Residency Program
Doctor of Medicine (MD)
Curriculum (Phase-B)

Rheumatology

Bangabandhu Sheikh Mujib Medical University
Dhaka, Bangladesh
1. Introduction:
Rheumatology incorporates the clinical evaluation, investigation, diagnosis, management, and rehabilitation of patients with disorders of the musculoskeletal system. The rheumatological disorders thus include diverse conditions such as inflammatory arthritis, autoimmune rheumatologic disorders, soft tissue conditions including injuries, osteoarthritis, spinal pain, and other chronic pain syndromes and metabolic bone disease. Rheumatology requires interdisciplinary knowledge and awareness of new developments in Internal Medicine, Immunology, Orthopedics, Neurology/pain management, rehabilitation, Psychiatry, nursing, and professions allied to medicine. Rheumatologists practicing adult medicine must understand the sequelae of childhood and adolescent rheumatological disease. This curriculum will act for setting criteria against which the trainees will estimate their achievements in a criterion-referenced manner.

2. Background of MD Rheumatology Course in BSMMU:
Bangabandhu Sheikh Mujib Medical University, Shahbagh (BSMMU) was established in 1998 and is an autonomous, non-profit institution which is not a part of or affiliated with any other organization. The mission of BSMMU is to ensure quality health care to the people by improving the educational process continuously and maintaining high standards for certifying internists and sub-specialists who acquire the knowledge, skill, and attitudes essentials for the provision of quality care.
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The university's core values are assuring people of the highest quality patient care, professionalism and excellence in the practice of medicine, evidence - based medicine and intellectual drive, following standard evaluation procedures, high quality standard setting and maintaining autonomy to preserve these values.
The Can Meds framework encompasses seven role of an ideal physician (see in detail in section 11, page 20) considered as a vision for the present day rheumatologist.

3. Rationale:
3.1 The purpose of the curriculum is to define the training for specialist in Rheumatology and describes the competencies required to achieve the award of specialist certification with MD( Rheumatology) degree
3.2 The specialist will be able to work as consultant Rheumatologist and will have the knowledge, skills and behaviors and will be capable of providing a high standard of professional service

4. Procedure of Developing the MD Rheumatology Curriculum:
The contents of this document were consensually adopted through discussions and consultations with the Faculty of Medicine of BSMMU, subject specialists and members of Rheumatology Society of Bangladesh. Different curricula of Rheumatology from various countries of the world have been reviewed to ensure the quality and the standard. A group of medical educationists provided technical assistance throughout the process.

Residency Program Rheumatology
5. Aims and Objectives of the Course:
5.1. National Goal:
To develop foresighted, beneficial human resources who will acquire the ability to provide the excellent comprehensive health care services to the country with a humanistic attitude.

5.2. Aim of the course:
The aim of the MD Rheumatology education program is to develop rheumatologists who will provide highest standard of rheumatologic medical care to the patients with musculoskeletal conditions, conduct research and training in the field of rheumatology.

5.3. Objectives of the course
The objective of the education program is to train physicians to achieve competencies in -

- Establishing differential diagnosis for patients presenting with clinical features of musculoskeletal conditions by appropriate use of history, clinical examination and investigation
- Performing the core investigations required for practicing Rheumatology and making cost-effective investigation and referral plan for reaching the diagnosis
- providing the highest quality of rheumatologic medical care at the end of the course
- conducting research in the field of rheumatology to explore and establish the evidence
- working in a variety of ways, including as expert consultant, clinician, teacher, and, with additional training, as clinical or basic science investigator
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- maintaining a habit of continuing post-certification professional development to further enhance and update their knowledge and skills.

Developing cost-effective management plans for the "whole patients" on the background of sound knowledge of the appropriate treatments including health promotion, disease prevention and long term management plans.

Communicating the diagnosis and management options to the patient and other members of the multidisciplinary team.

Application of acquired body of knowledge and skills in the diagnosis and management to ensure safe independent practice working in a team with leadership attributes.

Application of knowledge of the appropriate basic science relevant of rheumatology.

- using the curriculum as a source of reference and benchmarking for appreciation of their own training standards and as a source of inspiration to promote positive change where appropriate.

6. 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 social outcome. The competencies that developed through the MD Rheumatology course are described under the headings of knowledge, skills and attitude.

6.1. Knowledge

- Core medical knowledge should include an appropriate content of anatomy, genetics, biochemistry, immunology, physiology, pharmacology, epidemiology, statistics, ethics and human behavior as needed for the clinical practice of Rheumatology.

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- In-depth knowledge of musculoskeletal problems and conditions.

- Knowledge of Rheumatological history-taking, examination, relevant investigations and interpretations.

- Knowledge of therapeutic intervention including details of drug use which includes rational and evidence based use of such interventions, drug interactions, adverse effects etc.

6.2. Skills:

6.2.1. Clinical skills: The rheumatologists acquire the following clinical & data gathering skills

- Skill of interviewing the patient

- Physical examination with emphasis on joints and musculoskeletal structure

- Formulating diagnosis (provisional/differential diagnosis)

- Making a cost-effective plan of laboratory and imaging studies

- Outline of therapeutic management and patient education

- Risk-benefit and pharmaco-economic considerations

- Outcome measurement: The trainee should master the use of generic (e.g., numerical rating scales, HAQ, SF 36, WHO QoL etc) and disease specific tools (e.g., DAS 28, BASDAI, BASFI, BASMI, WOMAC, SLEDAI, TSS, etc.) for measurement of outcome of therapeutic interventions

6.2.2. Procedural Skills which include:

- Diagnostic and therapeutic procedures common to the practice of Rheumatology, including arthrocentesis, joint and intra articular injection
6.2.5. Research skill
A period of supervised research of good quality is considered an essential part of MD Rheumatology course. The relevant research period should be of one-year duration. The trainee will be competent in dealing with the principles of research ethics and contribute to the process by which ethical research in human subjects is ensured.

6.2.6. Team Player
As a team player physicians should effectively work within a health and social care team to achieve optimal patient care. Rheumatologists work in partnership with others who are appropriately involved in the care of individuals or specific groups of patients.

6.3. Attitude
Attitude that the Rheumatologists should develop will represent humanism, medical ethics and professionalism. The trainee develops willingness to involve in the full range of difficulties that patients bring to them and not just their biomedical problems. Also, willingness to spend time, intellectual and emotional energy in working with patients is essential for the rheumatologists.

6.3.1. Humanism should signify a set of defined knowledge, skills, and attitudes that brings about an admirable clinical process and desired health outcomes. Within the broad topic of humanism reside several core topics some of which will be dealt in this curriculum like medical interview, behavior medicine and medical ethics. These competencies are essential to deal with patients and colleagues to meet the needs associated with medical problems and lifestyle issues that contribute to health and disease.
Competencies for humanistic practice essential for the rheumatologist:

- To create and sustain doctor-patient relationships that maximizes the likelihood of the best outcome for the patients and the greatest personal satisfaction for the physician. The trainee should develop willingness to answer all questions posed by the patients and their attendants.
- To be able to identify types of patient-physician relationships, factors promoting their relationships, and one’s own relating style, preferences, and limitations.
- To deal with dying patients, demonstrate knowledge and skill in obtaining and interpreting advance directives for care at the end of life, and in providing comfort care, including managing the patient’s pain and anxiety and the family’s grief.
- To recognize and appropriately manage so-called “difficult patients”, including their personality disorders and problematic behavioral patterns.
- To recognize one’s own personal reactions to difficult situations; use these reactions to generate explanatory hypotheses and to understand potential barriers to communication.
- To comprehend the concept of health belief model; know how to elicit it and how to work constructively in patient-centered way with persons from different cultural groups.

6.3.2. Professionalism should be developed by the rheumatologist as it comprises excellence in medical practice and research, giving foremost importance to patients and responsive to health needs of the society. Professionalism in Medicine requires the physician to place the interest of the patient above the physician’s self-interest. Professionalism aspires to self-sacrifice, accountability, excellence, duty, service, honor, integrity, and respect for others. The trainee should develop further development of qualities of professionalism and humanistic skills, including integrity, compassion and respect for patients, peer and paramedical personnel. Professionalism is a core set of values, attitudes and behaviors that motivate physicians to make the interests of patients and society their first priority. The elements of professionalism, which have been identified by the American Board of Internal Medicine, from which this list is drawn, encompass:

1) A commitment to the highest standards of excellence in the practice of Medicine and in generating and disseminating knowledge
2) A commitment to seek, to know the interests of individual patients and to protect their interests
3) A commitment to be responsive to the health needs of society. These elements require rheumatologists to acquire the competencies that are listed below.

Competencies for professionalism:
- Demonstrate a personal sense of altruism by consistently acting in one’s patients’ best interest.
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- Maintain accountability to the patient, to society, and to the profession by fulfilling all agreements, both written and implied.
- Show a commitment to standards for lifelong excellence by continuously adding to one's knowledge of Medicine and by drawing the distinction between knowledge that is based on high-quality evidence and knowledge from anecdotes and personal experience.
- Demonstrate a sustained commitment to service by accepting inconvenience to meet patients' needs, advocating for the best possible care for every patient, seeking active roles in professional organizations and volunteering one's skills and expertise to advance the welfare of patients and the community.
- Demonstrate honesty and integrity through one's behaviors by recognizing and avoiding conflicts of interest and relationships by refusing to allow personal gain to supersede the best interest of patients.
- Behave with high regard and respect for colleagues, other members of the health care team and patients and their families.
- Demonstrate compassion and respect towards patients, families, staff, and colleagues using both a written and verbal format.

6.3.3. Ethics is an integral component of good doctor patient relationship. Ethics is the systematic application of values. Medical ethics focuses on the prevention, recognition, clarification and resolution of ethical issues and conflicts that arise in the care of particular patients, and on the prevention and resolution of conflicts associated with ethical issues. Topics in medical ethics include professional responsibility, informed consent, determination of decision-making capacity, truth telling, confidentiality, and the physician's role in cost containment.

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Rheumatologists must be able to recognize ethical issues in clinical practice and identify hidden values and unacknowledged conflicts. They must understand how common religious, cultural, and ethical beliefs affect patient preferences. They also should demonstrate specific cognitive and behavior skills, including basic knowledge of ethical and legal concepts; critical thinking about ethical issues; the capacity to justify a course of action; and the capacity to implement ethical decisions. Although the rheumatologist can handle most ethical issues, they should know when and how to seek the advice of an ethics consultant or committee.

6.4. The CanMeds Framework:

Encompasses the complex & ever-evolving roles of the physician are expected to play in present day medicine. It describes seven roles of ideal physician:

- Medical expert
- Communicator
- Collaborator
- Manager
- Scholar
- Professional
- Health Advocate

6.4.1. Medical expert

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, educational and legal opinions.
6.4.2 Communicator
- Establish therapeutic relationships with patients/families.
- Obtain and synthesize relevant history from patients/families/communities.
- Listen effectively
- Discuss appropriate information with patients/families and the health care team.

6.4.3 Collaborator
- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

6.4.4 Manager
- Utilize resources effectively to balance patient care, learning needs and outside activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

6.4.5 Scholar
- Develop, implement and monitor a personal continuing education strategy.
- Critically appraise sources of medical information.
- Facilitates learning of patients, house staff/students and other health professionals.
- Contribute to development of new knowledge.

6.4.6 Professional
- Deliver highest quality care with integrity, honesty and compassion.
- Exhibit appropriate personal and interpersonal professional behaviors.
- Practice medicine ethically consistent with obligation of a physician.

6.4.7 Health advocate
- Identify the important determinants of health affecting patients.
- Contribute effectively to improved health of patients and communities.
- Recognize and respond to those issues where advocate is appropriate.

7. Admission Requirements for Phase-B Training:
A. Residents who have successfully passed Phase A Final Examination in Medicine and Allied are eligible for enrolment in the Phase B Program.
B. Candidates with FCPS / MD in Internal Medicine can be enrolled directly into Phase-B program.

8. MD (Rheumatology) Phase-B Program Outline:
8.1 Three-year training in Rheumatology
The program is described in this section under four headings:
General structure of the Phase B residency, the role of the resident, Documentation, monitoring and formative assessment.

8.1.1 General structure of the Phase B residency: The first year is the academic part of the program dedicated to
acquisition of basic knowledge in Rheumatology. The second and third years are dedicated to experiential learning. This phase is divided in six 6-month blocks.

**1st block (1-6 months):** The residents are required to attain following learning packages during the first block:

1. Induction package: Upon entry into the Phase B, the residents are given a 5-day induction package covering basic approach to rheumatic patients, common procedures in the rheumatology ward, identification and management of medical emergencies encountered in the rheumatology ward. On the sixth day of the week, acquisition of appropriate knowledge on these issues is assessed.

2. Primer package: It comprises:
   - Definition, classification and cardinal features of rheumatic disorders
   - Rheumatological history taking and examination
   - Approach to joint pain
   - Core of treatment of common rheumatic conditions

3. Immunology and pathogenesis of rheumatic disorders

4. Bio-statistics, research methodology and medical education

5. Development of research questions and thesis protocol

**2nd block (7-12 months):** During the 2nd block, the residents acquire knowledge on following areas:

1. Pharmacokinetics and pharmacodynamics of drugs used in rheumatology practice

2. Regional musculoskeletal pain syndromes

3. Learning joint injections

4. Disease activity and outcome measures in rheumatology practice

5. Therapeutic exercises for rheumatic disorders

**3rd blocks (first 6 months of the second year):** During this block, the residents will acquire following competencies:

1. Diagnostic competencies: broadening the horizon of diagnostic hypothesis formulation, problem identification, problem solving and making evaluation plan. Type of learning will be case-based and problem based.


3. The residents will regularly inject joints as and when necessary, assess disease activity of various conditions, educate the patients, including therapeutic exercises and necessary lifestyle changes.

4. The residents carry out a near-complete study of rheumatology text.

5. The residents start collection of research data.

**4th block (last half of the second year):** This block is dedicated to experiential and reflective learning. Residents sharpen their acumen in differentiating among different similar appearing rheumatic disorders, in designing quality care plan, in assessing response to treatment including identification of adverse drug reactions, changes in quality of life and in titrating the treatment. They acquire competency for managing unexpected outcomes of treatment. They also acquire knowledge on areas overlap with other specialties, e.g.,

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It is expected that during this block, their research protocols get finally approved by the Institutional Review Board of the University and the preparation necessary for starting patient enrolment and data collection is completed.
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nephrology, neurology, cardiology, etc. The residents are expected to enhance their soft competencies, e.g., professionalism, communication, management, advocacy etc. Residents find out the blanks in the study of rheumatology text and fill them up. The residents also complete research data collection during this period.

5th block (1st half of the third year): This block is utilized for outsourcing. The residents are placed in the departments of Physical Medicine, Orthopedics, Psychiatry, Critical Care and Dermatology, for short visits. They dedicate this block to reflective case study, continued professional development (CPD) and putting CPD info into practice. They also analyze data collected during the second year and prepare the draft of their thesis.

6th block (last half of the 3rd year): dedicated to rounding up the gained competencies, revisions, self-assessment and intensive reflective learning and summative assessment. The residents also submit, defend and improvise their theses.

8.1.2 Round the placement time (1st year to 3rd year): From the very placement of the residents they are engaged with studying rheumatology text book, preparing portfolio and maintaining it, log book collection and maintaining it, starting literature review with keeping intention to gain information for thesis topic and subsequently maintaining update knowledge both for write-up and rheumatology related recent development, active participation in combined imaging evaluation meeting between dept. of rheumatology and radiology and imaging of BSMMU, active participation in the combined grand round of the university, participation in all CPD and other academic activities of the dept. Where relevant they maintain record of their participation in log book.

8.1.3 The responsibilities of the resident: Followings are expected from the residents during their placement;

- The residents learn through hands-on training on inpatient, outpatient and in the community and through acquisition of knowledge attending lectures, tutorials, literature study etc.
- From the very beginning, they are given responsibilities of inpatients.
- During the 1st and 2nd blocks, they look after inpatients directly along with phase A residents and other categories of trainees.
- During the 3rd block, they look after their own inpatients; along with they are attached with phase A residents and other categories of trainees for higher level (rheumatology specific) of assessment. Other than their assigned job they play role as midlevel supervisor over other placed trainee.
- During 4th and 5th blocks they assume upper level supervisory role, collectively looking after patients of several junior trainees. During this time, they also conduct group teaching in the form of tutorials and group discussions.
- During entire 1st to 5th blocks, the residents are placed in the outpatient clinic, by rotation with different faculties in the general rheumatology clinics and special disease-specific clinics. They are taken to a nearby community from time to time for community based learning.
- The residents carry out longitudinal follow up of chronic rheumatic patients. They follow up 100 patients for at least four months, including 40 for at least 12 and 15 for a minimum of 18 months. The disease categories include at
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least 20 patients of rheumatoid arthritis, 10 of different spondyloarthropathies, 10 SLE, 5 other connective tissue diseases, 5 vasculitides and 5 osteoarthritis. The four-month follow up should comprise at least three visits.

8.1.4 Monitoring & Feedback: During entire phase B, evidences of learning are documented, monitored, assessed with provisions of corrective feedbacks. Documentation takes place through logbook and portfolio. The logbook is a record of learning experiences that have taken place. A portfolio contains more detailed description of the experiences. Following evidences of learning are collected one in each block: best case record, best referral note, best discharge summary, one presentation, one assignment. One of the following evidences during whole phase need be included in the portfolio: best procedure log, best referral report, research protocol, written/audio record of a communication, a case report, emergency management report, a contribution to the department/university or society, a memory device containing record of longitudinal follow up of 100 chronic rheumatic patients.

9. Contents of Learning:
Competencies are defined as the ability to use knowledge, skills and appropriate attitudes and personal qualities to solve clinical problems in professional, ethical and proficient way for optimal patient and societal outcome
This section lists the contents of the syllabus including general rheumatology, clinical immunology, metabolic bone diseases and related disorders.

Each stage of learning in the curriculum has defined the competences to be attained by the trainee within the domains of knowledge, skills and attitude/behaviors.

9.1 General learning objectives

<table>
<thead>
<tr>
<th>Educational Domain</th>
<th>Learning objectives</th>
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</thead>
<tbody>
<tr>
<td>a. Clinical skills</td>
<td>1. Elicit the history and obtain other relevant data</td>
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<tr>
<td></td>
<td>2. Conduct an appropriate physical examination</td>
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<td></td>
<td>3. Synthesize findings from history and physical examination to develop a different diagnosis and management plan</td>
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<td></td>
<td>4. Plan and arrange investigations appropriate</td>
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<tr>
<td>b. Patient care and therapeutics</td>
<td>1. Manage general care in the unwell patient</td>
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<td></td>
<td>2. Prescribe appropriate and safe pharmacotherapy</td>
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<td></td>
<td>3. Incorporate health and wellness promotion in clinical practice</td>
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<td></td>
<td>1. Manage patients with surgical problems</td>
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<td></td>
<td>2. Facilitate ongoing care planning</td>
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<td>c. Procedural skills</td>
<td>1. Prepare patient for procedure</td>
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<td></td>
<td>2. Competently perform procedures relevant to Rheumatology.</td>
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<td></td>
<td>3. Provide care following procedure</td>
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<tr>
<td>d. Management of acute medical problems</td>
<td>1. Recognize and manage the critically ill patient</td>
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<td></td>
<td>2. Manage specific acute medical problem</td>
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<td></td>
<td>3. Communicate with patients and their families in an emergency situation</td>
</tr>
<tr>
<td>Undifferentiated Presentations</td>
<td>1. Manage patients with undifferentiated presentation</td>
</tr>
</tbody>
</table>
### 9.2 Knowledge, skills and performance requirements

**Learning objective:** Elicit the history and obtain other relevant data

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured approach to patient history including system review</td>
<td>Establishes a rapport and professional relationship with patients of all ages, their careers and relatives.</td>
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<tr>
<td>Different approaches to history taking as needed in various clinical setting such as acute inpatient, emergency and ambulatory care</td>
<td>Obtain a focused, efficient and accurate history</td>
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<tr>
<td>Other potential sources of data (e.g. personal health records, medical records, general practitioner, family, career)</td>
<td>Gives appropriate emphasis to functional and social history</td>
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<td></td>
<td>Evaluates critically the history in light of the degrees of functional impairment, physical findings and other data</td>
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<td>Revisits the history when the clinical situation is not clear</td>
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<td></td>
<td>Gathers accurate data in complex situations (e.g. confused patient, etc)</td>
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<td>Persists in seeking information to assist in clinical decision making</td>
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**Learning objective:** Conduct an appropriate physical examination

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Skills</th>
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<tbody>
<tr>
<td>Structured, systemic approach to examination.</td>
<td>Performs a thorough, accurate complete physical examination of new patient</td>
</tr>
<tr>
<td>Detailed system examinations</td>
<td>Performs a focused clinical examination in selected settings</td>
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<tr>
<td>Brief physical examination techniques (e.g. for neurological intactness, locomotor)</td>
<td>Tailors physical examination according to the patients history</td>
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<tr>
<td>Clinical signs and patterns</td>
<td>Interprets physical signs accurately</td>
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<tr>
<td>Evidence base for physical signs (reliability, validity, sensitivity, specificity, areas of uncertainty)</td>
<td>Integrates data obtained by other health care workers into physical examination findings</td>
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<tr>
<td>Functional/ screening tests mini mental state examination, GCS, depression score, 6 minute walk, etc.</td>
<td>Uses specific tools when indicated (e.g. functional / screening tests)</td>
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<td>Considers patient dignity and the need for a chaperone for some or all of the examination</td>
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<td></td>
<td>Demonstrates sensitivity to patients who are in pain embarrassed or who are vulnerable Clearly documents examination findings</td>
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### 9.3 Syllabus of the final part written examination

**Paper 1**

1. Clinical epidemiology of the rheumatic diseases
   - Magnitude of the disease - Global, Regional, Local perspectives
   - Determinants of rheumatic disease - Age/Sex/Genetics / environmental factors etc
   - Data collection, compilation, analysis, interpretation, report writing and dissemination

2. Basic Science of musculoskeletal and immune systems
   - The trainee will be able to:
     a. Describe the anatomy of the musculoskeletal system
     b. Identify surface anatomy of the musculoskeletal system
     c. Describe the physiology and biochemistry of the musculoskeletal system, including joints, bones, muscles and soft tissues
     d. Describe the structure and function of the musculoskeletal system in health and disease
     e. Explain the innate and adaptive immune systems, including cellular and humoral immunity
     f. Evaluate the concept of autoimmune disease in the light of the normal functions of the immune system

3. Pharmacology underpinning rheumatologic practice
   - The trainee will demonstrate:
     a. Knowledge of the pharmacology of all drugs used in Rheumatological practice, including analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), Disease modifying anti-rheumatic drugs, immunosuppressive agents, biologic agents, drugs used in treating patients with metabolic bone diseases, non-analgesic drugs used in the management of patients with chronic pain, drugs used in the management of gout, corticosteroids

4. Musculo-skeletal Disorders
   - Examination of the joints
     - Monoarthritis
     - Oligoarthritis
     - Polyarthritis
     - Myopathy
     - Neck pain
     - Shoulder pain
     - Low back pain
     - Hip and knee pain
     - Ankle and foot pain
     - Ophthalmological manifestations of rheumatic disease
     - Cutaneous manifestations of rheumatic diseases

5. Diagnostic tests and procedures in rheumatic diseases
   - a) Aspiration and injection of joints and soft tissues
   - b) Synovial fluid analysis and synovial biopsy
   - c) Imaging for rheumatic diseases
   - d) Arthroscopy and synovectomy in rheumatological diseases
   - e) Laboratory evaluation of inflammation

6. Special issues of the rheumatic diseases
   - a) The fibromyalgia syndrome
   - b) Psychosocial issues of rheumatic diseases
<table>
<thead>
<tr>
<th>Residency Program</th>
<th>Rheumatology</th>
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<tbody>
<tr>
<td>c) Rheumatological disorders associated to Sports</td>
<td></td>
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<td>d) Entrapment neuropathies and related disorders</td>
<td></td>
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<tr>
<td>e) Occupational overuse syndromes</td>
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<tr>
<td>7. Rheumatic diseases of childhood</td>
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<tr>
<td>a) Juvenile idiopathic arthritis</td>
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<tr>
<td>b) Rheumatic fever</td>
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<td>c) Juvenile dermatomyositis</td>
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<tr>
<td>8. Degenerative joint diseases (like Osteo-Arthritis)</td>
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<tr>
<td>9. Diseases of bone and structural proteins</td>
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<tr>
<td>a) Metabolic bone disease</td>
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<tr>
<td>i. Osteomalacia</td>
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<td>ii. Osteoporosis</td>
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<td>iii. Paget's disease</td>
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<tr>
<td>b) Osteonecrosis</td>
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<tr>
<td>10. Tumors involving joints</td>
<td></td>
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<tr>
<td>Tumors and tumor-like lesions of bones and joints and related structures</td>
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<tr>
<td>11. Infiltrative disorders associated with rheumatic diseases</td>
<td></td>
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<tr>
<td>a) Amyloidosis</td>
<td></td>
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<tr>
<td>b) Rheumatic manifestations of sarcoidosis</td>
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<tr>
<td>c) Iron storage disease</td>
<td></td>
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<tr>
<td>d) Multicentric reticulohistiocytosis</td>
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<tr>
<td>12. Structure and function of joints, connective tissue, and muscle</td>
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<tr>
<td>a) Biology of the normal joint</td>
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<tr>
<td>Structure of a normal joint (synovial joint, fibrous joint etc)</td>
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<tr>
<td>b) Collagen and elastin</td>
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<tr>
<td>Structure of collagen and elastic tissue</td>
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<td>c) Matrix glycoprotein and proteoglycans</td>
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<tr>
<td>Component of matrix</td>
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<tr>
<td>d) The biology, physiology, and morphology of bone</td>
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<tr>
<td>Physiology of a normal joint and their movements</td>
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<tr>
<td>Type of skeletal muscle and structure</td>
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<tr>
<td>e) Biomechanics of joints</td>
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**Paper - II**

1. Rheumatoid Arthritis and related disorders
2. Spondyloarthropathies
   - Reactive arthritis
   - Ankylosing spondylitis
   - Enteropathic arthritis
   - Psoriatic arthropathy
   - Undifferentiated spondyloarthropathy
   - Behcet syndrome
3. Autoimmune connective tissue diseases
   - Systemic lupus erythematosus
   - Antiphospholipid syndrome
   - Systemic sclerosis
   - Sjogrens syndrome
   - Inflammatory muscle disease
   - MCTD (Mixed Connective Tissue Disorder)
   - Overlap syndromes
   - Relapsing polychondritis
   Vasculitides including:
   - Giant cell arteritis (and polymyalgia rheumatica)
   - Wegener's granulomatosis
   - Polyarteritis nodosa and microscopic polyangiitis,
   Churg-Strauss vasculitis
### Residency Program: Rheumatology

1. Takayasu's arteritis
2. Cutaneous vasculitis
3. Panniculitis
4. Henoch-Schönlein purpura
5. Cryoglobulinemia etc.

4. Crystal associated arthropathies
   - Gout
   - Pseudogout
   - Apatite deposition disease
   - Oxalate metabolism disorders

5. Adult onset still’s disease
6. Infectious Arthritis
   - Viral arthritis
   - Bacterial arthritis
     - Tubercular
     - Septic arthritis
   - Other infective arthritis (Fungal, Lyme disease, Brucellosis etc)

7. Arthritis as a manifestation of other systemic disease
8. Syndromes of impaired immune-function
9. Reconstructive surgery of rheumatic diseases

10. Therapeutic exercise
    - Physiotherapy
    - Occupational therapy

11. Special issues to be considered in Rheumatological research

12. Counseling, Communication skill and Patient Education
    - The trainees have to conduct at least five counseling or patients education sessions of varied situations in clinical rheumatology under the supervision of the concern faculty and documented in the log book for summative assessment

13. Ethical and legal issues in Rheumatology

### 10. Assessment:

The assessment for certification of the MD degree of the University is comprehensive, integrated and phase-centered attempting to identify attributes expected of specialists for independent practice and lifelong learning and covers cognitive, psychomotor and affective domains. It keeps strict reference to the components, the contents, the competencies and the criteria laid down in the curriculum. Assessment includes both Formative Assessment and Summative (Phase final) Examinations.

#### 10.1. Formative Assessment:

Formative assessment will be conducted throughout the training phases. It will be carried out for tracking the progress of residents, providing feedback, and preparing them for final assessment (Phase completion exams).

There will be Continuous (day-to-day) and Periodic type of formative assessment.

- **Continuous (day-to-day) formative assessment** in classroom and workplace settings provides guide to a resident's learning and a faculty's teaching / learning strategies to ensure formative lesson / training outcomes.

- **Periodic formative assessment** is quasi-formal and is directed to assessing the outcome of a block placement or academic module completion. It is held at the end of Block Placement and Academic Module Completion. The contents of such examinations include Block Units of the Training
Residency Program  
Curriculum and Academic Module Units of the Academic Curriculum.

10.1.1. End of Block Assessment (EBA):
End of Block Assessment (EBA) is a periodic formative assessment and is undertaken after completion of each training block, assessing knowledge, skills and attitude of the residents. Components of EBA are written examination, structured clinical Assessment (SCA), medical record review, and logbook assessment. Unsatisfactory block training must be satisfactorily completed to be eligible for phase final examination.

10.1.2. Formative assessment for Academic modules for Biostatistics and Research Methodology and Medical Education to be done in the first nine months of Phase B training. Residents getting unsatisfactory grade must achieve satisfactory grade by appearing the re-evaluation examination to be eligible for the Phase B Final Examination.

10.2. Summative Examination:
Assessment will be done in two broad compartments.

a) **Compartment A:** Consist of 3 (three) components.
   1. Written Examination (Consisting of 2 papers).
   2. Clinical Examination (One long and four short cases).
   3. SCA and Oral (10 stations SCA, Oral one board consisting of 2 examiners).

   Every Resident must pass all the 3 components of compartment-A separately. Candidates will be declared failed if he/she fails in one or more component(s) of the examination. He/she then have to appear all the 3 components in the next Phase B Final Examination.

b) **Compartment B:** Thesis and Thesis defense.

10.2.1. Written Examination:
Two Papers: Contents of written papers listed in Annexure II
Question type and marks:
- Two Papers (Paper I and Paper II); 100 marks each; Time 3 hrs for each paper. Pass marks-60% of total of 2 papers.
- Each paper will consist of Two Groups:
  - **Group A:**
    - 10 short questions (5 marks each)
    - These will assess the knowledge of different level and its application
    - Eight questions will be evenly distributed across different aspects of clinical rheumatology. There will be one question from each of basic sciences and generic competencies.
  - **Group B:**
    - 5 scenario based problem solving questions (10 marks for each).
    - Four will represent rheumatology case scenario and one will include elements of co-morbidities and non-rheumatological conditions.
    - The questions should focus to assess the capability of handling clinical problem independently and comprehensively as a specialist.
    - Suggested format:–
      - A scenario followed by question(s).
10.2.2. Clinical Examination: Long case and Short case:

- There will be one long case and four short cases.

ii) Long case: Marks-100
- Directly observed
- Two examiners for each examinee.
- History taking and examination by the examinee – 30min.
- Discussion on the case 20 min. (presentation 6 min, crossing 6x2 min and decision 2 min).
- Examiners will not ask any question nor stop the examinee in any way during history taking and physical examinations.
- Discussion should be done preferably as per structured format and proper weightage on different segments of clinical skills.

ii) Short cases: Marks-100
- Four in number
- Time 20-30 min. (Time will be equally divided for each short case)
- Crossing should be done with proper weightage on different segment of clinical skills.

iii) Pass marks: 60% of total of Long and Short Cases

10.2.3. Structured Clinical Assessment (SCA): Marks-100
- 10 stations: 5 min each

10.2.4. Oral Examination: Marks-100
- One board consisting of 2 examiners.
- 20 minutes (9+9+2).

10.2.5. Pass marks in SCA and Oral: 60% of total (SCA and Oral.)

10.3. Thesis Evaluation:
- Marks: Thesis writing-200; Defense-100: Marks for acceptane-60% of total.
  - To be evaluated by 3 (three) evaluators:- 2 subject specialists and one academician preferably involve in research and teaching research methodology.
  - Among the subject specialists one should be external.
  - Evaluators should be in the rank of Professor/Associate Professor.
  - Supervisor will attend the defense as an observer and may interact only when requested by the evaluators.
  - Thesis must be submitted to the controller of Exam not later than 27 months of enrolment in Phase-B.
  - Thesis must be sent to the evaluators 2 (Two) weeks prior to assessment date.
  - Evaluation will cover Thesis writing and its defense.
  - For thesis writing evaluator will mark on its structure, content, flow, scientific value, cohesion, etc.
  - For defense – Candidate is expected to defend, justify and relate the work and its findings.
  - Assessment must be completed in next 3 months.
  - Outcome of the assessment shall be in 4 categories – “Accepted”, “Accepted with minor correction”, “Accepted with major correction” and “Not Accepted.”
10.3.1. Description of terms:

- **Accepted:** Assessors will sign the document and resident will bind it and submit to the Controller of Examinations by 10 days of the examination.

- **Accepted with minor correction:** Minor correction shall include small inclusion/exclusion of section; identified missing references, correction of references and typographical and language problem. This should be corrected and submitted within 2 weeks.

- **Accepted with major correction:** Task is completed as per protocol with acceptable method but some re-analysis of result and corresponding discussion are to be modified.
  - To be corrected, confirmed by Supervisor and submit within 3 (Three) weeks.

- **Not Accepted:** When work is not done as per protocol or method was faulty or require further inclusion or confirmation of study.
  - To complete the suggested deficiencies and reappear in defense examination during its next Phase Final Examination.
  - Candidate has to submit his/her thesis and sit for examination and pay usual examination fees for the examination.

10.3.2. Residents must submit and appear Thesis defense at notified date and time. However non-acceptance of the Thesis does not bar the resident in appearing the written, clinical and oral exam.

10.4. Qualifying for MD/MS Degree:

On passing both the compartments, the candidate will be conferred the degree of MD/MS in the respective discipline. If any candidate fails in one compartment he/she will appear in that compartment only in the subsequent Phase-B exam.

11. Curriculum Implementation, Review and Updating:

Both supervisors and residents are expected to have a good knowledge of the curriculum and should use it as a guide for their training program. Since rheumatology has tremendous development in last two decades and has been rapidly changing the need for review and up-dating of curricula is essential.