

**National Board of Examinations**

**REVISED CURRICULUM FOR COMPETENCY  
BASED TRAINING OF DNB CANDIDATES**

**ORTHOPAEDICS  
2006**



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## *Preface*

*The National Board of Examination was established in 1975 with the primary objective of improving the quality of the Medical Education by elevating the level and establishing standards of post graduate examinations in modern medicine on all India basis. There are more than 450 N.B.E accredited institutions/ Hospitals , imparting DNB training programmes in 28 Broad specialties and 16 super specialties. Besides, there are Post-doctoral fellowship programmes in 14 specialties and Post-graduate dental programmes in 9 specialties. In order to have standardized and quality training in all the accredited hospitals, National Board of Examinations has a well structured curriculum. The curriculum is being revised periodically to incorporate newer topics and introduce more innovative training methods. The present curriculum has been revised by National Board of Examinations' experts and has details of the training objectives, schedule, methods, technical contents. There are lists of skills in various procedures/ surgical techniques which a DNB candidate must acquire during the training, reference and text books as well as the journals in the speciality. The curriculum also gives sample theory questions and common cases for practical skill assessment during training every six months in the form of concurrent assessment. The guidelines for thesis and maintenance of log book to record day to day activities carried out by the candidates are also given.*

*It is expected that the revised curriculum will be useful to the DNB consultants in organizing the DNB training programmes in their respective hospitals. The DNB candidates will also benefit from this document.*

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## Goals

**Patient care ability :** A candidate in orthopaedics surgery at the end of its 3 year course should develop proper clinical acumen to interpret diagnostic results and correlate them with symptoms. He should become capable to diagnose common clinical conditions/diseases in the speciality and to manage them effectively with success. He should be able to decide for making a referral to consultation with a more experienced colleague/professional friend while dealing with any patient with a difficult problem.

**Teaching ability :** He/she should be able to teach MBBS students about the commonly encountered conditions in orthopaedics, pertaining to their diagnostic features, basic pathophysiological aspects and the general and basic management strategies.

**Research Ability :** He/she should also acquire elementary knowledge about research methodology, including record-keeping methods, and be able to conduct a research inquiry including making a proper analysis and writing a report on its findings.

**Team work :** He/she should be capable to work as a team member. He/she should develop general humane approach to patient care with communicating ability with the patients' relatives, especially in emergency situations such as in casualty department, while dealing with cancer patients and victims of accidents. He/she should also maintain human values with ethical considerations.

## Objectives to be achieved by an individual at the end of 3 years of DNB training

A candidate at the end of a 3-year course should acquire the following :

- **Cognitive knowledge :** Describe embryology, applied anatomy, physiology, pathology, clinical features, diagnostic procedures and the therapeutics including preventive methods (medical/surgical) pertaining to musculoskeletal system.
- **Clinical decision making ability & management expertise :** Diagnose conditions from history taking, clinical evaluation and investigations and to develop expertise to manage medically as well as surgically the commonly encountered disorders and diseases in different areas.
- **Teaching :** Acquire ability to teach the MBBS students in simple and straightforward language about the common orthopaedic ailments/disorders, especially about their signs/symptoms for diagnosis with their general principles of therapy.

- **Research:** Develop ability to conduct a research enquiry on clinical materials available in hospital and in community.
- **Patient doctor relation:** Develop ability to communicate with the patient and his/her relatives pertaining to the disease condition, its severity and options available for the treatment/therapy.
- **Preventive Aspect:** Acquire knowledge about prevention of common conditions especially in children such as poliomyelitis, congenital deformities, cerebral palsy and common orthopaedic malignancies.

### **Tentative Schedule for three years of DNB Training**

#### **Clinical Posting**

- Spend 6 (six) months in orientation programme including exposure to casualty.
- Learns bedside history taking in ward, OT exposures, casualty, ICU requirement and their visit to related disciplines such as physical medicine and rehabilitation/Anaesthesia.
- Care of indoor (medical preoperative and postoperative) patients for a minimum period of 6 months and learn techniques of traction, wound care and splintage.
- Attends operation theatre and emergency operations for acclimatization.
- Assists ward rounds and visits other wards with senior colleagues to attend call/consultation from other departments.
- Participates in the teaching sessions in wards for bedside clinical teaching in the weekly afternoon seminar/journal club.

#### **Remaining 2 and Half Years**

- Attends orthopaedic OPD 3 days in a week
- Discuss problematic cases with consultant (s) in OPD/ward
- Attends operation room/theatre 3 days in a week
- Attends 2 morning rounds/week
- Care of the indoor patients on beds allotted to him/her.
- Attends the weekly journal Club and seminar and presents the same by rotation.
- Attends speciality clinics, viz scoliosis, polio, hand, CTEV, arthritis clinics and presents cases; participates in discussions including therapy-planning etc.
- During the 2 and half years, the resident must attend the combined teaching Programme of the department of Surgery, Neurosurgery and Medicine i.e. clinical meetings, CPC's of students and staff of the whole hospital.
- Surgicopathological conference in pathology department, with surgeons.

- Visits the Rural Clinic by rotation for community exposures/work experience.
- Does 24 hours-emergency duty once a week/as per roster of the department.
- Attends lectures by the visiting faculty to the department/college from India/abroad.
- Attends/participates/presents papers in state/zonal national conferences.
- Actively participates/helps in organization of departmental workshop, courses in specialized areas like Arthroplasty, Arthroscopy, Spine, and Hand Surgery from time to time.

## **Thesis**

Research methodology/reporting on research: Learns the basics in research methodology.

- Problem oriented record keeping including the use of computer.
- Use of medical literature search through the internet or library.
- Attends Biostatistics classes by arrangement.
- Research Report – preparation and writing of Protocol for Research/Thesis.
- Writing an abstract/short paper/presentation style (slide-making & audiovisual aids).
- Preparation of a report on a research project/Thesis.
- Humanity/Ethics: Lectures on humanity, personality development, team spirit and ethical issues in patient care and human relationship including, public relations, by Psychologist and public relation officers are to be arranged by the department/college.

## **Methods of Training and Teaching**

The following learning methods are to be used for the teaching of the postgraduate students:

1. Journal Club : 1 hour duration – Paper presentation/discussion – once per week (Afternoon).
2. Seminar : One seminar every week of one hour duration (Afternoon)
3. Lecture/discussion : Lectures on newer topics by faculty, in place of seminar/as per need.
4. Case presentation in the ward and the afternoon special clinical (such as Scoliosis/Hand clinics), Resident will present a clinical case for discussion before a faculty and discussion made pertaining to its management and decision to be recorded in case files.
5. Case Conference – Residents are expected to work-up one long case and three short cases and present the same to a faculty member and discuss the management.

6. X-ray Classes – Held twice weekly in morning in which the radiologic features of various problems are discussed.
7. Surgicopathological Conference : Special emphasis is made on the surgical pathology and the radiological aspect of the case in the pathology department such exercises help the orthopaedics/Pathology/Radiology Residents.
8. Combined Round/Grand Round : These exercises are to be done for the hospital once/week or twice month involving presentation of usual or difficult patients. Presentation of usual or difficult patients. Presentations of cases in clinical combined Round and a clinical series/research data on clinical materials for benefit of all clinicians/Pathologists/other related disciplines once in week or fortnightly in the Grand round.
9. Community camps : For rural exposure and also for experiences in preventive aspect in rural situation/hospital/school, patient care camps are to be arranged 2-3/year, involving residents/junior faculty.
10. Emergency situation : Casualty duty to be arranged by rotation among the PGs with a faculty cover daily by rotation.
11. Afternoon clinics : Scoliosis Clinic – Held once a week. Residents work up the cases of spinal deformity and present them to a faculty member and management plan recorded in case file.

Hand Clinic – Held once a week corrective casts are given and the technique learnt by the resident. Surgical management is also planned & recorded in case file.

Polio Clinic – Held once a week. Various braces & Calipers are prescribed and surgical management planned.

12. Besides clinical training for patient care management and for bed side manners : Daily for ½ to one hour's during ward round with faculty and 1-2 hours in the evening by senior resident/faculty on emergency duty, bed side patient care discussions are to be made.
13. Clinical teaching : In OPD, ward rounds, emergency, ICU and the operation theatres :

Residents/Senior Residents and Faculty on duty in respective places – make discussion on clinical diagnosis/surgical procedures/treatment modalities, including postoperative care and preparation of discharge slip

## **Assessments/ Examinations**

### **Concurrent examination/assessment**

The purpose of the concurrent assessment is to give regular feedback to the DNB candidates about their performance and to prepare them for the final terminal examination by giving them exposure to the examination pattern. As a part of the concurrent evaluation the DNB candidates will be assessed every six months by an independent local appraiser selected by National Board of Examinations. This would include theory examination (100 marks of three hours duration) containing 10 short structured questions related to the topics covered during the preceding six months by the accredited hospital/institution.

The practical examination (300 marks) will include long case, short case, spots, ward round, viva voce on the topics covered during the period by the hospital/institution.

### **Final Examination**

The Final Examination shall consist of

1. Theory exams four papers
2. Practical Exams: - clinical, oral, instruments/specimen/hard parts/X-rays/splints etc.

### **Theory papers**

Theory: There shall be four papers: Each being of three hours duration. Each paper will have 8-10 short questions from the curriculum.

PAPER I	Section-A- Section B-	General Surgery as related to Orthopaedic Surgery Adult Orthopaedic including Orthopaedic Pathology
PAPER II	Section A- Section B-	Children's Orthopaedic and Hand Surgery Physical Medicine, Prosthetics and Ortnotics
PAPER III		Traumatology
PAPER IV		Basic Sciences as applied to Orthopaedics

### **Practical Examination**

- (a) Identification of Surgical Pathology, excised specimens & discussion, reading X-rays & CT scan/MRI, identification of instruments and discussion identification of braces & calipers & discussion thereon.
- (b) Clinical Patient presentation/discussion.

- (i) One long case : The long case will be structured comprising, history taking, clinical examination, investigations, decision making, proposed treatment modalities, ethical justification and personal attributes.
- (ii) Three short cases : The short cases will be also be structured in which only one particular system may be considered and therapy decision/discussion, made OSCE for 2 short cases.

## ANNEXURE- I, THEORY SYLLABUS

### Basic Sciences

Development of skeleton, histology of cartilage histology & histopathology of bone, physiology of fracture healing, delayed and non-union of bones, histology of skeletal muscle, collagen, physiology and mineralization of bone, physiology of cartilage, biophysical properties of bony and bone disease and related dysfunction of parathyroid glands.

### Principles & Practice of Orthopaedics

Bone infections (Pyogenic, tuberculosis, syphilis, mycotic infections, salmonella & brucella osteomyelitis), congenital deformities (upper & lower extremities, spine and general defects), developmental conditions (osteogenesis imperfecta, dysplasias, hereditary multiple exostosis etc.) diseases of the joints (osteoarthritis, rheumatoid arthritis, neuropathic joints, ankylosing spondylitis, sero-negative spondyloarthropathy, traumatic arthritis etc.) orthopaedic neurology, tumors of bony. Disorders of hand & their management.

### General surgical principles & allied specialities

General surgery, oncology, and medicine as applicable to the musculo-skeletal disorders/disease.

Radiology, Imaging – computed tomography and magnetic resonance imaging and interventional radiology and angiography as related to orthopaedics.

General pathologic aspects such as wound healing and also pathology and pathogenesis of orthopaedic diseases, pharmacology, molecular biology, genetics, cytology, haematology, and immunology as applicable to orthopaedics.

General principles of traumatology.

Plastic surgery as applicable to orthopaedics

**Pediatric orthopaedics**-The student should be exposed to all aspects of congenital and developmental disorders such as CTEV (club-Foot), development dysplasia of hip, congenital deficiency of limbs. Perthe's disease and infections, and also to acquire adequate knowledge about the principles of management of these disorders.

**Orthopaedic oncology**-The resident is expected to be familiar with the tumours encountered in orthopaedic practice. The recent trends towards limb salvage procedures and the advances in chemotherapy need to be familiar to him.

**Management of Trauma**-Trauma in this country is one of the main causes of morbidity and mortality in our demographic statistics. The student is expected to be duly conversant with trauma in its entirety. In any type of posting after qualification the orthopaedic surgeon would be exposed to all varieties of acute

trauma. Hence, it is his responsibility to be able to recognize, assess and manage it including the medico legal aspects.

**Sports Medicine** – A lot of importance is being given to sports medicine especially in view of the susceptibility of the athlete to injury and his failure to tide over them. Sport medicine not only encompasses diagnostic and therapeutic aspects athletic injuries but also their prevention, training schedules of personnel and their selection.

**Physical Medicine and Rehabilitation** – The student is expected to be familiar with this in all its aspects. Adequate exposure in the workshop manufacturing orthotics and prosthetics is mandatory, as is the assessment of the orthopedically handicapped.

**Orthopedic Neurology** – The student should be exposed to all kinds of nerve injuries as regards their recognition & management cerebral palsy and acquired neurological conditions such as post polio residual paralysis also need to be emphasized in their entirety.

**Spine Surgery** – The student is expected to be familiar with various kinds of spinal disorders such as scoliosis, kypho-scoliosis, spinal trauma, PIVD, infections (tuberculosis and pyogenic), & tumours as regards their clinical presentations and management.

**Radiology** – Acquire knowledge about radiology/imaging and to interpret different radiological procedures and imaging in musculo-skeletal disorders. There should be collaboration with Radiology department for such activities.

Psychological and social aspect – Some elementary knowledge in clinical Psychology and social, work management is to be acquired for management of patients, especially those terminally ill and disabled-persons and interacting with their relatives.

## **Semester-wise Break up of Syllabus**

### **FIRST SEMESTER (6 months)**

- Humanity/Ethics -Lectures on humanity, personality development, team spirit, Ethical issues in patients, Doctor- patient relationship and interpersonal relationship- 3 lectures
- Basic Sciences-Development of skeleton, Histology & Histopathology of cartilage & bone, Histology of skeletal muscle, collagen, Physiology of cartilage, Biophysical properties of bone and bone diseases and related dysfunction of parathyroid glands, Physiology of fracture healing, Delayed union & non-union of bones
- Emergency management of the Injured patient including critical care-lectures by Anesthetist for airway maintenance & shock management , Basic splintage and transportation techniques, ATLS
- Medical record keeping and bio-statistics
- Preparation for thesis/ protocol
- History taking and clinical examination of the patient

## **Second Semester**

- Common fractures/dislocations diagnosis and management including traction techniques
- Interpretation of plain x-rays and clinico-radiological co-relation
- Diagnosis and management of acute and chronic orthopaedic infections

## **Third Semester**

- **Pediatric Orthopedics** with emphasis on CTEV, CDH, Perthes disease, S.C.F.E., club hand
- **Physical Medicine & Rehabilitation:** with emphasis on electro diagnosis and various physiotherapy and occupational therapy techniques
- **Orthopedic neurology including** Polio, Cerebral palsy and spina-bifida
- **Interpretation of C.T., MRI, Bone Scanning-** Techniques and clinico-radiological co-relation.

## **Fourth Semester**

- Orthopaedic Oncology
- Surgical stabilizations of orthopaedic trauma
- Peripheral nerve injuries
- Clinical orthopaedics
- Biomaterials in orthopaedics

## **Fifth Semester**

- Sports medicine and arthroscopy
- Arthroplasty
- Spinal disorders including scoliosis, trauma, infections, degeneration and tumours
- Clinical orthopaedics
- Recent advances in orthopaedics

**ANNEXURE-II, DETAILS OF THE SKILLS TO BE ACQUIRED DURING THE TRAINING PERIOD**

**Clinical procedures, which the candidates must know**

S.no	Name of procedure	Number of procedure		
		As observer	As first assistant	Independently under supervision
	<b>ORTHOPAEDICS</b>			
1.	Skin traction			Yes
2.	Skeletal traction of upper Tibia, distal Tibia, lower Femoral, Trochanteric screw, Olecranon, Calcaneal and Skull traction			Yes
3	Closed reduction of Fractures & Dislocations: Clavicle, Shoulder dislocation, proximal Humerus, shaft of Humerus, supra-condylar / inter condylar and distal humeral fracture, dislocation Elbow, Fracture of both bones forearm, Monteggia and Galeazzi fracture- dislocation, Colles' and other distal radial fractures, Scaphoid fracture, perilunar dislocations, and related carpal dislocations, dislocations of hip, fracture shaft of femur in children, tibial shaft fracture, Ankle fractures& dislocations.			Yes
4	Management of open fractures - Debridement, external fixation - Soft tissue reconstruction including bone coverage			Yes Yes
5	Open reduction and internal fixation of Fractures - Plate Osteosynthesis in shaft Humerus and both bones forearm fractures - Tension band wiring of			Yes Yes

	Olecranon, Patella & Medial malleolus fractures - Kirschner wire fixation of supra condylar fracture of humerus - Cannulated screw fixation for fracture neck of femur - Dynamic Hip Screw of trochanteric fracture - Intramedullary nailing for femoral shaft fracture - Fixation of Potts fracture - Excision of Head Radius			Yes  Yes  Yes  Yes  Yes
6	Fixation of Fractures like proximal Humeral, Supracondylar Femur, Proximal tibia & Talus fracture - dislocation Interlocking Nail- Femur, Tibia		Yes	
7	Spine - Exposure to spine by posterior, anterior and anterolateral approaches		Yes	
8	CTEV Manipulation and POP application Tendo Achilles lengthening			Yes  Yes
	Postero-medial soft tissue release Bony procedures including triple arthrodesis		Yes  Yes	
10	High tibial osteotomy		Yes	
11	Tendon repair		Yes	
12	Poliomyelitis			
	Hamstring Release & Posterior Capsulotomy Flexor Abductor release			Yes
	Corrective osteotomies of Humerus, Femur and Tibia		Yes	
	Knee & Ankle arthrodesis Pantalar and triple arthrodesis		Yes Yes	
	Limbs lengthening / Illizarov procedure	Yes		
13	Bone & Joint Infections Aspiration of joint			Yes

	Drilling/ Decompression of metaphysis Drainage of abscess			Yes Yes
	Sequestrectomy & saucerisation Girdlestone/Excision arthroplasty of Hip			Yes Yes
14	Arthrolysis of Elbow joint	Yes		
15	Bone tumors			
	- Biopsy from tumor - Excision of osteochondroma - Curettage & Bone grafting			Yes Yes Yes
16	Amputations			Yes
17	Limbs salvage procedures		Yes	
18	DESIRABLE PROCEDURES Endoscopy Arthroscopy of knee Joint replacement - Hip joint - Knee joint Peripheral nerve repair Tendon transfer procedures Spinal stabilization procedures like pedicular screw	Yes Yes Yes Yes	Yes Yes Yes Yes Yes	

**Investigations/ tests which the candidates must know to interpret**

	Name of Investigations/ tests
<b>Hematological investigations in Orthopedic conditions like</b>	<ul style="list-style-type: none"> <li>- C-reactive protein,</li> <li>- Rheumatoid factor,</li> <li>- HLA-B27,</li> <li>- Serum Electrophoresis,</li> <li>- Serum Ca, P, Alkaline phosphatase, Acid phosphatase, Uric acid, Total proteins &amp; A.G. ratio</li> <li>- Elisa</li> </ul>
<b>Urine</b>	<ul style="list-style-type: none"> <li>- Bence Jones proteins,</li> <li>- 24hr Urinary Ca</li> </ul>
<b>Radiological investigations</b>	<ul style="list-style-type: none"> <li>- Plain radiography</li> <li>- CT Scan, MRI</li> <li>- Radio- isotope bone scan</li> </ul>
<b>Histopathological slides of common Orthopedic conditions like</b>	<ul style="list-style-type: none"> <li>- Interpretation of Tubercle,</li> <li>- Myeloma</li> <li>- Osteosarcoma</li> <li>- Ewing Sarcoma</li> <li>- Giant cell tumor</li> </ul>

## **ANNEXURE –III, SAMPLE CASES FOR PRESENTATION AND DISCUSSION**

### **Long cases**

- Fixed/ Ankylosed hip
- Neglected fracture Neck of femur
- Tubercular Hip
- Neglected traumatic dislocation hip
- Potts paraplegia
- Extra dural cord compression
- Prolapsed intervertebral disc
- Spinal Canal stenosis
- Cauda equina syndrome
- Avascular Necrosis of Hip
- Traumatic paraplegia

### **Short cases**

- Cubitus varus/ Valgus
- Non union Humerus with or without radial nerve palsy
- Non union lateral condyle of Humerus
- Infected non union
- Chronic osteomyelitis
- Post polio flail shoulder/ paralysed elbow
- Neglected unreduced Dislocation Elbow
- Neglected unreduced Dislocation Shoulder
- Malunited Colles Fracture
- Carpal tunnel Syndrome
- Bone tumors like Osteosarcoma, Ewing's Sarcoma, Giant cell tumor, Osteochondroma, Osteoid osteoma etc
- Genu varum/ Genu Valgum
- Ruptured Tendo Achillis
- Erb's palsy/ Brachial plexus injury
- Nerve injuries-Median Nerve, Radial Nerve, Ulnar Nerve, Sciatic Nerve, Common Peroneal Nerve

### **Spots**

- Pathological Specimens-Giant cell Tumor, Osteosarcoma, Ewings Sarcoma, Sequestrum, Madura foot
- Bones
- Instruments
- X-Rays
- Orthotics/ Prosthetics-Patellar tendon bearing prosthesis, Cock up Splint, Denis brown splint, Ischial weight relieving caliper, Jaipur foot

#### ANNEXURE-IV, SAMPLE QUESTIONS FOR SIX MONTHLY ASSESSMENTS

- What is informed consent? What is its relevance?
- How would you declare the news of a dead patient to the relatives?
- How would you explain the complications of a surgical procedure and its significance?
- How much one should inform to patient about the disease?
- Essay/ short notes on-Histology of Bone, Joint Lubrication, Cartilage/ Chondrocyte Culture & its use in orthopedics, Bone Metabolism, Spaces of Hand, Posterior approach to hip, Initial resuscitation of a poly traumatized patient, Fat Embolism, Gas gangrene, Tetanus, Tourniquet, Application of Chi Square test
- Russel Traction
- Techniques of application of skull traction
- Thomas Splint
- Clinical features, Diagnosis and Management of Supra condylar fracture of Humerus
- Myositis ossificans
- Causes of Nonunion of bone
- Principles of management of Nonunion
- Acute osteomyelitis of Proximal tibia- Diagnosis & management
- Tuberculosis of Hip- Clinical & radiological staging
- Pathoanatomy of Congenital Talipes equinovarus
- Classification of various stages of Perthes disease
- Management of Perthes disease
- Management of Dysplastic hip
- Clinical manifestations of congenital dislocation of hip
- Management of slipped capital femoral epiphysis
- Short notes on-Club hand, Short wave diathermy, Electromyography, Strength duration curve, Continuous passive motion, Technicium 99 bone scan
- Aneurysmal Bone cyst
- Osteochondroma
- Limb salvage in Tumors
- Chemotherapy for Osteosarcoma
- Multiple Myeloma
- Claw Hand
- Tendon transfer in Radian nerve injury
- Foot drop
- Nerve grafting
- Silicon in orthopedics
- Ceramics in orthopedics
- Metal on metal joints
- Bone cement
- Clinical features of Meniscal Injury
- Anterior cruciate ligament repair
- Bankart's repair

- Management of caries spine with neurological deficit
- Spondylolisthesis- Its complications & Management
- Lumbar Canal stenosis
- Discography
- Laminoplasty
- Complication of Total Hip Replacement
- Peri prosthetic fractures
- Unicdylar Knee
- Articular Surface replacement

## **ANNEXURE- V, BOOKS AND JOURNALS WHICH THE CANDIDATE MUST READ**

- Watson Jones fractures and joint injuries, J.N. Wilson, Churchill Livingston
- Outline of orthopedics, Crawford Adams, Churchill Livingston
- Closed treatment of fractures, H. John Charnley, Churchill Livingston
- Mercer's orthopedics surgery, Duthie, Edward Arnold
- Pediatrics orthopedic and fractures, W.J. Sherrad, Butterworth
- Orthopedics diseases, Aegerter & Kirkpatrick, Saunders
- Tumours and tumourous conditions of bones and joints, Jaffe, Lea Febiger
- Campbell's operative orthopedics, A.H. Crenshaw, C.V. Mosby
- Extensive exposure, A.K. Henery, Churchill Livingston
- Fractures in adults and children, Rockwood, Greens,
- Text book of orthopedics, Samuel Turek

### **Journals**

- Indian journal of orthopedics
- Journal of bone and surgery ( British and American volumes0
- Orthopedics clinics of North America
- Clinical orthopedics and related research
- Yearbook of orthopedics
- Journal of rehabilitation, Bombay
- INJURY
- British journal of Rheumatology and physical medicine

## ANNEXURE-VI, GUIDELINES FOR WRITING THESIS/DISSERTATION

Research shall form an integral part of the education programme of all candidates registered for Diplomat of NB degrees of the Board. The Basic aim of requiring the candidates to write a 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

- I. The thesis may be normally restricted to the size to 100 pages. To achieve this, following points may be kept in view;
  - (i) Only contemporary and relevant literature may be reviewed.
  - (ii) The techniques may not be described in detail unless any modification/innovations of the standard techniques are used and reference may be given.
  - (iii) Illustrative material may be restricted.
  - (iv) 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:
    - For prospective study, as far as possible, the number of cases should be such that adequate material, judged from the hospital attendance, will be available and the candidate will be able to collect the case material within a period of 6-12 months so that he/she is in a position to complete the work within the stipulated time.
    - The objectives of the study should be well defined.
    - As far as possible, only clinical or laboratory data of investigations of patients or such other material easily accessible in the existing facilities should be used for the study.
    - Technical assistance, wherever necessary, may be provided by the department concerned. The resident of one speciality taking up some problem related to some other speciality should have some basic knowledge about the subject and he/she should be able to perform the investigations independently, wherever some specialised 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 and co-guide by mutual consultation.
    - The Clinical residents may not ordinarily be expected to undertake experimental work or clinical work involving new techniques, not hitherto perfected or the use of chemicals or radio isotopes 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.

- The residents should be able to use freely 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.
- Statistical methods used for analysis should be described in detail.

### **Rules for Submission of Thesis/ Dissertation by candidates for DNB**

- (i) The protocol of Thesis/ Dissertation should be submitted to the office of the NBE through head of the institutions within three (3) months of joining the training in Medical college/university/DNB accredited institution.
- (ii) No correspondence will be made in regard to acceptance of the protocol except only in the case of rejected protocols for which individual will be informed by office through mail/website.
- (iii) The guide will be a recognized PG teacher in Medical college or university or NBE Accredited institutions. The teacher should have the experience of 5 years in speciality after obtaining the post graduate degree. The certificate of PG teaching and being Guide recognized by University/NBE must be enclosed alongwith thesis/dissertation. The Guide can guide one MD/MS candidate and one university diploma candidate desirous of taking the DNB examination, or one direct NBE candidate. Total number of candidates should be two including all sources.
- (iv) Candidates who will be appearing in the subject under the heading Super Speciality (like Cardiology & Cardio Thoracic Surgery etc.) need not write their thesis/dissertation if they have already written their thesis during their MD/MS/NBE examinations. However they have to submit a proof in support of their having written thesis during their MD/MS examination.
- (v) If the candidates appearing in the broad specialities have already written their thesis in the MD/MS examination, they need not submit the thesis/dissertation. However they are required to submit a copy of the letter accepting the thesis by the University.
- (vi) If thesis is rejected or needs to be modified for acceptance, the Board will return it to the candidate with suggestion of assessors in writing for modification. The result of such candidate will be kept pending till the thesis is modified or rewritten, accordingly as the case may be and accepted by the assessors of the Board.
- (vi) If any unethical practice is detected in work of the Thesis, the same is liable to be rejected. Such candidates are also liable to face disciplinary action as may be decided by the Board.
- (vii) The thesis is to be submitted 6 MONTHS before the commencement of the DNB examination. Theory result of the candidates whose thesis/dissertation are accepted by the Board will be declared.

## **Guidelines for Writing of Thesis/Dissertation**

**Title** - Should be brief, clear and focus on the relevance of the topic.

**Introduction** – Should state the purpose of study, mention lacunae in current knowledge and enunciate the Hypothesis, if any.

### **Objectives of the study**

**Review of Literature** – Should be relevant, complete and current to date.

**Material and Methods-** Should include the type of study (prospective, retrospective, controlled double blind) details of material & experimental design procedure used for data collection & statistical methods employed; statement of limitations ethical issues involved.

**Observations–** Should be Organized in readily identifiable sections Having correct analysis of data be presented in appropriate charts, tables, graphs & diagram etc. These should be statistically interpreted.

**Discussion-** Observations of the study should be discussed and compared with other research studies. The discussion should highlight original findings and should also include suggestion for future.

### **Summary and Conclusion**

**Bibliography** - Should be correctly arranged in Vancouver pattern.

**Appendix—**All tools used for data collection such as questionnaire, interview schedules, observation check lists etc should be put in the annexure.

**ANNEXURE-VI, GUIDELINES FOR LOCAL APPRAISERS**

**Ref. National Board of Examinations/ Monitoring DNB trg2006  
Dated 23.6.2006**

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**Sir/Madam,**

**Thank you for agreeing to act as appraiser for the subject \_\_\_\_\_ at the**

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**You are hereby requested to carry out the followings:**

- i. Prepare one paper containing ten short questions in the areas covered by the hospital/ institution in the last six months.**
- ii. Conduct the theory examination for the candidates in the subject in the hospital.**
- iii. Review the thesis progress and log book records for each candidate.**
- iv. Conduct practical examination for the DNB candidates in the discipline.**
- v. Appraise the infrastructure and facilities in the hospital in the concerned subject as per the enclosed format.**
- vi. Send the report in the enclosed format to The Executive Director, National Board of Examinations, Ansari Nagar, Ring Road, New Delhi-110029.**
- vii. Give suggestion for improving the DNB training and appraisal.**

**You are requested to contact \_\_\_\_\_ of the hospital \_\_\_\_\_ at Phone No. \_\_\_\_\_**

**You will be paid the honorarium for these activities by the concerned hospital as per the enclosed norm.**

**Thank you for your co-operation and support.**

**Yours sincerely**

**(A.K. Sood)**

**Copy to**

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**Director/DNB Coordinator should make the necessary arrangements to conduct appraisal by the 31 July 2006.**



## **National Board of Examinations**

### **Guidelines for local Appraisers**

- 1. NBE is pleased to suggest your name as local appraiser. The purpose of introducing six monthly appraisals of NBE accredited hospitals/institutions is to further improve the quality of training, assess the training infrastructure for the DNB candidates and also assist the local institutions to develop in to a center of academic excellence. This would further add value to the services being rendered in these accredited hospitals/institutions. Please do not think that this assessment has negative connotation. Please plan your appraisal in such a way as to minimally affect the routine working of the department.**
  
- 2. The Board expects the local appraiser to be a post graduate in the speciality with teaching and research experience. He/She should have enough time and expertise to carry out the following activities in the allotted hospitals/Institutions:**
  - 2.1 He/she should participate in thesis protocol/progress presentation & discussion; assist the DNB candidates in their thesis work by giving them suggestions and monitoring their progress. He/she should give specific remarks to improve the Thesis work after reviewing the objectives, methodology (sample size, sampling technique, data collection tools etc.), data analysis plan and statistical tests, results and discussion plan etc. of thesis of each candidate. These remarks should also be communicated in writing to the supervisor and the concerned candidate by the appraiser and a copy be sent to National Board of Examinations.**
  
  - 2.2. He /she is expected to examine the log book maintained by the candidates and give specific remarks to improve the log book maintenance after reviewing the contents of the log book ( name of procedure, details of the case, salient findings, remarks of the supervisor for the improvement of the candidate etc). These remarks should also be communicated in writing to the supervisor and the concerned candidate by the appraiser and a copy be sent to National Board of Examinations.**
  
  - 2.3 He/ should prepare question paper containing ten short structured questions in the speciality on the topics covered during the preceding six months and evaluate the**

answer sheets. He/she will maintain total confidentiality in these activities. The arrangements for six monthly theory and practical examination will be made by local accredited hospitals/institutions.

- 2.3. He/she will formally conduct practical examination (On the topics/areas covered in preceding six months). The practical will have long case, short cases; ward round, spots and viva voce as per the DNB format.
- 2.4. He/she will communicate the result of assessment to the concerned candidates along with detailed feed back on their performance. He/she will give detailed suggestions to each candidate in writing for improving his/her performance. He/she will act as counselor and give specific remarks for improving the overall performance level of the candidate. These remarks should also be communicated in writing to the supervisor and the concerned candidate by the appraiser and a copy be sent to National Board of Examinations.
- 2.5. He/she will prepare the Examination worksheet for each candidate and submit the same to the concerned hospital for records with a copy of the same to the National Board of Examinations.
- 2.6. He/she will submit the report to the Executive Director, NBE, on the format (enclosed herewith).
- 2.7. He/she will also send six monthly report on the infrastructure, patient load and manpower in the concerned speciality of the accredited hospital, to Executive Director, National Board of Examinations, Ring Road, Ansari Nagar, New Delhi-110029.

**3. Remuneration/honorarium to the Appraisers**

**NBE recommends that suitable honorarium be given to the local appraisers by the concerned accredited hospital/institution, considering the activities performed and number of DNB candidates in the speciality. The recommended minimal amount be given as follows:**

- 3.1. Assessment of Infrastructure and facilities in the hospital/institutions in the speciality = Rs. 500/-.**
- 3.2. Participation in thesis protocol presentation and discussion = Rs. 500/-per candidate.**
- 3.3. Development of theory paper = Rs. 500/-.**
- 3.4. Assessment of theory paper(s) = Rs. 500/-**
- 3.5. Holding of practical examination = Rs. 1000/- per candidate.**

**This expenditure will be met out of the fee collected from the candidates.**



**National Board of Examinations**  
(Ministry of Health & Family Welfare, Govt. of India)  
Ansari Nagar, Ring Road, New Delhi-110029.  
Tel.No. 011- 26589119, 26589517, 26589656  
Website : www.natboard.nic.in

**PROFORMA FOR INFRASTRUCTURE AND DNB  
CANDIDATES' PERFORMANCE ASSESSMENT BY APPRAISER  
(PLEASE FILL SEPARATE FORM FOR EACH DNB DISCIPLINE)**

01.	Name of the Hospital, Address, Telephone number, Fax number and e-mail				
02.	Name of the Department offering DNB				
03.	No. of beds in the speciality	Total	General (Free)*	Paying	Subsidized
04.	Number of indoor admission during the last six months	Total	General (Free)*	Paying	Subsidized

\* Free – which recovers the cost only and are available for training of DNB trainees.

<b>05. Facilities for supportive services</b>	
<b>Subject</b>	<b>Please list the type and number of tests done in the reference period of last one month</b>
<b>Pathology</b>	
<b>Biochemistry</b>	

**Microbiology**

**Radiology**

**Blood Bank**

**Any other**

**06. Physical facilities :-**

**Please list the facilities related to the specialty present in the department**



<b>08.</b>	<b>Consultants</b>	<b>Details of PG Qualification</b>	<b>Total experience after PG</b>
	<b>Name of Senior Consultants</b>		
	<b>Name of Junior Consultants</b>		
	<b>Name of Whole time Sr. Residents</b>		

**Please attach a copy of salary/ remuneration slips for the last six months.**

<b>09.</b>	<b>Track record of the candidates for the last three years : (in the specialty)</b>				
	<b>Year</b>	<b>Registered</b>	<b>Appeared</b>	<b>Passed</b>	<b>Left (with reason)</b>

**10. Please attach the details( such as the topic covered, date, the resource persons etc.) of various academic activities carried out by the department like -**

- i. Guest lectures**
- ii. Case presentations and discussions**
- iii. Clinical conferences**
- iv. Seminars**
- v. Teaching sessions/ lectures for candidates**
- vi. Other activity specify**

**11. Any other information**

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**NATIONAL BOARD OF EXAMINATION**

**WORK- SHEET FOR ASSESSMENT OF CANDIDATE BY LOCAL APPRAISER**

Date: \_\_\_\_\_

Name & Address of Hospital \_\_\_\_\_

Name of the candidate and registration No. \_\_\_\_\_

Training Year of the candidate - \_\_\_\_\_

First/ second/ Final

Name of Appraiser \_\_\_\_\_

**I Clinical Examination**

Case	Agreed Diagnosis	Max. Marks	Marks Awarded				Total Marks	
			History	Clinical Examination	Diagnosis	Management	In words	In Figure
Long case -I		60						
Short case -I		40						
Short case -II		40						
Short case-III		40						
<b>Total</b>		<b>180</b>						

II. Ward Round M. Marks = 40	Marks words	in	Awarded figure	in	Sub Total I + II (Max. Marks = 220)	
					In words	In figure

**III. Viva voce Max. Marks = 80**

Marks	Pathology	X-rays	Instrument Orthotics prosthetic	Operative surgery	Total
Maximum					
Marks Awarded (In words)					
Marks Awarded (In figure)					

**IV. Grand Total (Sum of I+II+III) Max. Marks = 300**

\_\_\_\_\_

Marks Awarded in words

\_\_\_\_\_

Marks Awarded in figure

\_\_\_\_\_

V. Result \_\_\_\_\_

**VI. Specific description of the strong points in case of pass candidate and of weak points in case of failed candidate. Please list out the specific details which need to be communicated to the candidate to help him improve.**

**VII. Examiner's Name & Signature \_\_\_\_\_**



- 3.9. Please mention the names of any three standard text books in your speciality ` which are available in the library of your hospital and you have referred to them in the last six months-**
- 3.10. Please mention the names of any one National and any one International journal which you have referred to in your hospital library in the last six months-**
- 3.11. How many clinical procedures you have done under supervision in last six months Please mention names and number of any three of them**
- 3.12. How many clinical procedures you have done independently in last six months Please mention names and number of any three of them.**
- 3.13. Please give five suggestions to improve your training in your speciality**

## ANNEXURE- VII, FORMAT FOR LOG BOOK

### Instructions for the supervisor

**P.G. Training Programme** - The post graduate programme broadly should include lecture/demonstration on applied basic sciences, bed side clinics, case presentations. Faculty lectures, symposia/seminar journal clubs, biopsy, radiology discussions and graded clinical responsibility.

**Evaluation** - It is essential that the trainee maintains a detailed account of the work done by him. The record book will in addition remind the trainee of what he should observe, learn and perform in a programmed and phased manner during the course of training. It is hoped that this record will stimulate the trainee towards greater effort in areas where he is below par and also record his progress. It forms the basis for assessment and evaluation of the trainees progress. Some of the possible criteria on the basis of which a trainee could be evaluated are - soundness of knowledge, application & judgment, keenness to learn, punctuality and promptness, initiative, reliability, clinical skill, behavior with patients, attitudes towards patient's relatives, colleagues, seniors and other staff, ability to express

Depending on the qualities and the level of attainments a candidates could be considered for appraisal, on the basis, for example, of the following 5 letter grading system.

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A	Excellent	Above	75%	B	Good	60% -	65%
C	Satisfactory	50%-	60%	D	Poor	30% -	50%
E	Bad	Below	30%				

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Besides the grading as indicated above, each student should also be given a formal feed back on his/her weak points and how to overcome his/her deficiencies.

**ALL THE CANDIDATES MUST WRITE THE LOG BOOK IN DETAILS WITH REMARKS FROM THE SUPERVISORS AND THESE ENTRIES MUST BE CHECKED BY THE LOCAL APPRAISERS EVERY SIX MONTHS.**

1. Name of Trainee : \_\_\_\_\_

2. Name of Hospital/Institution : \_\_\_\_\_

3. Address : \_\_\_\_\_

4. Specialty : \_\_\_\_\_

5. Name of Supervising Specialist : \_\_\_\_\_

6. Name of Medical  
Director/Superintendent : \_\_\_\_\_

Date : \_\_\_\_\_

Signature of Supervising Specialist

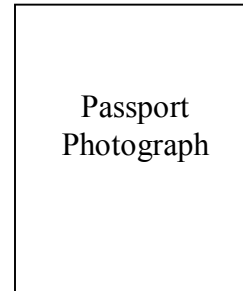
Name (Block Letters) :

Permanent Address :

Date of Birth :

Fathers Name & Address :

Education :



MBBS

Specimen Signature

Name of the College	Date joining	of	Date passing	of	No. of attempts	Prizes
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House-job

Subject	Date joining	of	Date of leaving	of	Period
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Primary Diplomat of N.B.

Subject	Date of Passing	No. of Attempts
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Final Diplomat of N.B.

Subject	Date of joining
---------	-----------------

Posting schedule

S. No.	Specialty	From	To	Period
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Lectures

S. No.	Date	Topic and name of the resource person
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Seminars

S. No.	Date	Topic and name of the facilitators	Evaluation
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Journal Clubs

S. No.	Date	Topic and name of the facilitators	Evaluation
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Clinical Procedures/Operations Performed

S. No.	Date	Details of the patients and the procedures/Operations performed; names and signatures of the supervisors

Clinical Procedures/Operations Assisted

S. No.	Date	Details of the patients and of the procedures/Operations performed along with the names signatures and of the supervisors

Presentations

S. No.	Date	Details of the Case	Names and signatures of the consultants /resource persons	Evaluation

Emergencies

S. No.	Date	Details of the patients and management of emergency cases

Panel Discussions

(A) Radiology

S. No.	Date	Details of the case discussed	Names of panelists

(b) Biopsy

S. No.	Date	Details of the case discussed	Names of panelists

(C) Death review

S. No.	Date	Details of the case discussed and names of the resource persons