar of skills acquisition. Such experiences must be duly supervised so that the trainee has abundant opportunity to observe skilled clinician role models, participate in the management of rheumatologic problems and receive appropriate, constructive feedback. Situations in which facets of patient care are taught and learned include:

- Didactic teaching - conferences, lectures, or discussions
- Clinical experience in a supervised, mentored clinical setting
- Interactive case-based discussions
- Independent reading - recommended textbooks, journal articles and internet based research and study
- Preparation of patient care portfolios
- Clinical case presentations
- Web-based case reviews

Assessment Methods

A. Knowledge

- Faculty performance rating – with regard to medical knowledge
- Evaluation committee
- Formal oral or written exam
- Mentor evaluation of trainee's clinical performance

B. Clinical skills and practice

- Regular formative appraisal and feedback
- Faculty performance rating – with regard to patient care
- Evaluation committee
- Chart review – for patient care, drug prescribing, or outcomes
- Presentations to peers and lay audiences
- Participation in individual or group quality improvement projects
- Formal practical exam
- Clinical evaluation exercise (mini-CEX)
- Direct observation of practical skills (DOPS)
- Objective structured clinical examination (OSCE)
- 360° evaluations
- Portfolio review

Additional information:

1. See the European Board of Rheumatology EDUCATIONAL GUIDE (<http://www.uems-rheumatology.net/>)
2. Moore DE, Pennington FC, Practice-based learning and improvement, J Cont Educ Health Prof, 2003;23:S73-80.
3. Epstein RM, Mindful practice, JAMA, 1999;282:833-9.
4. "Advancing Education in Practice-Based Learning and Improvement." An educational resource developed by the ACGME to aid program directors in teaching and assessing PBLI located at www.acgme.org/outcome/implement/complete_PBLIBooklet.pdf

COMMUNICATOR

Definition

As *Communicators*, rheumatologists effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur throughout the course and medical management of what are frequently long-term conditions.

Description

Rheumatologists enable and nurture patient-centered therapeutic communication through shared decision-making and effective dynamic interactions with patients, families, caregivers, other professionals, and important other individuals. The competencies of this role are essential for establishing rapport and trust, formulating a diagnosis, delivering information, striving for mutual understanding, and facilitating a shared plan of care. Confidentiality and ethics must be respected.

The application of these communication competencies and the nature of the doctor-patient relationship vary for different cultures, conditions and individual needs for information. The potential barriers of language and culture need to be recognized.

Elements

- Patient-centred approach
- Empathy, Concordance, Mutual understanding
- Relational competence in interactions
- Effective listening
- Use of expert verbal and non-verbal communication
- Respect for diversity
- Interactive process
- Eliciting and synthesizing information for patient care
- Attention to the psychosocial aspects of illness
- Conveying effective oral and written information for patient care
- Shared decision-making
- Rapport, trust and ethics in the doctor-patient relationship
- Constructive relationships with patients, families and caregivers

- Capacity for compassion, trustworthiness, integrity
- Flexibility in application of skills
- Efficiency, Accuracy
- Breaking bad news
- Addressing end-of-life issues
- Disclosure of error or adverse event
- Informed consent
- Capacity assessment
- Appropriate documentation
- Public and media communication, where appropriate

Key Competencies

By the end of their training a Rheumatologist must be able to...

1. Develop a good interaction with empathy, trust and ethical therapeutic relationships with patients, carers and families;
2. Accurately elicit, select, document and synthesize relevant information and perspectives of patients and families, colleagues and other professionals;
3. Adequately and understandably convey relevant information and explanations to patients and families, colleagues and other professionals;
4. Propose and negotiate a common understanding on issues, problems and plans with patients and families, colleagues and other professionals to develop a shared plan of care;
5. Convey accurate and effective oral and written information about a medical problem.

Specific training requirements

To acquire and demonstrate the competencies above, the trainee must exhibit, at the completion of training the following specific knowledge, skills and attitudes.

1. Develop a good interaction with empathy, trust and ethical therapeutic relationships with patients, carers and families:
 - 1.1. Be a good communicator. Rheumatologists must recognize that this is a core clinical skill for their practice and strive to master it. They should demonstrate an understanding that effective physician-patient

communication can foster patient satisfaction, physician satisfaction, adherence and improved clinical outcomes

1.2. Establish positive therapeutic relationships with patients and their families that are characterized by mutual understanding, trust, respect, honesty and empathy

1.3. Respect patient confidentiality, privacy and autonomy

1.4. Have good consultation skills and be able to effectively facilitate a structured clinical encounter by listening effectively, and being aware and responsive to nonverbal cues

2. Accurately elicit, select, document and synthesize relevant information and perspectives of patients and families, colleagues and other professionals:

2.1. Gather information about the clinical condition, but also about a patient's beliefs, concerns, expectations and illness experience

2.2. Select, appraise and document relevant information accurately and in a way that can communicate the information reliably to others

2.3. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers and other professionals

3. Adequately and understandably convey relevant information and explanations to patients and families, colleagues and other professionals:

3.1. Deliver information to a patient and family, colleagues and other professionals in a humane manner, recognizing their needs and in such a way that it is understandable, encourages discussion and participation in decision-making and concordance with a plan for management

4. Propose and negotiate a common understanding on issues, problems and plans with patients and families, colleagues and other professionals to develop a shared plan of care:

4.1. Effectively identify and explore problems to be addressed from a patient encounter, including the patient's context, responses, concerns, and preferences

4.2. Respect diversity and difference, including, but not limited to, the impact of gender, culture and religious beliefs on decision-making

4.3. Encourage discussion, questions, and interaction in any encounters

4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care

4.5. Effectively address challenging issues related to communicating with and supporting people with long term musculoskeletal conditions

4.6. Effectively address challenging communication issues, such as obtaining informed consent, delivering bad news, and addressing anger, confusion and misunderstanding

5. Convey accurate and effective oral and written information about a medical problem:

5.1. Maintain clear, accurate, and appropriate records (e.g., written or electronic) of clinical encounters and plans

5.2. Effectively present verbal reports of clinical encounters and plans

5.3. Prepare reports for employers and agencies

5.4. Understand the critical issues involved in presenting medical information to the public, to insurers or to the media about a medical issue

Teaching and Learning Methods

Methods and resources that can contribute to the acquisition of these competencies include, but are not limited to:

- Experiential learning/Tutorial learning. Working with professionals that are examples of good practice and actively adopt a tutorial role towards the trainee in these domains is probably the most efficient way of promoting these competencies
- Group case-based discussions
- Role playing
- Consultation under supervision / video followed by appraisal
- Working with patient organizations and public groups
- Patient Partners

Assessment Methods

- Regular formative appraisal and feedback
- Assessment of Videotaped encounters
- 360° assessment
- Clinical records review
- Clinical reports review

Additional information:

1. See the European Board of Rheumatology EDUCATIONAL GUIDE (<http://www.uems-rheumatology.net/>)
2. "Interpersonal and Communication Skills." An educational resource developed by the ACGME to aid program directors in teaching and assessing interpersonal and communication skills located at www.acgme.org/outcome/implement/interperComSkills.pdf
3. Burack JH, Irby DM, Carline JD, Root RK, Larson EB, Teaching compassion and respect. Attending physicians' responses to problematic behaviors, J Gen Intern Med 1999;14:49-55.

COLLABORATOR

Definition

As Collaborators, physicians effectively work within a health and social care team to achieve optimal patient care.

Description

Rheumatologists work in partnership with others who are appropriately involved in the care of individuals or specific groups of patients. Modern health-care teams not only include a multidisciplinary group of professionals working closely together at one site, such as a ward team, but also extended teams with a variety of perspectives and skills, in multiple locations. It is therefore essential that rheumatologists are able to collaborate effectively with patients, families, and an inter-professional team of expert health professionals for the provision of optimal care, education and scholarship.

Elements

- Collaborative care, culture and environment
- Sharing of knowledge and information
- Respect for other physicians and members of the healthcare team
- Respect for diversity
- Team dynamics
- Leadership based on patient needs
- Shared decision making
- Delegation
- Effective teams
- Constructive negotiation
- Conflict resolution, management, and prevention
- Organizational structures that facilitate collaboration
- Understanding roles and responsibilities
- Recognizing one's own roles and limits
- Effective consultation with respect to collaborative dynamics
- Effective primary care – specialist collaboration
- Collaboration with community agencies

- Communities of practice
- Inter-professional health care
- Multiprofessional health care
- Health insurers
- Learning together
- Gender issues

Key Competencies

By the end of their training a Rheumatologist must be able to...

1. Participate effectively and appropriately in a multiprofessional and multi-disciplinary healthcare team;
2. Effectively work with other health care providers and agencies to negotiate and resolve issues relevant to patient care;
3. Collaborate with organizations for people with musculoskeletal conditions.

Specific training requirements

To acquire and demonstrate the competencies above, the trainee must exhibit, at the completion of training the following specific knowledge, skills and attitudes.

1. Participate effectively and appropriately in a multiprofessional and multi-disciplinary healthcare team:
 - 1.1. Know, understand and respect the roles and responsibilities and dynamics of other professionals within the multiprofessional and multi-disciplinary healthcare team
 - 1.2. Demonstrate a respectful attitude towards other colleagues and members of an interprofessional team
 - 1.3. Work with others to assess, plan, provide and integrate multidisciplinary care for individual patients (or groups of patients) recognizing the broad impact of musculoskeletal conditions on the individual, their carers and family (WHO ICF)
 - 1.4. Where appropriate, work with others to assess, plan, provide and review other tasks, such as research problems, educational work, program review or administrative responsibilities
 - 1.5. Participate effectively in multidisciplinary team meetings

- 1.6. Respect team ethics, including confidentiality, resource allocation and professionalism, working with other professionals to prevent conflicts
- 1.7. Where appropriate, demonstrate leadership in a healthcare team
2. Effectively work with other health care providers and agencies to negotiate and resolve issues relevant to patient care:
 - 2.1. Demonstrate knowledge of regulations and practices related to access to appropriate care
 - 2.2. Be able to develop a case based on evidence and best practice to facilitate negotiation
 - 2.3. Employ collaborative negotiation to resolve conflicts
 - 2.4. Respect differences, misunderstandings and limitations in other professionals
 - 2.5. Recognize one's own differences, misunderstanding and limitations that may contribute to inter-professional tension
 - 2.6. Reflect on inter-professional team function and on his own contributions to its effectiveness
3. Collaborate with organizations for people with musculoskeletal conditions:
 - 3.1. Know of the organizations that support people with various musculoskeletal conditions, what they offer for supporting people and of the potential benefits of successful collaboration with them

Teaching and Learning Methods

Methods and resources that can contribute to the acquisition of these competencies include, but are not limited to:

- Experiential learning in Departments and professionals that are examples of good practice in these domains
- Group case-based discussions
- Performance under supervision followed by appraisal
- Working with patient organizations and public groups

Assessment Methods

- Regular formative appraisal and feedback
- Assessment of encounters

- 360° assessment
- Clinical reports review

Additional information:

1. European Board of Rheumatology EDUCATIONAL GUIDE
(<http://www.uems-rheumatology.net/>)

MANAGER/MEDICAL LEADER

Definition

As *Managers/medical leaders*, rheumatologists must be prepared to act as integral participants in healthcare organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system.

Description

Rheumatologists interact with their work environment as individuals, as members of teams or groups, and as participants in the health system locally, regionally or nationally.

Rheumatologists function as Managers of practice activities involving a multi-disciplinary team, resources and organizational tasks, such as care processes, and policies as well as balancing their personal lives.

Thus, rheumatologists require the ability to prioritize, effectively execute tasks collaboratively with colleagues, and develop the service whilst making systematic choices when allocating scarce healthcare resources.

Elements

- Organization, structure and financing of the healthcare system
- Budgeting and finance
- Priority-setting
- Practice management to maintain a sustainable practice and physician health
- Health human resources
- Administration
- Physician remuneration options
- Negotiation
- Career development
- Information technology for healthcare
- Development of a Rheumatology service
- Quality assurance and improvement
- Leadership

- Supervising others
- Collaborative decision-making
- Effective meetings and committees
- Managing change
- Consideration of justice, efficiency and effectiveness in the allocation of finite healthcare resources for optimal patient care
- Time management

Key Competencies

Rheumatologists must be able to...

1. Participate effectively in activities that contribute to the effectiveness of their healthcare organizations and systems;
2. Manage their practice and career effectively;
3. Understand and critically allocate finite healthcare resources appropriately in the interest of patients and the community;
4. Serve in administration and leadership roles

Specific training requirements

These competencies cannot be fully trained and acquired during specialist training, but will rather be develop and matured through continuing professional development. Training programmes must, however, set the basic conditions to facilitate this process and verify that they have been acquired.

At the completion of training rheumatologists must demonstrate the following specific knowledge, skills and attitudes.

1. Participate effectively in activities that contribute to the effectiveness of their healthcare organizations and systems:
 - 1.1. Ability to work collaboratively with others in their organizations
 - 1.2. Understand the basis of and support quality process evaluation and improvement, such as development and implementation of guidelines and recommendations
 - 1.3. Describe the structure and function of the healthcare system as it relates to Rheumatology, including the roles of physicians
 - 1.4. Describe principles and discuss main problems of healthcare financing

2. Manage their practice and career effectively:
 - 2.1. Set priorities and manage time to balance patient care, practice requirements, outside activities and personal life
 - 2.2. Describe the principles of practice management, including finances and human resources
 - 2.3. Design and discuss processes to ensure service development as well as personal practice improvement
 - 2.4. Employ information technology appropriately for patient care
3. Understand and critically allocate finite healthcare resources appropriately in the interest of patients and the community
 - 3.1. Demonstrate appropriate consideration of cost-effectiveness principles in patient care
 - 3.2. Recognize the importance of just allocation of healthcare resources, balancing effectiveness, efficiency and access with optimal patient care
 - 3.2. Apply evidence and management processes for cost-appropriate care
4. Serve in administration and leadership roles, as appropriate:
 - 4.1. Participate effectively in committees and meetings
 - 4.2. Demonstrate appropriate leadership skills when appropriate, including the supervision of younger trainees
 - 4.3. Demonstrate a good operational understanding of planning and administration in health care delivery (e.g., work schedules, department reports and accounting, etc)

Teaching and Learning Methods

Methods and resources that can contribute to the acquisition of these competencies include, but are not limited to:

- Experiential learning in Departments that are examples of good practice in these domains
- Group case-based discussions
- Dedicated courses on principles of management

Assessment Methods

- Regular formative appraisal and feedback

- Portfolios
- 360° assessment
- Performance ratings with regard to each specific competency, following a predefined structured assessment known to all parties.

Additional information:

1. European Board of Rheumatology EDUCATIONAL GUIDE (<http://www.uems-rheumatology.net/>)
2. Nolan T. Understanding medical systems, Ann Intern Med 1998; 128: 293-298.
3. Macones GA, Goldie SJ, Peipert JF: Cost-effective analysis: an introductory guide for clinicians. Obstet Gynecol Surv 1999; 54:663-672.
4. Systems-based practice: to learn about and improve the system. ACGME Bulletin, November, 2004. www.acgme.org

HEALTH ADVOCATE

Definition

As *Health Advocates*, rheumatologists responsibly use their expertise and influence to advance the health and well-being of individual patients, communities and populations, especially in respect to musculo-skeletal and connective tissue conditions.

Description

Rheumatologists recognize and embrace their duty to promote the overall health of their patients and the society they serve. They recognize advocacy activities as important for the individual patient, for populations of patients and for communities. Individual patients need physicians to assist them in navigating the healthcare system and accessing the appropriate health resources in a timely manner. Communities and societies need Rheumatologists' special expertise in identifying health risks and solutions with respect to the musculoskeletal system as well as their contribution to wise and equitable allocation of health resources. At this level, health advocacy involves efforts to change specific practices or policies on behalf of those served. Health advocacy is appropriately expressed both by individual and collective actions of physicians in influencing public health and policy.

Elements

- Advocacy for individual patients, populations and communities
- Health promotion and disease prevention
- Determinants of health, including psychological, biological, social, cultural, legal and economic
- Individual and socioeconomic burden of the musculoskeletal diseases
- The medical profession's role in society
- Responsible use of authority and influence
- Mobilizing resources as needed
- Adapting practice, management and education to the needs of the individual
- Patient rights to efficient and safe care
- Principles of health policy and its implications

- Interactions of advocacy with other Roles and competencies described in this document
- Structure and functioning of the health and social security systems
- Allocation of resources in the health and social security systems

Key Competencies

Rheumatologists are able to...

1. Respond to individual patient health needs and issues as part of patient care;
2. Respond to the health needs of the communities that they serve;
3. Identify the determinants of health of the populations that they serve;
4. Promote the health of individual patients, communities and populations.

Specific training requirements

These competencies cannot be fully acquired during specialist training, but will rather be developed and matured through continuing professional development. Training programmes must, however, set the basic conditions to facilitate this process and verify that they have been acquired.

At the completion of training rheumatologists must be able to demonstrate the following specific knowledge, skills and attitudes.

1. Respond to individual patient health needs and issues as part of patient care:
 - 1.1. Identify the health needs of an individual patient
 - 1.2. Identify and use opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care
 - 1.3. Knowledge of the applicable regulations of health and social security systems
 - 1.4. Be prepared to provide expert testimony in medico-legal conflicts between patients and insurance companies or in malpractice suits.
2. Respond to the health needs of the communities that they serve:
 - 2.1. Describe the relevant social and health aspects of the communities that they serve

- 2.2. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately
- 2.3. Appreciate the possibility of competing interests between the communities served and other populations
3. Identify the determinants of health for the populations that they serve:
 - 3.1. Identify the determinants of health of the populations, including barriers to access to care and resources
 - 3.2. Identify vulnerable or marginalized populations within those served and opportunities to improve their condition
4. Promote the health of individual patients, communities, and populations:
 - 4.1. Describe and advocate an approach to implementing a change in a determinant of health of the populations they serve
 - 4.2. Describe how public policy impacts on the health of the populations served
 - 4.3. Identify points of potential personal influence in the healthcare system and its structure
 - 4.4. Demonstrate a balanced consideration of the ethical and professional issues inherent to health advocacy, including altruism, social justice, autonomy, integrity and idealism
 - 4.5. Appreciate the possibility of conflict inherent to their role as a health advocate for a patient or community with that of manager or gatekeeper
 - 4.6. Describe the role of the medical profession in advocating collectively for health and patient safety

Teaching and Learning Methods

Methods and resources that can contribute to the acquisition of these competencies include, but are not limited to:

- Experiential learning in Departments that are examples of good practice in these domains
- Group case-based discussions
- Dedicated courses on ethics and advocacy
- Actual advocacy assignments

- Work with patient associations and other groups involved in such activities

Assessment Methods

- Portfolios
- 360° assessment
- Written reports
- Case-based questioning

Additional information:

1. European Board of Rheumatology EDUCATIONAL GUIDE (<http://www.uems-rheumatology.net/>)

SCHOLAR

Definition

As Scholars, rheumatologists should demonstrate a lifelong pursuit of mastering their domain of expertise and engage in the creation, dissemination, application and translation of medical knowledge of their field.

Description

As physicians, through reflective practice, they recognize the need to be committed to continued learning and to model this for others. Through their scholarly activities, they contribute to the creation, dissemination, application and translation of medical knowledge. They recognize and assume their role as formal or informal teachers and educators(role-models). In accordance, they facilitate the education of their students, patients, colleagues, health professionals and community.

Elements

- Commitment to lifelong learning, to enhance competence and be accountable
- Reflection on all aspects of practice
- Self-assessment
- Accessing and critically appraising evidence, statements and recommendations
- Evidence-based medicine
- Principles of teaching and learning
- Role modelling
- Giving feedback
- Mentoring
- Assessing learners
- Teacher-student ethics, power issues, confidentiality, boundaries
- Principles of research / scientific inquiry
- Research ethics, disclosure, conflicts of interests, human subjects and industry relations

Key Competencies

Rheumatologists must be able to...

1. Demonstrate the competencies and attitudes needed to enhance the quality of their professional performance through ongoing learning and self assessment;
2. Apply the principles of evidence-based medicine in their practice;
3. Facilitate the learning of patients, families, students, trainees, relevant health professionals, the public, and others, as appropriate;
4. Contribute to the creation, dissemination, application, and translation of new medical knowledge and practices, especially in the field of rheumatology;
5. Exercise appropriate interaction with industry and other commercial interests, with due consideration of risks regarding conflicts of interest.

Specific training requirements

At the completion of training rheumatologists must demonstrate the following specific knowledge, skills and attitudes.

1. Demonstrate the competencies and attitudes needed to enhance the quality of their professional performance through ongoing learning and self assessment:
 - 1.1. Describe the principles and strategies for developing and implementing a personal plan for continuous professional development
 - 1.2. Identify knowledge gaps and learning needs
 - 1.3. Demonstrate methods and results of a personal practice audit
 - 1.4. Pose an appropriate learning question, access and interpret the relevant evidence
 - 1.5. Integrate new information into practice
 - 1.6. Describe the principles of quality management
2. Apply the principles of evidence-based medicine in their practice:
 - 2.1. Describe the principles of evidence based medicine
 - 2.2. Describe the principles and demonstrate experience in the identification, retrieval and critical appraisal of evidence (in the framework of evidence based medicine) in order to address a clinical question

- 2.3. Integrate critical appraisal conclusion into clinical care, especially with respect to risk-benefit ratio
3. Facilitate the learning of patients, families, students, trainees, relevant health professionals, the public and others, as appropriate:
 - 3.1. Describe the principles of teaching and learning relevant to medical education
 - 3.2. Collaboratively identify the learning needs and desired learning outcomes of others
 - 3.3. Select effective teaching approaches and content to facilitate the learning of others
 - 3.4. Demonstrate the ability to effectively communicate and teach matters of rheumatology to other professionals and the public
 - 3.5. Provide effective feedback
 - 3.6. Describe the principles of ethics with respect to teaching
4. Contribute to the development, dissemination, and translation of new knowledge and practices, especially in the field of rheumatology:
 - 4.1. Describe the principles of research and scientific inquiry
 - 4.2. Describe the principles of research ethics
 - 4.3. Elaborate a relevant and appropriate research question
 - 4.4. Conduct a systematic search for existing evidence
 - 4.5. Demonstrate a critical insight regarding appropriate research methods to address the question
 - 4.6. Demonstrate knowledge on how to disseminate the findings of a study

Teaching and Learning Methods

Methods and resources that can contribute to the acquisition of these competencies include, but are not limited to:

- Self-directed learning
 - Independent reading - recommended textbooks, journal articles and internet based research and study
- Dedicated courses
 - Evidence based medicine,
 - Research methodology,

- Audit,
- 'Teach the Teachers' courses,
- Other courses
- Relevant experience in a supervised, mentored setting
 - Faculty-facilitated group discussions and tutorials
 - Faculty role modelling
 - Interactive case-based discussions
 - Participation in individual or group audit and other quality improvement projects
 - Systematic chart review of their own patients
 - Preparation and presentation of patient care portfolios
 - Research projects
 - Teaching
 - Preparation and presentation of EBM reviews
 - Presentations to peers and lay audiences

Assessment Methods

Possible evaluation methods for these competencies include,

- Regular formative appraisal and feedback
- Portfolios
- 360° assessment
- Performance ratings with regard to each specific competency, following a predefined structured assessment known to all parties.

Additional information:

1. European Board of Rheumatology EDUCATIONAL GUIDE (<http://www.uems-rheumatology.net/>)

PROFESSIONAL

Definition

As professionals, rheumatologists are committed to the health and well being of individuals and society through ethical practice, profession-led regulation and high personal standards of behaviour.

Description

Rheumatologists, like all physicians, have a unique role as professionals who are dedicated to the health and caring of others. Their work requires the mastery of a complex body of knowledge and skill, as well as the art of medicine. As such, the Professional role is guided by codes of ethics, and a commitment to clinical competence, the embracing of appropriate attitudes and behaviours, integrity, altruism, personal well being, and to the promotion of the public good within their domain. These commitments form the basis of a social contract between the physician and society. Society in return, grants physicians the privilege of profession-led regulation with the understanding that they are accountable to those served.

Elements

- Altruism and empathy
- Integrity and honesty
- Compassion and caring
- Morality and codes of behaviour
- Responsibility to society
- Responsibility to the profession, including obligations of peer review
- Responsibility to self, including personal care in order to serve others
- Commitment to excellence in clinical practice and mastery of the discipline
- Commitment to the promotion of the public good in health care
- Accountability to professional regulatory authorities
- Commitment to professional standards
- Bioethical principles and theories
- Medico-legal frameworks governing practice

- Self-awareness
- Sustainable practice and physician health
- Self-assessment
- Disclosure of error or adverse events

Key Competencies

As Professionals, rheumatologists must ...

1. Demonstrate a commitment to their patients, profession, and society through ethical practice;
2. Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation;
3. Demonstrate a commitment to physician health and sustainable practice.

Specific training requirements

These competencies will develop and mature through continuing professional development. Training programmes must, however, establish the appropriate standards and reinforce the attitudes that will lead to lifelong commitment to the principles.

At the completion of training rheumatologists must be able to

1. Demonstrate a commitment to their patients, profession, and society through ethical practice:
 - 1.1. Exhibit appropriate professional behaviours in practice, including honesty, integrity, commitment, compassion, respect and altruism
 - 1.2. Demonstrate a commitment to delivering the highest quality care and maintenance of competence
 - 1.3. Demonstrate responsiveness to the needs and interests of patients that supersedes self-interest.
 - 1.4. Demonstrate the ability to provide autonomy to their patients to decide upon treatment once all treatment options and risks have been outlined for them.
 - 1.5. Provide and obtain key elements of informed consent in an understandable manner for therapeutic interventions and clinical research endeavours.
 - 1.6. Recognize and appropriately respond to ethical issues encountered in practice and always be aware of conflicts of interest.

- 1.7. Appropriately manage conflict of interest, with special focus on relationships with the pharmaceutical industry
- 1.8. Recognize the principles and limits of patients confidentiality as defined by professional practice standards and the law
- 1.9. Maintain appropriate relations with the patients
2. Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation:
 - 2.1. Appreciate the professional, legal and ethical codes of practice
 - 2.2. Fulfil the regulatory and legal obligations required of current practice
 - 2.3. Demonstrate accountability to professional regulatory bodies
 - 2.4. Recognize and respond to other's unprofessional behaviours in practice
 - 2.5. Participate in peer review and audit
3. Demonstrate a commitment to physician health and sustainable practice:
 - 3.1 Balance personal and professional priorities to ensure personal health and sustainable practice
 - 3.2 Strive to heighten personal and professional awareness and insight
 - 3.3 Recognize other professionals in need and respond appropriately

Teaching and Learning Methods

- Experiential learning in Departments that are examples of good practice in these domains is the most efficient way of promoting these competencies
- Faculty role modelling and mentorship.
- Regular formative appraisal and feedback
- Participation in professional activities. Trainees should be given the opportunity to participate in community service, professional organizations, and institutional committee activities.
- Didactic teaching - conferences, lectures, or discussions devoted to topics of professionalism.
- Faculty-facilitated group discussions. Case vignettes or journal club discussions of issues of professionalism that provide the opportunity for frank discussions between faculty and trainees about these issues.

- Independent reading. Reading assignments of peer reviewed publications and specialty organization publications on professionalism.

Assessment Methods

- Faculty performance rating - with regard to demonstration of professional behaviour
- 360 evaluations – regarding professional attitudes and behavior. Trainees may also fill out self-evaluations in the sphere of professionalism.
- Portfolio review – including reflective entries on issues of professionalism such as difficult patient and peer encounters, conflicts of interest, and barriers to providing equitable care.
- Patient survey - with components that specifically address trainee's professionalism.

Additional information:

1. Rothman DJ, Medical professionalism - focusing on the real issues, N Engl J Med 2000;342:1284-6.
2. Klein EJ, Jackson JC, Kratz L, Marcuse EK, McPhillips HA, Shugerman RP, Watkins S, Stapleton FB, Teaching professionalism to residents, Acad Med. 2003 Jan;78(1):26-34.
3. Hatem CJ. Teaching approaches that reflect and promote professionalism. Acad Med. 2003 Jul;78(7):709-13.
4. ABIM Medical Professionalism in the new millenium: A physician charter. Ann Internal Med 2002; 136□243□6.
4. Blank, L., Medical Professionalism in the new millennium; A physician charter 15 months later. Ann Internal Medicine 2003; 138;839□841.
5. Steinert Y, Cruess S, Cruess R, Snell L, Faculty development for teaching and evaluating professionalism: from programme design to curriculum change, Med Educ. 2005 Feb;39(2):127-36.
6. McCormick BB, Tomlinson G, Brill-Edwards P, Detsky AS, Related Articles, Effect of restricting contact between pharmaceutical company representatives and internal medicine residents on post-training attitudes and behavior, JAMA. 2001 Oct 24-31;286(16):1994-9.
7. Kuczewski, M., Fostering Professionalism: The Loyola Model. Cambridge Quarterly of Healthcare Ethics, 2003; 12: 161□166.

8. Branch, W., Feedback and Reflection: Teaching Methods for Clinical Settings. *Academic Medicine* 2002; 77: 1185-1188.
9. Siegler, M., Training Doctors for Professionalism: Lessons Learned from Teaching Clinical Medical Ethics. *Mount Sinai Journal of Medicine*, 2002; 69: 404-409.
10. "Advancing Education in Professionalism." An educational resource developed by the ACGME to aid program directors http://www.acgme.org/outcome/implement/Profm_resource.pdf
11. The ACGME also has a comprehensive list of professionalism references available at <http://www.acgme.org/outcome/comp/refProf1.asp>
12. The ACGME provides several assessment tools for the evaluation of professionalism: <http://www.acgme.org/outcome/assess/profIndex.asp>
13. NBME Embedding Professionalism in Medical Education: Assessment as a tool for Implementation 2002 http://www.nbme.org/PDF/NBME_AAMC_ProfessReport.pdf
14. NBME Behaviors of Professionalism <http://ci.nbme.org/professionalism/>
15. The American Medical Association Ethics Publication "Virtual Mentor" found at www.virtualmentor.org.
16. American Medical Association. "Embedding Professionalism in Medical Education: Assessment as a tool for implementation." http://www.nbme.org/PDF/NBME_AAMC_ProfessReport.pdf

EUROPEAN RHEUMATOLOGY CURRICULUM FRAMEWORK

List of conditions

- 1. Rheumatoid Arthritis**
- 2. Seronegative spondyloarthropathies** - ankylosing spondylitis, reactive arthritis, psoriatic arthritis, inflammatory bowel disease-associated arthritis, arthritis associated with acne and other skin diseases, SAPHO syndrome, and undifferentiated spondyloarthritis
- 3. Lupus erythematosus and Antiphospholipid syndrome**- systemic, discoid, and drug-related SLE; Primary and secondary antiphospholipid antibody syndrome
- 4. Scleroderma** - diffuse and limited systemic sclerosis, localized syndromes, chemical/drug-related, sclerodermiform syndromes
- 5. Other systemic connective tissue diseases** - eosinophilic fasciitis, eosinophilia-myalgia syndrome, Sjögren's syndrome, polymyositis and dermatomyositis, relapsing polychondritis, relapsing panniculitis, erythema nodosum, adult-onset Still's disease, overlap syndromes including mixed connective tissue disease, undifferentiated connective tissue disease
- 6. Vasculitis and related diseases:** polyarteritis nodosa, Wegener's granulomatosis and other ANCA-associated diseases like microscopic polyarteritis and allergic granulomatosis of Churg-Strauss, temporal arteritis/polymyalgia rheumatica, Takayasu's arteritis, systemic necrotizing vasculitis overlaps, Behcet's disease, hypersensitivity and small vessel vasculitis, cryoglobulinemia, Cogan's syndrome, central nervous system vasculitis, pseudovasculitis, endangitis obliterans (Buerger's disease), periaortitis (Ormond's syndrome), Sweet's syndrome.
- 7. Infectious and reactive arthritis**
 - Infectious/septic arthritis: bacterial (non-gonococcal and gonococcal), mycobacterial, spirochetal (syphilis, Lyme), viral (HIV, hepatitis B, parvovirus, other), fungal, parasitic
 - Whipple's disease
 - Reactive arthritis: acute rheumatic fever, arthritis associated with subacute bacterial endocarditis, intestinal bypass arthritis, post-dysenteric arthritis, post-immunization arthritis, other colitic-associated arthropathies

8. Disorders of the locomotor system associated with primarily metabolic, endocrine or haematological diseases

Crystal-associated diseases: monosodium urate monohydrate (gout), calcium pyrophosphate dihydrate deposition disease, basic calcium phosphate (hydroxyapatite), calcium oxalate

Endocrine-associated diseases: rheumatic syndromes associated with diabetes mellitus, acromegaly, hyperparathyroidism, hypoparathyroidism, hyperthyroidism, hypothyroidism, Cushing's disease

Haematological-associated diseases: rheumatic syndromes associated with haemophilia, haemoglobinopathies, angio-immunoblastic lymphadenopathy, multiple myeloma, Hodgkin- and non-Hodgkin lymphoma, primary and drug-induced myelodysplastic and myeloproliferative syndromes.

9. Bone and cartilage disorders

Osteoarthritis: primary and secondary osteoarthritis, chondromalacia patellae

Metabolic bone disease: osteoporosis, osteomalacia, bone disease related to renal disease

Paget's disease of bone

Avascular necrosis of bone: idiopathic, secondary causes, osteochondritis dissecans

Others: transient osteoporosis, hypertrophic osteoarthropathy, diffuse idiopathic skeletal hyperostosis, insufficiency fractures

10. Hereditary, congenital, and inborn errors of metabolism associated with rheumatic syndromes

Disorders of connective tissue: Marfan's syndrome, osteogenesis imperfecta, Ehlers-Danlos syndromes, pseudo-xanthoma elasticum, hypermobility syndrome, others

Mucopolysaccharidoses

Osteochondrodysplasias: multiple epiphyseal dysplasia, spondylepiphyseal dysplasia

Inborn errors of metabolism affecting connective tissue: homocystinuria, ochronosis

Storage disorders: Gaucher's disease, Fabry's disease, Farber's lipogranulomatosis

Immunodeficiency: Acquired and hereditary neutropenia, IgA deficiency, Common variable immunodeficiency (CVID) and other forms of hypogammaglobulinemia (e.g. Bruton's disease, Hyper-IgM syndromes), primary T cell defects (e.g. SCID, ADA and PNP deficiency), secondary T cell deficiencies (e.g. HIV, low CD4 syndrome, drug induced),

Autoinflammatory syndromes including familial Mediterranean fever, Muckle-Wells Syndrome, tumor necrosis factor receptor-associated periodic syndromes (TRAPS).

Others: haemochromatosis, hyperlipidemic arthropathy, myositis ossificans progressiva, Wilson's disease, others

11. Non-articular and regional musculoskeletal disorders

Fibromyalgia

Myofascial pain syndromes

Axial syndromes: low back pain, spinal stenosis, intervertebral disc disease and radiculopathies, cervical pain syndromes, coccydynia, osteitis condensans ilii, osteitis pubis, spondylolisthesis/ spondylolysis, infectious and aseptic diskitis

Regional musculoskeletal disorders: in addition to bursitis, tendonitis, or enthesitis occurring around each joint, the trainee should be familiar with other disorders occurring at each specific joint site (e.g., shoulder-rotator cuff tear, adhesive capsulitis, impingement syndrome; wrist ganglions; trigger fingers and Dupuytren's contractures; knee synovial plicae, internal derangements, cysts; hallux rigidus, heel pain, and metatarsalgia; TMJ syndromes; costochondritis.

Biomechanical/anatomic abnormalities associated with regional pain syndromes: scoliosis and kyphosis, leg length discrepancy, foot deformities

Overuse rheumatic syndromes: occupational, sports, recreational, performing artists

Sports medicine: injuries, strains, sprains, nutrition, female athlete, medication issues

Entrapment neuropathies: thoracic outlet syndrome, upper extremity entrapments, lower extremity entrapments

Other: reflex sympathetic dystrophy, erythromelalgia

12. Neoplasms and tumor-like lesions

Benign:

- i. Joints: loose bodies, fatty and vascular lesions, synovial osteochondromatosis, pigmented villonodular synovitis, ganglions
- ii. Tendon sheaths: fibroma, giant cell tumor, nodular tenosynovitis
- iii. Bone: osteoid osteoma, others

Malignant:

- iv. Primary: synovial sarcoma, others

- v. Secondary: leukaemia, myeloma, metastatic malignant tumours
- vi. Malignancy-associated rheumatic syndromes: carcinomatous polyarthritis, palmo-plantar fasciitis

13. Muscle diseases

Inflammatory - polymyositis, dermatomyositis, inclusion body myositis

Metabolic:

- i. Primary: glycogen storage diseases, lipid metabolic disorders, myoadenylate deaminase deficiency, mitochondrial myopathies
- ii. Secondary: nutritional, toxic, endocrine disorders, electrolyte disorders, drug-induced

Muscular dystrophies

Myasthenia gravis

14. Miscellaneous rheumatic disorders

Amyloidosis: primary, secondary, hereditary

Raynaud's disease

Charcot joint

Remitting seronegative symmetrical synovitis with pitting edema

Multicentric reticulohistiocytosis

Plant thorn synovitis

Intermittent arthritis: palindromic rheumatism, intermittent hydrarthrosis

Arthritic and rheumatic syndromes associated with: sarcoidosis, scurvy, pancreatic disease, chronic active hepatitis, primary biliary cirrhosis, drugs, vaccinations and environmental agents

Rheumatic disease in the geriatric population

Rheumatic disease in the pregnant patient

Rheumatic syndromes in renal insufficiency and dialysis patients

Uveitis and scleritis

15. Paediatric musculoskeletal conditions (Ability to diagnose the following musculoskeletal conditions that occur primarily in children, and know how they differ from the same, or similar, disease in adults. Know the treatment of these conditions)

Systemic juvenile rheumatoid arthritis (Still's Disease)

Pauciarticular juvenile rheumatoid arthritis

Polyarticular juvenile rheumatoid arthritis
Juvenile spondyloarthropathy
Systemic lupus erythematosus
Scleroderma syndromes
Juvenile dermatomyositis
Kawasaki Disease
Henoch-Shönlein Purpura
Acute rheumatic fever
Neonatal lupus syndrome

16. Recognize non-rheumatic disorders in children that can mimic musculoskeletal conditions:

Infectious or post-infectious syndromes

- i. Septic arthritis and osteomyelitis
- ii. Transient synovitis of the hip
- iii. Post-infectious arthritis and arthralgia
- iv. Post-viral myositis

Orthopaedic conditions

- i. Legg-Calve-Perthes Disease and other avascular necrosis syndromes
- ii. Slipped capital femoral epiphysis
- iii. Spondylolysis and spondylolisthesis
- iv. Patello-femoral syndrome

Non-rheumatic pain

- i. Benign limb pains of childhood ("growing pains")
- ii. Benign hypermobility syndrome
- iii. Pain amplification syndromes including reflex sympathetic dystrophy

Neoplasms

- i. Leukaemia
- ii. Lymphoma
- iii. Primary bone tumours (especially osteosarcoma and Ewing's sarcoma)
- iv. Tumours metastatic to bone (especially neuroblastoma)

Bone and cartilage dysplasias, and inherited disorders of metabolism

17. Know the major sequelae and complications of paediatric musculoskeletal conditions and their implications in adult life:Systemic onset JRA

- i. Macrophage activation syndrome
- ii. Cardiac tamponade

Pauciarticular JRA

- iii. Chronic uveitis

Juvenile dermatomyositis

- i. GI vasculitis
- ii. Calcinosis

Kawasaki Disease

- i. Aneurysms of coronary and other arteries

Henoch-Schonlein Purpura

- i. GI- intussusception, intestinal infarction
- ii. Renal - chronic nephritis

Neonatal lupus syndrome

- i. Congenital heart block
- ii. Thrombocytopenia

End