

Guidelines  
for  
Competency Based Training Programme  
in  
**FNB- Hand & Micro Surgery**



**NATIONAL BOARD OF EXAMINATIONS**

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## **PROGRAMME GOAL**

The goal of the Hand Surgery and Microsurgery Fellowship of the Departments of Plastic Surgery and Orthopaedic Surgery and its affiliates is to prepare physicians for a career in Hand surgery either as clinical surgeons or academic surgeons. It is the goal of the program to recruit outstanding men and women who desire to become leaders in their community or academic program

It is the goal of the program to have residents/fellows understands the practice of Hand and Micro surgery and to provide ethical lessons through faculty example and discussion. It is our goal for the resident/fellow to be competent in the knowledge of the practice of Hand surgery, to carry out this practice in a professional and ethical manner, to develop skills for continuing and self-reflective education in the field of hand surgery, and to understand hand surgery in the context of the healthcare system in which they will practice.

The purpose is to help the Fellow develop an understanding of surgical and medical management of musculoskeletal problems of the entire upper extremity. The program provides a mix of basic hand surgery and complex hand surgery conditions.

The goal Hand and Upper Extremity Fellowship is to optimally prepare surgeons-in-training to render contemporary, compassionate and fiscally-responsible care for all pathologies afflicting the hand, wrist, while inspiring the fellow to give back to the specialty through engagement in scientific inquiry and practice as a life-long learner and teacher.

Training emphasizes traumatic and acquired conditions of the hand, wrist, forearm, elbow, arm, and shoulder including peripheral nerve disorders, microsurgical training in collaboration with Plastic Surgery, brachial plexus arthroscopy of the hand, wrist, joint replacement of the hand, wrist, and congenital hand surgery.

## **PROGRAMME OBJECTIVES**

The fellowship combines clinical, teaching, and research opportunities for Plastic, Orthopaedic and General surgeons interested in furthering their knowledge of the upper extremity. Training emphasizes traumatic, congenital, and acquired conditions of the hand, wrist, forearm, and elbow.

Objectives include:

- 1) Development of clinical expertise in the diagnosis and management of disorders involving the upper extremity.
- 2) Refinement of clinical skills so new problems can be addressed based on path physiologic and patient-oriented information, allowing an appropriate course of action to be initiated.
- 3) Attainment of surgical expertise in traumatic, congenital, and acquired disorders of the upper extremity.
- 4) Exposure to research investigations including clinical review and outcomes, and basic science research.

These objectives are attained through competency-based educational methods including instruction and formal research experience.

## **ELIGIBILITY CRITERIA FOR ADMISSIONS TO THE PROGRAMME**

### **(A) FNB Hand & Micro Surgery Course:**

1. Any medical graduate with ***DNB/Mch Plastic Surgery or DNB/MS Orthopedics or DNB/MS General Surgery*** qualification , who has qualified the ***Entrance Examination*** conducted by NBE and fulfill the eligibility criteria for admission to FNB courses at various NBE accredited Medical Colleges/ institutions/Hospitals in India is eligible to participate in the Centralized counseling for allocation of FNB Hand & Micro Surgery seats purely on merit cum choice basis.
2. Admission to 2 years Fellowship 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 : 2 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 month
4. Faculty lecture teaching- once a week
5. Clinical Audit-Once a Month
6. A poster and have one oral presentation at least once during their training period in a recognized conference.
7. One publication in a national journal and one in an international journal

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan) Aspects of training would include,

**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.

**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 once a month 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.

**Microsurgery Lab Course:** All candidates must undergo one week microsurgery laboratory course either in the institution selected or where it is regularly conducted.

**Research:** The student would carry out the research project 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

## THEORY

### Basic Sciences

- Anatomy of the hand and upper limb
- Embryology of the Hand and Upper Limb
- Physiology of muscle, nerve and bone metabolism
- Principles of infection, microbiology
- Healing of wound, tendon, bone, nerve
- Anatomy and physiology of blood supply to limb including skin
- Imaging (MRI, Ultrasound, Plain radiographs, CT)
- Pathology of rheumatic, degenerative and neoplastic disorders
- Biomechanics of the hand and wrist
- Embryology of the Upper Extremity
- Basic Pathology of the Hand, Wrist, and Forearm: Bone and Joint
- Basic Pathology of the Hand, Wrist, and Forearm: Tendon and Ligament
- Basic Pathology of the Hand, Wrist, and Forearm: Nerve
- Basic Vascular Pathophysiology of the Hand, Wrist, and Forearm

### Principles of Hand Surgery

- Examination of nerves, tendons, vascular system, joints
- Injured hand - wound care, management of skeletal, vascular, tendon and nerve injuries
- Treatment of fractures and malunions of the hand
- Ligament ruptures and joint instabilities of the hand
- Arthroscopy of the hand and wrist
- Amputations in the hand and upper limb
- Burns of the hand
- Reconstructive surgery of mutilated hand
- Management of upper limb nerve injuries, including brachial plexus injuries
- Management of tetraplegia, stroke, brain injury and cerebral palsy

- Tendon transfers
- Congenital abnormalities of hand and upper limb
- Arthrosis of the hand and wrist
- The arthritic hand in rheumatoid arthritis and other inflammatory arthritides, e.g. LES and scleroderma
- Dupuytren's contracture
- Overuse syndromes
- Nerve compression syndromes
- Infections of the hand
- Vascular disorders (inc ischaemia, HAVS)
- Tumours of the hand
- Psychiatric manifestations, secondary gain etc.
- Principles of Hand Therapy
- Complex regional pain syndrome
- Skin grafts
- Local, distant and free flaps
- Extravasation injuries
- Enhancing wounds including specialised dressings and vacuum therapy
- Spasticity

### **Applied sciences**

- Anesthesia in Hand and Upper Extremity Surgery
- Radiographic Imaging of the Hand, Wrist, and Forearm
- Principles of Hand Therapy
- Intraarticular Fractures of the Phalanges
- Extraarticular Fractures of the Metacarpals
- Intraarticular Injuries of the Distal and Proximal Interphalangeal Joints
- Intraarticular Injuries of the Metacarpophalangeal and Carpometacarpal Joints
- Fractures and Joint Injuries of the Thumb
- Malunion and Other Posttraumatic Complications in the Hand
- Fractures and Joint Injuries of the Child's Hand

- Extraarticular Distal Radius Fractures
- Intraarticular Distal Radius Fractures
- Acute Injuries of the Distal Ulna
- Malunion of the Distal Radius and Ulna
- Distal Radioulnar Joint Instability
- Triangular Fibrocartilage Complex Injuries and Ulnar Impaction Syndrome
- Fractures of the Carpus: Scaphoid Fractures
- Nonunions of the Carpus
- Wrist Instability
- Ligament Injuries and Instability of the Carpus
- Dissociations of the Radius and Ulna: Surgical Anatomy and Biomechanics
- Principles of wrist Arthroscopy
- Arthroscopic Repair and Stabilization
- Arthroscopic Debridement, Resections, and Capsular Shrinkage
- 
- Ganglionectomy
- Flexor Tendon Injuries
- Flexor Tendon Grafting
- Early Active Motion after Flexor Tendon Repair
- Early Repair of Extensor Tendon Injuries
- Extensor Tendon Reconstruction after Chronic Injuries
- Rehabilitation after Extensor Tendon Injury and Repair
- Tendon Disorders: de Quervain's Disease, Trigger Finger, and Generalized Tenosynovitis
- Tennis Elbow Entrapment Neuropathies in the Upper Extremity
- Principles and technique of Tendon Transfers following nerve injuries
- Brachial Plexus Injury: Acute Diagnosis and Treatment
- Brachial Plexus: Neurotization and Pedicle Muscle Transfer
- Brachial Plexus: Free Composite Tissue Transfers
- Reconstruction of the Spastic Hand
- Burns of the Hand and Upper Extremity
- Frostbite
- Dupuytren's Contracture

- Fingertip and Nailbed Injuries
- Skin Grafts and Tissue Expanders
- Skin and Soft Tissue: Pedicled Flaps
- Free Tissue Transfers for Coverage
- Rheumatoid Arthritis in the Hand and Digits
- Rheumatoid Arthritis of the Wrist
- Crystalline Arthritis and Other Arthritides
- Osteoarthritis of the Hand and Digits: Distal and Proximal Interphalangeal Joints
- Osteoarthritis of the Hand and Digits: Metacarpophalangeal and Carpometacarpal Joints
- Osteoarthritis of the Hand and Digits: Thumb
- Principles of Limited Wrist Arthrodesis
- Scaphotrapeziotrapezoid and Scaphocapitate Fusions
- Four-Corner Fusion
- Radiocarpal and Total Wrist Arthrodesis
- Proximal Row Carpectomy
- Wrist Arthroplasty
- Denervation of the Wrist
- Congenital Disorders: Classification and Diagnosis
- Congenital Disorders: Syndactyly
- Congenital Disorders: Polydactyly
- Congenital Disorders: Hypoplastic Thumb
- Congenital Disorders: Radial and Ulnar Club Hand
- Congenital Disorders: Cleft Hand
- Camptodactyly and Clinodactyly
- Delta Phalanx and Madelung's Deformity
- Macrodactyly, Constriction Band Syndrome, Synostosis
- Replantation
- Vascular Injuries: Acute Occlusive Conditions
- Compartment Syndromes and Ischemic Contracture
- Vascular Disorders: Arteriovenous Malformations
- Raynaud's Syndrome
- Thumb Reconstruction
- Finger Reconstruction and Ray Resection

- Wrist and Mid-Hand Reconstruction
- Tumors: General Principles
- Soft Tissue Tumors of the Hand: Malignant
- Primary Bone Tumors
- Metastatic Lesions
- Hand Infections
- Open-Wound, Injection, and Chemical Injuries
- Practical Guide for Complex Regional Pain Syndrome in the Acute Stage and Late Stage
- Pediatric Brachial Plexus Palsy
- Hand, Wrist, and Forearm Fractures in Children
- Rehabilitation
- Recent advances in hand and microsurgery

## **PRACTICAL**

List of procedures follows a description with the operations to be performed independently by the trainee or, for operations of a higher degree of difficulty, as a participant. Microvascular experience is essential.

Surgical procedures can be listed according to the anatomical structures involved:

### **A) Skin and subcutaneous tissue**

- Free skin graft
- Pedicled local flaps
- Regional and/or island flaps
- Free flap with microvascular anastomosis
- Treatment of retracting scars of the hand and wrist
- Application of vacuum therapy
- Dupuytren's including PNF, collagenase, limited and radical surgery
- Extravasation
- Infection

### **B) Tendons**

- Flexor tendon repair
- Flexor tendon graft
- Flexor pulley reconstruction

- Flexor tendon tenolysis
- Trigger finger release
- Extensor tendon repair
- Extensor tendon graft
- Extensor tendon tenolysis
- Tendon sheath synovialectomy
- Tendon reconstruction in rheumatoid arthritis
- Tendon transfers (injury, paralysis, spastic conditions)
- Free muscular flap with microvascular anastomosis
- Flexor sheath infection

### **C) Bone and Joints**

- Closed reduction and fixation of fractures and dislocations
- Open reduction and fixation of fractures and dislocations
- Corrective osteotomies
- Treatment of non-union
- Bone resections
- Bone grafts and substitutes
- Free bone transfers with microvascular anastomosis
- Finger joint ligament or palmar plate repair/reconstruction
- Wrist ligament repair/reconstruction
- Arthrolysis 11. Digital/wrist arthroplasty (incl. allo-arthroplasty)
- Wrist partial and total fusion, PRC
- Hand Arthrodesis
- Denervation
- Synovectomy
- Arthroscopy
- DRUJ reconstruction
- Fractures in children

### **E) Nerves**

- Microsurgical repair of nervelesions
- Nerve grafting and neurotisation and conduits
- Neurolysis
- Neuroma

### **F) Vascular**

- Tumours and malformations
- Ischaemia (inc Kienbock' s, Raynauld' s)
- Replantation
- Revascularisation

## **G) Other**

- Congenital disorders
- Children' s disorders
- 5. Oncology- biopsy (transcutaneous, open); excision, reconstruction
- Brachial plexus repair\reconstruction
- Neuromas
- Nerve tumours
- Treatment of nerve compressionsyndromes

## **H) Blood vessels**

- Microsurgical arterial anastomosis
- Microsurgical venous anastomosis
- Vein graft
- Adventitiectomy

List of procedures should also include operations for the treatment of complex trauma of the hand, special diseases, malformations:

## **A) Amputations**

- Hand level
- Carpal or forearm\upper limb level

## **B) Replantation in limbamputations**

- Digital or metacarpal level
- Carpal or forearm\upper limb level
- Lower limb

## **C) Treatment of thermal burn, chemical injury, electricaltrauma**

## **D) Mangled hand treatment**

## **E) Fasciotomy**

- Acute
- Chronic

## **F) Infections of the Hand**

- Treatment of wound infection incl. tendonsheath

- Treatment of paronychia or pulp infection
- Treatment of osteomyelitis or septic arthritis
- Necrotising fasciitis

### **G) Tumours**

- Resection of skin and soft tissue tumour
- Resection of bone tumour
- Resection of tumour-like lesion

### **H) Contracture**

- Dupuytren's
- Volkmann's
- Stiffness
- Burns

### **I) Treatment of congenital malformations of the hand**

#### **RESEARCH**

The Hand Surgeon should undertake some research during his/her training, At the very least, a thorough understanding of the basics of research is essential

- Formulating a hypothesis
- Designing an appropriate methodology to test that hypothesis
- Using appropriate statistics to report the research
- Deducing appropriate conclusions from the data
- Understanding the limitations of a study
- Epidemiological principles

#### **Biostatistics, Research Methodology and Clinical Epidemiology**

#### **Ethics**

#### **Medico legal aspects relevant to the discipline**

#### **Health Policy issues as may be applicable to the discipline**

**In addition the Hand Fellow will attend one national Hand Surgery meeting and is encouraged to become a member of the National body of Hand Surgery .**

## **Skills**

### **A. Intellectual Skills**

#### Education

A Hand Surgeon must be able to critically assess a research article or podium presentation, to understand the strengths and weaknesses of the material and to apply it to his own practice.

#### Continuing Medical Education

Education is a life-long process; the Hand Surgeon should take personal responsibility to use all resources to improve and update his knowledge and practice.

### **B. Personal Skills**

#### Team working

Hand Surgeons work with theatre teams, therapists, nurses, junior doctors and many others who are involved in the care of patients. The Hand Surgeon will often be the leader of the team and should develop the necessary qualities of leadership.

#### Delegation

Many problems in Hand Surgery can be shared with others. The Hand Surgeon should develop skills of delegation so that patient care can be safely delegated to the appropriate practitioner to help provide an efficient, safe and cost-effective service.

#### Time Management and Stress Management

Surgery is stressful. It requires long hours with many competing demands on time and skill. Some decisions are uncertain; some procedures are very complex with potentially serious complications and uncertain outcome. The Hand Surgeon must learn to manage time and cope with stress.

#### Referral

The Hand Surgeon must appreciate the responsibility of asking for advice or referring to another practitioner when a case is beyond his expertise or comfort.

## **C.Other Skills**

### Consent

Informed consent is important in developing the confidence of a patient by engaging them in the choice of treatment and avoiding medico-legal issues with unexpected outcomes.

### Documentation

Clear contemporaneous documentation is important for many reasons: to allow proper handover, for example post-operative instructions; to record the basis of clinical decisions; for medico-legal protection; to collect data for research and audit.

### Service Management

A Hand Surgeon must be able to prioritise and also develop the skills to manage their service with the skills, resources and personnel available

# Competencies

## I. Patient Care

1. Demonstrate appropriate evaluation and treatment of patients with hand surgery problems in the emergency room and as part of the inpatient consultation service, including application of physical examination tests specific to the diagnosis.
2. Be able to examine the injured hand with a high level of sophistication and detail to determine any bony or ligamentous injury, flexor or extensor tendon injury, nerve injury, arterial injury, and infections of the upper extremity.
3. Be able to perform a detailed clinical examination of the forearm and wrist.
4. Be able to order appropriate diagnostic tests and imaging studies to assist with diagnosis and accurate assessment of the level/severity of the injury.
5. Be able to initiate and interpret a logical course of investigations for patients complaining of chronic wrist pain, including bone scan, arthrogram, CT scan and MRI scan of the wrist.
6. Be able to interpret x-rays of fractures of the wrist and hand to determine the need for closed reduction or admission for open reduction and internal fixation.
7. In consultation with the appropriate hand surgery attending, provide treatment for the patient as appropriate for level of training as a hand surgery fellow.
8. Be able to treat both simple and complex infections of the hand, wrist and forearm (e.g. flexor tenosynovitis, large or complex abscess, deep space infections of the hand, complicated cellulitis requiring inpatient therapy, necrotizing fasciitis, etc.).
9. Be able to reduce and apply appropriate cast immobilization for displaced or angulated fractures of the metacarpals, phalanges and distal radius.
10. Be able to repair nail bed injuries or apply split thickness or full thickness skin grafts for fingertip injuries.
11. Be able to perform steroid injections of the A1 pulley of the flexor tendon sheath for trigger fingers, first dorsal extensor compartment for deQuervain's tenosynovitis, lateral/medial epicondyle for epicondylitis, and carpal tunnel for carpal tunnel syndrome.

12. Demonstrate a thorough understanding of the operative anatomy and be able to perform at least the following procedures:

- Open reduction and internal fixation of metacarpal and phalangeal fractures using K-wires, interosseous wires, interfragmentary and/or lag screws, and screws and plates.
- Repair/reconstruction of ligament injuries in the hand (e.g. repair of thumb MP joint ulnar collateral ligament rupture).
- Carpal tunnel release, radial tunnel release, cubital tunnel release, and radial tunnel release.
- Open reduction and internal fixation of scaphoid fractures.
- Russe bone graft, distal radius bone graft, iliac crest bone graft, and vascularized bone graft for scaphoid nonunions.
- Release of Dupuytren's contracture, including needle aponeurotomy.
- Arthrodesis of interphalangeal joints.
- Understand the operative approach to the digits (Bruner approach).
- Dorsal and volar approaches to the wrist joint, including open reduction/internal fixation vs. closed reduction/percutaneous K-wire fixation of distal radius fractures.
- Treatment of ulnar shaft fractures.
- Wrist arthroscopy.
- Limited intercarpal fusions (e.g. STT fusion, four-corner fusion).
- Proximal row carpectomy.
- Complete wrist fusion.
- Syndactyly release and treatment of other common congenital hand differences.
- Lateral/medial epicondylectomy for epicondylitis.
- Tendon transfers.
- Radius and ulna shortening osteotomies.
- Distal ulna resection procedures (e.g. Darrach procedure, Feldon wafer procedure, Bower's hemiresection).
- Trapezium excisional arthroplasty for metacarpal-trapezial arthritis
- Extensor tendon repairs.

- Flexor tendon repairs, including "no man's land" repairs for zone II flexor tendon injuries.
- Tenolysis, secondary tendon reconstruction, flexor tendon sheath pulley reconstruction
- Extensor and flexor tendon grafting.
- Joint arthroplasties of the MP and PIP joints.
- Neurolysis.
- Excision of upper extremity tumors.
- Excision of common hand masses (giant cell tumor, ganglion cysts, mucous cysts, volar retinacular cysts, neuromas, schwannomas, etc.)

13. Be able to apply an external fixator for reduction of distal radius fractures.

14. Demonstrate microsurgical skills under the operating microscope and be able to perform microsurgical procedures such as arterial anastomoses, group fascicular nerve repair, nerve grafting and free tissue transfers.

## **II. Medical Knowledge**

1. Develop an advanced understanding of the anatomy of the forearm, wrist and hand, including the bones, ligaments, tendons, nerves and arteries.

2. Demonstrate a thorough understanding of the treatment of fractures of the hand and wrist, fingertip injuries, tendon injuries, nerve injuries.

3. Demonstrate ability to diagnose and treat nerve compression syndromes, including carpal tunnel syndrome, cubital tunnel syndrome and radial tunnel syndrome.

4. Understand the indications and contraindications for replantation in the upper extremity.

5. Be able to perform reconstructive hand surgery, including treatment for congenital hand anomalies, tendon transfers and Dupuytren's contracture.

6. Focused reading of other appropriate textbooks and journals of hand surgery, Incorporate online sources of information available on the internet to augment the knowledge base and to facilitate acquiring specific information for specific questions or problems that arise.

7. Demonstrate a detailed understanding of the use of splints for fracture immobilization and tendon rehabilitation.
8. Prepare and present at least three 45-minute presentations on three different hand surgery topics at the weekly hand service conference during the rotation (over a twelve-month period).
9. Prepare and present a monthly report for the hand surgery Morbidity and Mortality conference, including a detailed presentation of "Cases of the Month".
10. Attend and participate at the weekly hand service conference during the rotation.
11. Attend the orthopaedic residents' journal club that focuses on hand surgery, hosted 2-3 times per year by Drs. Azari, Meals and Benhaim.
12. Attend and participate at the biannual lecture series on hand surgery (24 lectures total), presented at the weekly orthopaedic surgery basic science course on Wednesday mornings.
13. Attend the monthly hand surgery journal club, hosted by Dr. Meals at his home.

### **III. Practice-Based Learning and Improvement**

1. Frequently use, in a focused fashion, the available printed textbooks, online textbooks, and Medline sources for application to specific patients. The goal is to demonstrate the ability to locate and interpret scientific studies and known medical knowledge into an appropriate knowledge base that will be of direct benefit to patients.
2. Frequently present and discuss patients with the attending hand surgeons after initial evaluation and review of available diagnostic tests to confirm the appropriate treatment plan. The hand fellow will be expected to formulate a plan of treatment, which will then be reviewed in detail and either confirmed or altered as necessary to achieve optimal patient outcome.
3. Use appropriate sources (e.g. textbook, selected articles from the literature, etc.) to obtain more detailed information about a specific patient or diagnosis, based on his/her experiences on the hand surgery service and any specific questions that arise as part of that experience/exposure.
4. Play an active role in the teaching of senior orthopaedic surgery residents, junior plastic surgery residents, junior orthopaedic residents, sports medicine fellows, senior medical students (sub-interns) and junior medical students on the service.

5. Demonstrate expertise in use of available information technology and hospital information systems to manage patient data (e.g. lab tests, imaging tests, etc.) and access online information that will be of direct benefit to his/her own education.
6. Integrate feedback from faculty to ensure that the hand fellow is able to analyze his/her own practice experience, with the goal of improving future patient care. Feedback is provided systematically at the weekly hand service conference, which includes a morbidity and mortality format to identify areas of potential improvement for all members of the hand surgery service.
7. Undergo formal evaluation at least twice per year, including review of progress and suggestions for improvement).

#### **IV. Interpersonal and Communication Skills**

1. Demonstrate ability to communicate effectively with all members of the hand service, including medical students, junior residents, senior residents, sports medicine fellows, and hand surgery attending staff.
2. Demonstrate ability to communicate effectively and work well with all members of the hospital staff, including nurses, nursing assistants, radiology staff, social workers, discharge planners, physical therapists, hand therapists, operating room/surgery center staff, inpatient/outpatient support staff, etc.
3. Demonstrate the ability to interact effectively, professionally, and empathetically with patients and family members.
4. Demonstrate the ability to provide appropriate and detailed information to patients and family members, when appropriate.
5. Demonstrate the ability to develop an appropriate relationship with a patient that fosters communication, respect, and ethics of the highest degree.
6. Demonstrate the ability to recognize important cultural and generational differences that may affect patient care, and to apply appropriate changes in approach to these patients that respect these important differences (e.g. amputation of a digit in Asian cultures has important cultural implications that need to be addressed).

7. Demonstrate effective listening and communication skills with patients, which may include both verbal and non-verbal skills.
8. Demonstrate ability to understand and respond appropriately to patient inquiries.

## **V. Professionalism**

1. Demonstrate a strict adherence to medical/ethical principles.
2. Demonstrate a keen sensitivity to the differences and challenges that a diverse patient population may present.
3. Treat all patients with respect, empathy, and with compassionate care. All patient inquiries and requests will be considered seriously, professionally, and in a timely manner.
4. Recognize the important social, economic, emotional, and work-related implications that a hand problem or injury may represent for the patient.
5. Provide patients with excellent care in all aspects.
6. Maintain patient confidentiality, including strict adherence to HIPPA guidelines.
7. Obtain informed consent from patients in accordance with established guidelines that ensure full patient comprehension after a detailed discussion of all pertinent issues relating to patient care/surgery. This includes the opportunity for the patient to ask and have answered questions relating to any proposed procedures.
8. Demonstrate the ability to accommodate and adapt to differences in patients' culture, age, gender and disabilities.

## **VI. Systems-Based Practice**

1. Develop an awareness of how the care that they provide to patients can affect other caregivers and in general.
2. Demonstrate an ability to effectively utilize hospital resources in a way that directly benefits patient care.

3. Develop a more in-depth understanding of the different types of medical practice available in the context of hand surgery..
4. Develop a more detailed understanding of the differences in different payor types, such as worker's compensation, managed care, HMO, PPO, Medicare, MediCal, and student health insurance plans.
5. Develop a mature understanding of the necessity to provide efficient and cost-effective health care in the context of appropriate use of limited medical resources, yet without sacrificing quality of care.
6. Act as a patient advocate and assist patients in obtaining the necessary care, including coordination of post-discharge care if necessary (e.g. home health care, postoperative hand therapy, placement into appropriate rehabilitation facility, etc.).

## **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/FNB Trainees are entitled to avail leave during the course of DNB/FNB training as per the Leave Rules prescribed by NBE.
2. A DNB/FNB Trainees can avail a maximum of 30 days of leave in a year excluding regular duty off/ Gazetted holidays as per hospital/institute calendar/policy. This leave shall be processed at the institutional level.
3. Any kind of study leave is not permissible to DNB/FNB Trainees.
4. 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/FNB training program may be clubbed together with prior approval of NBE.
5. Unauthorized absence from DNB/FNB training for more than 7 days may lead to cancellation of registration and discontinuation of the DNB/FNB training and rejoining shall not be permitted.
6. Any Leave availed by the candidate other than the eligible leave (30 days per year) shall lead to extension of DNB /FNB training. The training institute has to forward such requests to NBE along with the leave records of the candidate since his/her joining and supporting documents (if any) through the Head of the Institute with their recommendation/comments. NBE shall consider such requests on merit provided the seat is not carried over and compromise with training of existing trainees in the Department.
7. Any extension of DNB/FNB training 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.
8. DNB/FNB trainees are required to complete their training by a prescribed cutoff date (as per information bulletin of Exit exam) for being eligible to DNB/FNB Exit examination.
9. The eligibility for DNB/FNB Final Examination shall be determined strictly in accordance with the criteria prescribed in the respective information bulletin.

10. candidates join on or after 2018 can avail Maternity / Paternity leave, as per the Central or State Government policies, whichever is applicable to DNB/FNB training institute.
11. DNB/FNB trainees are eligible for stipend either during the leave period or extension of training period as per the policies of DNB/FNB training institute and prevailing rules.

## **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

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

## **FELLOWSHIP EXIT EXAMINATION**

The summative assessment of competence will be done in the form of Fellowship Exit Examination leading to the award of the degree of Fellow of National Board in Hand & Micro Surgery. The FNB final is a two-stage examination comprising the theory and practical part

### **Theory Examination:**

1. **The Theory examination comprises of one paper with maximum marks of 100.**
2. **There are 10 short notes of 10 marks each in the Theory paper**
3. **Maximum time permitted is 3 hours.**

### **Practical Examination:**

1. **Maximum marks : 300**
  2. **Comprises of Clinical Examination and viva**
- The candidate has to score a minimum of 50% marks in aggregate i.e. 200 out of total 400 marks (Theory & Practical) with at least 50% marks in theory examination to qualify in the Fellowship Exit Exam.

- The Theory and Practical of Fellowship Exit Examination shall be conducted at the same examination centre of the concerned specialty.

### **Declaration of FNB Results**

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

## RECOMMENDED TEXT BOOKS AND JOURNALS

### TEXT BOOKS

- Green's Operative Hand Surgery: 2-Volume Set, 6e 6th Edition by Scott W. Wolfe MD (Author), William C. Pederson MD (Author), Robert N. Hotchkiss MD (Author), Scott H. Kozin MD (Author)
- Lister's The Hand :Diagnosis and Indications
- ASSH Manual of Hand Surgery By Warren C. Hammert, Martin I. Boyer, David J. Bozentka, Ryan Patrick Calfee
- Microsurgery Practice Manual by Robert.D.Acland and Raja S Sabapathy
- Operative Microsurgery by J.Brian Boyd and Neil F Jones
- Principles of Hand Surgery and Therapy Thomas E. Trumble, Ghazi M. Rayan, Mark E. Baratz

### JOURNALS

- Journal of Hand Surgery, European Volume
- Journal of Hand Surgery (American)
- Journal of Hand Surgery (Asia Pacific)
- Hand Clinics
- Journal of Bone and Joint Surgery (American and British volumes )
- Techniques in Hand and Upper Extremity Surgery
- Plastic and Reconstructive Surgery
- Journal of Plastic Reconstructive and Aesthetic Surgery
- Indian Journal of Plastic Surgery
- Indian Journal of Orthopaedics
- Internet sources Pubmed Medscape Web of Science

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