Guidelines

for

Competency Based Training Programme

in

DNB- Rheumatology

NATIONAL BOARD OF EXAMINATIONS

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CONTENTS

INTRODUCTION

A broad experience in general (internal) medicine is considered essential for the practice of rheumatology, hence students enrolling for this course should have a strong background of Internal Medicine.

During the course the individual should have the experience of continuing care for Rheumatology patients on an inpatient and outpatient basis.

During this time, the trainee should acquire the knowledge, experience and skills detailed in the syllabus and record them in the training record

DESCRIPTION OF THE DISCIPLINE

Rheumatology incorporates the investigation, diagnosis, management and rehabilitation of patients with disorders of the musculoskeletal system ie the locomotor apparatus, bone and soft connective tissues.

The rheumatic disorders thus include diverse conditions such as inflammatory arthritis, autoimmune rheumatic 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, orthopaedics, neurology/pain management, rehabilitation, psychiatry, nursing and professions allied to medicine.

AIMS OF THE POST-GRADUATE TRAINING

- Post graduate training, leading to recognition as a specialist, should furnish the doctor with knowledge and skills which will enable them to become competent in the field of rheumatology. The curriculum will enable trainees the opportunity to be competent in the:
- Establishment of a differential diagnosis for patients presenting with clinical features of musculoskeletal conditions by appropriate use of history, clinical examination and investigation
- Performance of the core investigations required for all physicians practicing rheumatology
- Development of management plans for the “whole patient” and have sound knowledge of the appropriate treatments including health promotion, disease prevention and long term management plans
- Communication of the diagnosis and management options with the patient and other members of the multidisciplinary team.
- Application of sufficient knowledge and skill in diagnosis and management to ensure safe independent practice.
- Provision of effective team working and leadership skills
- Application of knowledge of the appropriate basic sciences relevant to rheumatology
- Management of time and other resources to the benefit of their patients and colleagues
- Facilitation of effective learning by other clinical and allied staff.
- Maintenance of professional standards through continuing development and learning
- Critical appraisal and analysis of clinical research methodology and results.

PROGRAMME GOAL

The goal of the DNB program is to provide advanced training in RHEUMATOLOGY to produce competent sub-specialists who can provide clinical care of the highest order to patients and serve as future teachers, trainers and researchers in the field**.**

PROGRAMME OBJECTIVES

At the end of the course, the student should be able to: A. Clinically diagnose, investigate and manage a whole spectrum of non immune mediated and immune-mediated rheumatological disorders B. Practically perform and interpret the common laboratory techniques used in a Rheumatology Laboratory C. Plan and undertake research in Rheumatology in the clinic, laboratory and community D. Competent to understand and critically analyze the new literature in the field of Rheumatology E. Teach the subject to undergraduates and postgraduates in Medicine and Pediatrics

COMPETENCIES: As Professionals, rheumatologists must

- Demonstrate a commitment to their patients, profession, and society through ethical practice;
- Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation;
- 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

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

PROFESSIONAL ROLE

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

ELIGIBILITY CRITERIA FOR ADMISSIONS TO THE PROGRAMME

(A) DNB Rheumatology Course:

1. Any medical graduate with **MD/DNB in General Medicine or Paediatrics** qualification, who has qualified the ***Entrance Examination*** conducted by NBE and fulfills the eligibility criteria for admission to DNB ***Super Specialty*** courses at various NBE accredited Medical Colleges/Institutions/Hospitals in India is eligible to participate in the Centralized counseling for allocation of DNB **Rheumatology** seats purely on merit cum choice basis.

2. Admission to 3 years DNB/MD **Rheumatology** course is only through ***Entrance Examination*** conducted by NBE and Centralized Merit Based Counseling conducted by National Board of Examination as per prescribed guidelines.

Duration of Course : 3 Years

Every candidate admitted to the training programme shall pursue a regular course of study (on whole time basis) in the concerned recognized institution under the guidance of recognized post graduate teacher for assigned period of the course.

TEACHING AND TRAINING ACTIVITIES

The fundamental components of the teaching programme should include:

1. Case presentations & discussion- once a week
2. Seminar – Once a week
3. Journal club- Once a week
4. Grand round presentation (by rotation departments and subspecialties)- once a week
5. Faculty lecture teaching- once a month
6. Clinical Audit-Once a Month
7. A poster and have one oral presentation at least once during their training period in a recognized conference.

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan) interesting and difficult case unit discussions.

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

Theoretical: The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to the subject in the undergraduate curriculum.

Symposia: Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation.

Clinical: The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.

Bedside: The trainee would work up cases, learn management of cases by discussion with faculty of the department.

Journal Clubs: This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document. The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.

Research: The student would carry out the research project and write a thesis/ dissertation in accordance with NBE guidelines. He/ she would also be given exposure to partake in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

SYLLABUS

1. Structure And Function Of Bone, Joints, And Connective Tissue

2. Biology of the Normal Joint and Articular Structures:

- Hands
- Wrists
- Elbows
- Shoulders
- Neck
- Low Back
- Spines
- Hip joint and Pelvic Girdle
- Knees
- Ankles-feet
- Synovium, Cartilage, Bone and Chondrocytes

3. Normal and Pathological synovial tissue and cartilage

4.Connective tissue

- collagen - collagenases
- proteoglycans - mediators derived from polyunsaturated fatty acids
- prostaglandins
- thromboxanes
- leukotrienes
- mediators of acute and chronic inflammation
- vascular endothelium
- interleukins
- free radicals
- nitric oxide
- apoptosis.

5. Formation and resorption of bone - bone as a tissue and an organ.

6. Muscle: Anatomy - contractile proteins - ultrastructure of the muscle fibre – neuro muscular junction -physiology of motor unit- excitation - contraction

coupling - biochemistry of contraction — muscle energy metabolism — pharmacology of the motor unit.

7. Nerve: Neuropathies of special interest in Rheumatology - laboratory investations – painbath ways

8. Synovial physiology

9. Collagen in normal and diseased connective tissue

10 Articular cartilage ,Chondrocyte structure and function -.

Broad Issues In The Approach To Rheumatic Disease

- Principles of Epidemiology in Rheumatic Disease
- Economic Burden of Rheumatic Diseases
- Clinical Trial Design and Analysis
- Assessment of Health Outcomes
    - Design of clinical trials in rheumatology
    - Comorbidities of rheumatic disease
    - Social aspects (work)
    - Registries
    - Outcomes of paediatric rheumatic disease
    - Basics of genetics
    - Environment
    - Epigenetics
    - Genetics of rheumatoid arthritis
    - Genetics of spondyloarthropathies
    - Genetics of connective tissue diseases
    - Genetics of juvenile rheumatic diseases
    - Genetics of osteoarthritis
    - Genetics of Gout and other crystal arthritis
- Genetics of chronic musculoskeletal pain
- Biologic Markers
- Occupational and Recreational Musculoskeletal Disorders
- Cardiovascular Risk in Rheumatic Disease
- Cancer Risk in Rheumatic Diseases

Rheumatic Diseases Of Childhood

- Etiology and Pathogenesis of Juvenile Idiopathic Arthritis
- Treatment of Juvenile Idiopathic Arthritis
- Pediatric Systemic Lupus Erythematosus, Dermatomyositis, Scleroderma, and Vasculitis

Medical Orthopaedics And Rehabilitation

- Sports Medicine
- Entrapment neuropathies
- Physiotherapy
- Occupational therapy
- Health outcome assessment
- Rehabilitation of patients with rheumatic diseases

Other areas in which knowledge is to be acquired:

- Biostatistics, Research Methodology and Clinical Epidemiology
- Ethics
- Medico legal aspects relevant to the discipline
- Health Policy issues as may be applicable to the discipline

Rheumatological Diseases

Regional pain syndromes:

- spinal pain
- intervertebral disc disorders
- spinal canal or foraminal stenosis & related syndromes
- limb pain syndromes (eg rotator cuff disease, epicondylitis & other soft tissue conditions, nonspecific

- limb pain, plantar fasciitis, bursitis, algodystrophy etc)
- chest wall pain syndromes
- fibromyalgia and related somatoform disorders
- benign joint hypermobility
- specific to childhood – eg nocturnal limb pain, Osgood-Schlatter's, Perthe's etc

Osteoarthritis and related conditions:

- osteoarthritis
- DISH
- neuropathic arthritis
- crystal associated arthropathy – urate, CPPD, basic calcium phosphate, oxalate

Spondylarthropathy

- ankylosing spondylitis
- enteropathic arthropathies
- psoriatic arthritis
- reactive arthritis
- Whipple's disease

Autoimmune rheumatic disease

- rheumatoid arthritis
- systemic lupus erythematosus and related overlap syndromes
- systemic sclerosis, Sjogrens syndrome
- inflammatory muscle disease
- vasculitides, antiphospholipid syndrome, Behcet's disease

Metabolic, endocrine and other disorders

- osteoporosis

- rickets and osteomalacia
- bone & joint dysplasias
- renal bone disease
- endocrine disorders affecting bone, joint or muscle (eg thyroid, pituitary, parathyroid)
- metabolic disorders affecting joints (eg alkaptonuria, haemochromatosis etc)
- heritable collagen disorders
- haemoglobinopathies
- haemophilia and other disorders of haemostasis
- regional disorders – Paget's disease, HPOA, osteonecrosis, Perthe's disease
- osteochondritis dissecans, transient regional osteoporosis

Neoplastic disease

- primary and secondary neoplastic conditions of connective tissue
- pigmented villonodular synovitis
- paraneoplastic musculoskeletal syndromes

Infection and arthritis:

- septic bone and joint lesions
- Lyme disease
- mycobacterial, fungal & parasitic arthropathies
- viral arthritis
- AIDS
- post-infectious rheumatological conditions (eg rheumatic fever, post-meingococcal arthritis))

Miscellaneous:

- Sarcoidosis, Eosinophilic fasciitis, Familial Mediterranean Fever, Relapsing polychondritis

- Hypogammaglobulinaemia & arthritis, Amyloidosis, Sweets syndrome (neutrophilic dermatoses)

CLINICAL SKILLS & ATTITUDES

The trainee will learn to

A. Do a proper History taking & clinical examination: which will include

History – To be able to elicit and correctly interpret a history of the presenting symptoms of rheumatic disease ie pain, stiffness, weakness, loss of function & non-articular manifestations the disability and handicap caused by rheumatic disease the psychosocial problems associated with rheumatic disease other general medical problems **Examination** - To be able to undertake a physical examination as follows and identify

a) Normal anatomy and function: of the surface anatomical features of the shoulder girdle, elbow, hand & wrist, hip/pelvis, knee, ankle/foot , and spine; the normal range of movement (active and passive) of these joints and the actions of major muscle/tendons acting on these joints.

b) Abnormal anatomy and function:
The trainee should be able to identify general features of musculoskeletal pathology:
by inspection – swelling, erythema, muscle wasting or deformity
by palpation – tenderness of articular or specific periarticular structures, increased warmth, to distinguish bone from soft tissue swelling and identify fluctuance
by movement – abnormalities of active and passive movements, instability, the presence of tendon lesions by applying appropriate stress tests, and muscle wasting/weakness
to use these signs to identify inflammation or structural damage of limb joints, spinal joints, soft tissues (muscles, tendons, entheses, bursae), to identify the clinical signs associated with the extra-articular & systemic features, and to identify the general medical complications of rheumatic disease. In particular the trainee should be able to examine for

Shoulder pathology:

- Rotator cuff lesions
- Glenohumeral/capsular pathology
- Muscle wasting, proximal myopathy (deltoid)
- S/C joint pathology - OA, synovitis
- A/C joint pathology - OA, synovitis
- Shoulder pain due to pain referred from viscera or neck

Elbow pathology:

- Olecranon bursitis
- Elbow joint pathology
- Radio-ulnar joint pathology
- Medial or lateral epicondylitis

Hand & wrist pathology:

- Radiocarpal joint pathology
- Inf. radio-ulnar joint pathology
- 1st CMC, MCP or IP joint pathology
- Hand deformities
- Muscle wasting
- Flexor or extensor tenosynovitis or tendon nodules
- Rupture or attenuation of flexor or extensor tendons of fingers or thumb
- De Quervain's tenovaginitis
- Carpal tunnel syndrome

Hip/pelvic pathology:

- trochanteric, iliopsoas, gluteal bursitis
- hip joint pathology
- real & apparent leg length inequality
- SI joint pathology
- muscle wasting, proximal myopathy, Trendelenberg sign
- deformities of the hip, Thomas' test
- pathology of symphysis pubis
- pathology of pelvis - fractures
- hip pain due to pain referred from lumbar region
- lesions of tendons and entheses

Knee pathology:

- knee joint pathology, including internal derangements
- deformities
- muscle wasting, myopathy
- prepatellar, anserine bursitis
- popliteal cyst

- damage to collateral ligaments
- knee pain due to pain referred from hip or lumbar spine
- lesions of tendons and entheses

Ankle & foot pathology:

- ankle (tibiotalar) pathology
- subtalar/midtarsal joint pathology
- MTP & IP joint pathology
- lesions of the Achilles tendon, enthesis and retrocalcaneal bursa
- deformities of the ankle and foot
- foot pain due to pain referred from lumbar spine
- plantar fasciitis
- tenosynovitis of tib post and peroneal tendons
- rupture of tib posterior or Achilles tendon
- lesions of bone (eg stress fracture)

Spinal pathology:

- Cervical spine pathology
- Thoracic spine pathology
- Lumbar spine pathology
- Spinal nerve root entrapment syndromes
- Spinal deformities

Extra-articular pathology:

- Raynauds phenomenon
- Vasculitic skin lesions
- Rheumatoid nodules
- Heberdens & Bouchard's nodes
- Rash – psoriasis, pustular psoriasis, onycholysis, balanitis, lupus rashes, erythema nodosum
- Scleritis, episcleritis, conjunctivitis, iritis
- Scerodactyly
- Tophi
- Other medical complications of rheumatic disease affecting internal organs
- the normal musculoskeletal system and its' variations eg at
- extremes of age
- the clinical signs associated with -
- inflammation or structural damage of joints & periarticular
- structures (muscles, tendons, entheses, bursae and bone)
- non-articular, systemic and other features of rheumatic disease
- general medical complications of rheumatic disease
- diffuse or regional pain disorders or somatisation disorders

B. Make a differential diagnosis – To be able to use the clinical findings to formulate a differential diagnosis and plan of investigation for patients presenting with –

monoarthropathy
oligoarthropathy
polyarthropathy
axial arthropathy
multisystem disorder
muscle weakness
regional limb & spinal musculoskeletal pain disorders
unexplained musculoskeletal pain
rheumatological emergencies

C. Principle and Interpretation of Laboratory Test – To know the indications for and limitations of the laboratory and imaging techniques used in the diagnosis and management of rheumatic diseases. To be able, in the light of the clinical assessment, to select and interpret the most appropriate –

- laboratory investigations
- haematology
- biochemistry
- immunology
- histopathology
- bacteriology
- qualitative imaging techniques
- plain radiography
- CT
- MRI
- ultra-sound
- radioisotope scanning
- quantitative techniques for assessing bone density
- DXA
- ultrasound

The Candidate will be required to perform some of these tests himself/herself

D. Learn management & communication:

To be able to communicate, explain and discuss with the patient the diagnosis, the need for further investigations the evidence-based management options, their risks and benefits and need for clinical monitoring; the need for orthopaedic/surgical intervention, and the main risks and benefits; the patient's

views on causation, management and the risks and benefits of complementary or non-conventional approaches.

To be able to identify the need for - paramedical intervention, and aids to assist self care, mobility or driving intervention by other relevant specialists including the neurologist, neurosurgeon, renal physician or rehabilitationist.

Education and self management techniques disability benefits or re-training to reduce the socioeconomic impact of rheumatic disease on the patient.

Multidisciplinary pain management techniques and pain relieving procedures such as epidural and regional nerve blocks physical treatments such as manipulative and mobilization techniques.

To communicate these needs effectively with members of the multidisciplinary team(physiotherapist, occupational therapist, nurse specialist, orthotist, podiatrist or clinical psychologist) with other clinical colleagues with relevant support workers including medical social worker and voluntary agencies

E. Perform procedures –

- To be able to identify the correct indications for joint injection/aspiration soft tissue injection.
- To aspirate and inject joints competently using the appropriate techniques
- To recognise the macroscopic appearance of normal and abnormal synovial fluid (noninflammatory, inflammatory, haemorrhagic and septic)
- To inject soft tissue lesions competently using the appropriate techniques (tennis/golfer's elbow, carpal tunnel, tenosynovitis/flexor tendon nodules, bursitis, tendinitis and plantar fasciitis).

F. Perform clinical audit and assessing outcomes –

To be able to design, plan and carry out an audit project on a relevant clinical, topic. To achieve this the trainee will be required to specify an appropriate standard of practice for auditing, identify suitable outcome measures, apply appropriate statistical methods to achieve a robust study, design and analysis of results, complete the audit 'loop' to demonstrate whether change in practice has occurred.

G. Learn managing a rheumatology unit –

To acquire the management skills relevant to participation in and leadership of a rheumatology team. To achieve this the trainee will be required to demonstrate effective time management, negotiating skills, participation in staff organization, and effective supervision of junior medical staff.

SCHEDULE OF POSTING AND TRAINING PROGRAMME

First Year

Rheumatology Department Out-patient/Wards/Laboratory - One Year

Second Year

- Peripheral Posting
- Nephrology One Week
- Dermatology One Week
- Orthopaedics One Week
- Radiology Four Weeks
- Ophthalmology One Week
- Physical Medicine & Rehabilitation One Week
- Three Weeks Laboratory
- Students who are posted outside should attend Theory classes, Journal club and case presentation daily at the Department of Rheumatology in the afternoon.

Rheumatology Department

OP/Wards/Laboratory Nine Months

Ultrasonography 2 months & Laboratory 2 months included in nine months

Third Year

- Rheumatology Department - OP/Wards/Laboratory One year
- Laboratory – 2 months included in one year
- Besides the above, Synovial aspirations, Intra articular injections, Arthroscopy, interpretation of X-rays, CT Scan, M.R.I, and Ultrasound are to be undertaken.

THESIS PROTOCOL & THESIS

The candidates are required to submit a thesis at the end of three years of training as per the rules and regulations of NBE.

Guidelines for Submission of Thesis Protocol & Thesis by candidates

Research shall form an integral part of the education programme of all candidates registered for DNB degrees of NBE. The Basic aim of requiring the candidates to write a thesi protocol & thesis/dissertation is to familiarize him/her with research methodology. The members of the faculty guiding the thesis/dissertation work for the candidate shall ensure that the subject matter selected for the thesis/dissertation is **feasible, economical** and **original**.

Guidelines for Thesis Protocol

The protocol for a research proposal (including thesis) is a study plan, designed to describe the background, research question, aim and objectives, and detailed methodology of the study. In other words, the protocol is the 'operating manual' to refer to while conducting a particular study.

The candidate should refer to the NBE Guidelines for preparation and submission of Thesis Protocol before the writing phase commences. The minimum writing requirements are that the language should be clear, concise, precise and consistent without excessive adjectives or adverbs and long sentences. There should not be any redundancy in the presentation.

The development or preparation of the Thesis Protocol by the candidate will help her/him in understanding the ongoing activities in the proposed area of research. Further it helps in creating practical exposure to research and hence it bridges the connectivity between clinical practice and biomedical research. Such research exposure will be helpful in improving problem solving capacity, getting updated with ongoing research and implementing these findings in clinical practice.

Research Ethics: Ethical conduct during the conduct and publication of research is an essential requirement for all candidates and guides, with the primary responsibility of ensuring such conduct being on the thesis guide. Issues like Plagiarism, not maintaining the confidentiality of data, or any other distortion of the research process will be viewed seriously. The readers may refer to standard documents for the purpose.

The NBE reserves the right to check the submitted protocol for plagiarism, and will reject those having substantial duplication with published literature.

PROTOCOL REQUIREMENTS

1. All of the following will have to be entered in the online template. The thesis protocol should be restricted to the following word limits.

- Title : 120 characters (with spacing) page
- Synopsis [structured] : 250-300
- Introduction : 300-500
- Review of literature : 800-1000
- Aim and Objectives : Up to 200
- Material and Methods : 1200-1600
- 10-25 References [ICMJE style]

2. It is mandatory to have ethics committee approval before initiation of the research work. The researcher should submit an appropriate application to the ethics committee in the prescribed format of the ethics committee concerned.

Guidelines for Thesis

1. The proposed study must be approved by the institutional ethics committee and the protocol of thesis should have been approved by NBE.

2. The thesis should be restricted to the size of 80 pages (maximum). This includes the text, figures, references, annexures, and certificates etc. It should be printed on both sides of the paper; and every page has to be numbered. Do not leave any page blank. To achieve this, following points may be kept in view:

    a. The thesis should be typed in 1.5 space using Times New Roman/Arial/ Garamond size 12 font, 1” margins should be left on all four sides. Major sections viz., Introduction, Review of Literature, Aim & Objectives, Material and Methods, Results, Discussion,

References, and Appendices should start from a new page. Study proforma (Case record form), informed consent form, and patient information sheet may be printed in single space.

b. Only contemporary and relevant literature may be reviewed. Restrict the introduction to 2 pages, Review of literature to 10-12 pages, and Discussion to 8-10 pages.
c. The techniques may not be described in detail unless any modification/innovations of the standard techniques are used and reference(s) may be given.
d. Illustrative material may be restricted. It should be printed on paper only. There is no need to paste photographs separately.

3. Since most of the difficulties faced by the residents relate to the work in clinical subject or clinically-oriented laboratory subjects, the following steps are suggested:
    a. The number of cases should be such that adequate material, judged from the hospital attendance/records, will be available and the candidate will be able to collect case material within the period of data collection, i.e., around 6-12 months so that he/she is in a position to complete the work within the stipulated time.
    b. The aim and objectives of the study should be well defined.
    c. As far as possible, only clinical/laboratory data of investigations of patients or such other material easily accessible in the existing facilities should be used for the study.
    d. Technical assistance, wherever necessary, may be provided by the department concerned. The resident of one specialty taking up some problem related to some other specialty should have some basic knowledge about the subject and he/she should be able to perform the investigations independently, wherever some specialized laboratory investigations are required a co-guide may be co-opted from the concerned investigative department, the quantum of laboratory work to be carried out by the candidate should be decided by the guide & co-guide by mutual consultation.

4. The clinical residents are not ordinarily expected to undertake experimental work or clinical work involving new techniques, not hitherto perfected OR the use of chemicals or radioisotopes not readily available. They should; however, be free to enlarge the scope of their studies or undertake experimental work on their own initiative but all such studies should be feasible within the existing facilities.

5. The DNB residents should be able to freely use the surgical pathology/autopsy data if it is restricted to diagnosis only, if however, detailed historic data are required the resident will have to study the cases

himself with the help of the guide/co-guide. The same will apply in case of clinical data.

6. Statistical methods used for analysis should be described specifically for each objective, and name of the statistical program used mentioned.

General Layout of a DNB Thesis:

- **Title-** A good title should be brief, clear, and focus on the central theme of the topic; it should avoid abbreviations. The Title should effectively summarize the proposed research and should contain the PICO elements.
- **Introduction-** It should be focused on the research question and should be directly relevant to the objectives of your study.

- **Review of Literature -** The Review should include a description of the most relevant and recent studies published on the subject.

- Aim and Objectives - The 'Aim' refers to what would be broadly achieved by this study or how this study would address a bigger question / issue. The 'Objectives' of the research stem from the research question formulated and should at least include participants, intervention, evaluation, design.

- **Material and Methods-** This section should include the following 10 elements: Study setting (area), Study duration; Study design (descriptive, case-control, cohort, diagnostic accuracy, experimental (randomized/non-randomized)); Study sample (inclusion/exclusion criteria, method of selection), Intervention, if any, Data collection, Outcome measures (primary and secondary), Sample size, Data management and Statistical analysis, and Ethical issues (Ethical clearance, Informed consent, trial registration).

- **Results-** Results should be organized in readily identifiable sections having correct analysis of data and presented in appropriate charts, tables, graphs and diagram etc.

- **Discussion–**It should start by summarizing the results for primary and secondary objectives in text form (without giving data). This should be followed by a comparison of your results on the outcome variables (both primary and secondary) with those of earlier research studies.

- **Summary and Conclusion-** This should be a précis of the findings of the thesis, arranged in four paragraphs: (a) background and objectives; (b) methods; (c) results; and (d) conclusions. The conclusions should strictly pertain to the findings of the thesis and not outside its domain.

- **References-** Relevant References should be cited in the text of the protocol (in superscripts).

- **Appendices -**The tools used for data collection such as questionnaire, interview schedules, observation checklists, informed consent form (ICF), and participant information sheet (PIS) should be attached as appendices. Do not attach the master chart.

Thesis Protocol Submission to NBE

1. DNB candidates are required to submit their thesis protocol within 90 days of their joining DNB training.

2. Enclosures to be submitted along with protocol submission form:
    a) Form for Thesis Protocol Submission properly filled.
    b) Thesis Protocol duly signed.
    c) Approval letter of institutional Ethical committee. *(Mandatory, non receivable of any one is liable for rejection)*

Thesis Submission to NBE

1. As per NBE norms, writing a thesis is essential for all DNB candidates towards partial fulfillment of eligibility for award of DNB degree.
2. DNB candidates are required to submit the thesis before the cut-off date which shall be 30th June of the same year for candidates appearing for their scheduled December final theory examination. Similarly, candidates who are appearing in their scheduled June DNB final examination shall be required to submit their thesis by 31st December of preceding year.
3. Candidates who fail to submit their thesis by the prescribed cutoff date shall NOT be allowed to appear in DNB final examination.
4. Fee to be submitted for assessment (In INR): 3500/-
5. Fee can be deposited ONLY through pay-in-slip/challan at any of the Indian bank branch across India. The challan can be downloaded from NBE website www.natboard.edu.in
6. Thesis should be bound and the front cover page should be printed in the standard format. A bound thesis should be accompanied with:
    a. A Synopsis of thesis.
    b. Form for submission of thesis, duly completed
    c. NBE copy of challan (in original) towards payment of fee as may be applicable.
    d. Soft copy of thesis in a CD duly labeled.
    e. Copy of letter of registration with NBE.

7. A declaration of thesis work being bonafide in nature and done by the candidate himself/herself at the institute of DNB training need to be submitted bound with thesis. It must be signed by the candidate himself/herself, the thesis guide and head of the institution, failing which thesis shall not be considered.

The detailed guidelines and forms for submission of Thesis Protocol & Thesis are available at www.natboard.edu.in.thesis.php.

LOG BOOK

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s) The candidate will maintain the record of all academic activities undertaken by him/her in log book .

1. Personal profile of the candidate
2. Educational qualification/Professional data
3. Record of case histories
4. Procedures learnt
5. Record of case Demonstration/Presentations
6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
7. In the absence of production of log book, the result will not be declared.

Leave Rules

1. DNB Trainees are entitled to leave during the course of DNB training as per the Leave Rules prescribed by NBE.
2. A DNB candidate can avail a maximum of 20 days of leave in a year excluding regular duty off/ Gazetted holidays as per hospital/institute calendar/policy.
3. MATERNITY LEAVE:
    a. A female candidate is permitted a maternity leave of 90 days once during the entire duration of DNB course.
    b. The expected date of delivery (EDD) should fall within the duration of maternity leave.
    c. Extension of maternity leave is permissible only for genuine medical reasons and after prior approval of NBE. The supporting medical documents have to be certified by the Head of the Institute/hospital where the candidate is undergoing DNB training. NBE reserves its rights to take a final decision in such matters.
    d. The training of the candidate shall be extended accordingly in case of any extension of maternity leave being granted to the candidate.
    e. Candidate shall be paid stipend during the period of maternity leave. No stipend shall be paid for the period of extension of leave.
4. Male DNB candidates are entitled for paternity leave of maximum of one week during the entire period of DNB training.
5. No kind of study leave is permissible to DNB candidates. However, candidates may be allowed an academic leave as under across the entire duration of training program to attend the conferences/CMEs/Academic programs/Examination purposes.

DNB COURSE	NO. OF ACADEMIC LEAVE
DNB 3 years Course (Broad & Super Specialty)	14 Days
DNB 2 years Course (Post Diploma)	10 Days
DNB Direct 6 years Course	28 days

6. Under normal circumstances leave of one year should not be carried forward to the next year. However, in exceptional cases such as prolonged illness the leave across the DNB training program may be clubbed together with prior approval of NBE.
7. Any other leave which is beyond the above stated leave is not permissible and shall lead to extension/cancellation of DNB course.
8. Any extension of DNB training for more than 2 months beyond the scheduled completion date of training is permissible only under extra-ordinary circumstances with prior approval of NBE. Such extension is neither automatic nor shall be granted as a matter of routine. NBE shall consider such requests on merit provided the seat is not carried over and compromise with training of existing trainees in the Department.
9. Unauthorized absence from DNB training for more than 7 days may lead to cancellation of registration and discontinuation of the DNB training and rejoining shall not be permitted.
10. Medical Leave
    a. Leave on medical grounds is permissible only for genuine medical reasons and NBE should be informed by the concerned institute/hospital about the same immediately after the candidate proceeds on leave on medical grounds.
    b. The supporting medical documents have to be certified by the Head of the Institute/hospital where the candidate is undergoing DNB training and have to be sent to NBE.
    c. The medical treatment should be taken from the institute/ hospital where the candidate is undergoing DNB training. Any deviation from this shall be supported with valid grounds and documentation.
    d. In case of medical treatment being sought from some other institute/hospital, the medical documents have to be certified by the Head of the institute/hospital where the candidate is undergoing DNB training.

e. NBE reserves its rights to verify the authenticity of the documents furnished by the candidate and the institute/hospital regarding Medical illness of the candidate and to take a final decision in such matters.

11.

a. Total leave period which can be availed by DNB candidates is 120+28 = 148 days for 6 years course, 60+14=74 days for 3 years course and 40+10 = 50 days for 2 years course. This includes all kinds of eligible leave including academic leave. Maternity / Paternity leave can be availed separately by eligible candidates. Any kind of leave including medical leave exceeding the aforementioned limit shall lead to extension of DNB training. It is clarified that prior approval of NBE is necessary for availing any such leave.

b. The eligibility for DNB Final Examination shall be determined strictly in accordance with the criteria prescribed in the respective information bulletin.

EXAMINATION

FORMATIVE ASSESSMENT

Formative assessment includes various formal and informal assessment procedures by which evaluation of student's learning, comprehension, and academic progress is done by the teachers/ faculty to improve student attainment. Formative assessment test (FAT) is called as "Formative "as it informs the in process teaching and learning modifications. FAT is an integral part of the effective teaching. The goal of the FAT is to collect information which can be used to improve the student learning process.

Formative assessment is essentially positive in intent, directed towards promoting learning; it is therefore part of teaching. Validity and usefulness are paramount in formative assessment and should take precedence over concerns for reliability. The assessment scheme consists of Three Parts which has to be essentially completed by the candidates.

The scheme includes:-

Part I:- Conduction of theory examination
Part-II :- Feedback session on the theory performance
Part-III :- Work place based clinical assessment

Scheme of Formative assessment

PART – I	**CONDUCT OF THEORY EXAMINATION**	Candidate has to appear for Theory Exam and it will be held for One day.
PART – II	**FEEDBACK SESSION ON THE THEORY PERFORMANCE**	Candidate has to appear for his/her Theory Exam Assessment Workshop.
PART – III	**WORK PLACE BASED CLINICAL ASSESSMENT**	After Theory Examination, Candidate has to appear for Clinical Assessment.

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student

1. Personal attributes:

- **Behavior and Emotional Stability:** Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.
- **Motivation and Initiative:** Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.

- **Honesty and Integrity:** Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.
- **Interpersonal Skills and Leadership Quality:** Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

2. Clinical Work:

- **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.
- **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- **Academic ability:** Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

3. Academic Activity: Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.

FINAL EXAMINATION

The summative assessment of competence will be done in the form of DNB Final Examination leading to the award of the degree of Diplomate of National Board in Rheumatology. The DNB final is a two-stage examination comprising the theory and practical part. An eligible candidate who has qualified the theory exam is permitted to appear in the practical examination.

Theory Examination

1. The theory examination comprises of ***Three/ Four*** papers, maximum marks 100 each.
2. There are 10 short notes of 10 marks each, in each of the papers. The number of short notes and their respective marks weightage may vary in some subjects/some papers.
3. Maximum time permitted is 3 hours.
4. Candidate must score at least 50% in the aggregate of ***Three/ Four*** papers to qualify the theory examination.

5. Candidates who have qualified the theory examination are permitted to take up the practical examination.
6. The paper wise distribution of the Theory Examination shall be as follows:

PAPER 1:

Basic sciences applied to the specialty, The Rheumatic diseases & The Clinical Pharmacolgy

PAPER 2:

Rheumatoid Arthritis, Seronegative Spondarthritis, Osteoarthrosis & The metabolic diseases

PAPER 3:

Arthritis in children, Other forms of Arthritis, Inflammatory disorders of connective tissue, Topographical rheumatology, Physical treatment , rehabilitation and surgical treatment, Recent advance and Investigations

a) Practical Examination:

1. Maximum Marks: 300.
2. Comprises of Clinical Examination and Viva.
3. Candidate must obtain a minimum of 50% marks in the Clinical Examination (including Viva) to qualify for the Practical Examination.
4. There are a maximum of three attempts that can be availed by a candidate for Practical Examination.
5. First attempt is the practical examination following immediately after the declaration of theory results.
6. Second and Third attempt in practical examination shall be permitted out of the next three sessions of practical examinations placed alongwith the next three successive theory examination sessions; after payment of full examination fees as may be prescribed by NBE.
7. Absentation from Practical Examination is counted as an attempt.
8. Appearance in first practical examination is compulsory;
9. Requests for Change in center of examination are not entertained, as the same is not permissible.
10. Candidates are required not to canvass with NBE for above.

Declaration of DNB Final Results

1. DNB final is a qualifying examination.
2. Results of DNB final examinations (theory & practical) are declared as PASS/FAIL.
3. DNB degree is awarded to a DNB trainee in the convocation of NBE.

RECOMMENDED TEXT BOOKS AND JOURNALS

BOOKS

- Oxford Handbook of Rheumatology (Eds Hakim, Clunie and Haq. Published by Oxford University Press)
- Oxford Textbook of Rheumatology (Eds Isenberg, Madison, Woo, Klars and F. C. Breedveld. Published by Oxford University Press)
- Primer on the Rheumatic Diseases (Eds Klippel, Stone, Crofford, White)
- Rheumatology 5th edition (Eds Hochberg et al. Published by Elsevier)
- Textbook of Pediatric Rheumatology (Authors Cassidy, Petty)

JOURNALS

- Annals of the Rheumatic Diseases (ARD) Official Journal of EULAR
- Arthritis and Rheumatism – official journal of the American College of Rheumatology (ACR)
- Arthritis Research and Therapy
- Current Opinion in Rheumatology
- Journal of Rheumatology
- Nature Reviews Rheumatology
- Rheumatology – Oxford journals – Official Publication of British Society of Rheumatology
- International Journal of Rheumatic Diseases. Official Publication of APLAR
- Indian Journal of Rheumatology