

GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR DIPLOMA IN PEDIATRICS (DCH)

Preamble:

The purpose of PG education is to create specialists who would provide high quality health care and advance the cause of science through research & training.

A post graduate student after undergoing the required training should be able to deal effectively with the needs of the community and should be competent to handle the problems related to his specialty including recent advances. He should also acquire skill in teaching of medical/para-medical students.

The purpose of this document is to provide teachers and learners illustrative guidelines to achieve defined outcomes through learning and assessment. This document was prepared by various subject-content specialists. The Reconciliation Board of the Academic Committee has attempted to render uniformity without compromise to purpose and content of the document. Compromise in purity of syntax has been made in order to preserve the purpose and content. This has necessitated retention of “domains of learning” under the heading “competencies”.

SUBJECT SPECIFIC LEARNING OBJECTIVES

The objective of Diploma Course in Paediatrics is to produce a competent pediatrician who:

- Recognizes the health needs of infants, children and adolescents and carries out professional obligations in keeping with principles of the National Health Policy and professional ethics
- Has acquired the competencies pertaining to pediatrics that are required to be practiced in the community and at all levels of health system
- Has acquired skills in effectively communicating with the child, family and the community
- Is aware of contemporary advances & developments in medical sciences as related to child health
- Has acquired skills in educating medical and paramedical professionals

SUBJECT SPECIFIC COMPETENCIES

A. Cognitive domain

At the end of the Diploma course in Paediatrics, the student should be able to:

1. Recognize the key importance of child health in the context of the health priority of country
2. Practice the specialty of Pediatrics in keeping with the principles of professional ethics
3. Identify social, economic, environmental, biological and emotional determinants of child and adolescent health, and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to children
4. Recognize the importance of growth and development as the foundation of Pediatrics; and help each child realize her/his optimal potential in this regard
5. Take detailed history; perform full physical examination including neurodevelopment and behavioral assessment and anthropometric measurements in the child and make clinical diagnosis
6. Perform relevant investigative and therapeutic procedures for the pediatric patient
7. Interpret important imaging and laboratory results
8. Diagnose illness based on the analysis of history, physical examination & investigations
9. Plan & deliver comprehensive treatment for illness using principles of rational drug therapy
10. Plan and advice measures for the prevention of childhood disease and disability
11. Plan rehabilitation of children with chronic illness and handicap & those with special needs
12. Manage childhood emergencies efficiently
13. Provide comprehensive care to normal, 'at risk' and sick neonates
14. Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation
15. Recognize the emotional and behavioral characteristics of children, and keep these fundamental attributes in focus while dealing with them
16. Demonstrate empathy and humane approach towards patients and their families and keep their sensibilities in high esteem
17. Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities
18. Develop skills as a self-directed learner. Recognize continuing educational needs; use appropriate learning resources and critically analyze published literature in order to practice evidence-based pediatrics
19. Implement National Health Programs, effectively and responsibly
20. Organize and supervise the desired managerial and leadership skills
21. To recognize mental conditions, characterized by self absorption, reduced ability to respond, abnormal functioning in social interaction with or without repetitive behavior, poor communication (autism) and collaborate with Psychiatrists/Child Psychologists for the treatment of such patients

All the residents joining the course should have an orientation session to acquaint them with the requirements and other details. A plan for orientation session has been given at **Annexure 1**.

B. Affective Domain:

The student

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor domain

At the end of the course, the student should have acquired following skills:

I. History and Examination

The student must gain proficiency in eliciting, processing and systemically presenting pediatrics history and examination with due emphasis of the important and minimization of less important facts. The following skills must be achieved:

- Recognition and demonstration of physical findings
- Recording of height, weight, head circumference and mid arm circumference and interpretation of these parameters using growth reference standard assessment of nutritional status and growth
- Assessment of pubertal growth
- Complete development assessment by history and physical examination, and recognizing developmental disabilities, including autism
- Systematic examination
- Neonatal examination including gestation assessment by physical neurological criteria
- Examination of the fundus and the ear
- Skills related to Integrated management of Neonatal and Childhood Illnesses (IMNCI) & Infant and Young Child Feeding (IYCF)

II. Monitoring Skills

Non-invasive monitoring of blood pressure, pulse and respiratory rates, saturation; ECG

III. Investigative Procedures

- Venous, capillary and arterial blood sampling using appropriate precautions
- Pleural, peritoneal, pericardial aspiration; subdural, ventricular and lumbar puncture
- Tuberculin test
- Biopsy of liver and kidney

- Urethral catheterization and suprapubic tap
- Gastric content aspiration

IV. Therapeutic Skills

- Breast feeding assessment and counseling; management of common problems
- Establishment of central and peripheral vascular access; CVP monitoring
- Administration of injections using safe injection practices
- Determination of volume and composition of intravenous fluids and their administration
- Neonatal and Pediatric basic and advanced life support
- Oxygen administration, CPAP and nebulization therapy
- Blood and blood component therapy
- Intra-osseous fluid administration
- Phototherapy, umbilical artery and venous catheterization and exchange transfusion
- Nasogastric feeding
- Common dressings and abscess drainage; intercostal tube insertion
- Basic principles of rehabilitation
- Peritoneal dialysis
- Mechanical ventilation

V. Bedside investigations, including

- Complete blood counts, micro ESR, peripheral smear
- Urinalysis
- Stool microscopy and hanging drop
- Examination of CSF and other body fluids
- Blood sugar
- Shake test on gastric aspirate
- Gram stain, ZN stain

VI. Patient Management Skills

- Proficiency in management of pediatric emergencies, including emergency triaging
- Drawing and executing patient management plan and long term care
- Documenting patient records on day to day basis and problem oriented medical record
- Care of a normal and sick newborn, management of neonatal disorders hypothermia, sepsis, convulsions, jaundice, metabolic problems
- Identifying need for timely referral to appropriate departments/health facility & pre-transport stabilization of the sick child

VII. Communication Skills; Attitudes; Professionalism

- Communicating with parents/child about nature of illness and management plan prognostication, breaking bad news
- Counseling parents on breast feeding, nutrition, immunization, disease prevention, promoting healthy life style
- Genetic counseling
- Communication and relationship with colleagues, nurses and paramedical workers
- Appropriate relation with pharmaceutical industry
- Health economics
- Professional and research ethics

VIII. Interpretation of Investigations

- Plan x-ray chest, abdomen, skeletal system
- Contrast radiological studies: Barium swallow, barium meal, barium enema, MCU
- Ultrasound skull and abdomen
- Histopathological, biochemical and microbiological investigations
- CT Scan and MRI (skull, abdomen, chest)
- Electrocardiogram, electroencephalogram
- Arterial and venous blood gases

Desirable: Interpretation of radio-isotope studies, audiogram, neurophysiological studies, (BERA, VER, EMG, NCV), lung function tests

IX Academic Skills

- Familiarity with basic research methodology, basic IT skills.
- Interpret research paper

Syllabus

Course contents

During the training period, effort must be made that adequate time is spent in discussing child health problems of public health importance in the country or particular region.

Basic Sciences

- Principles of inheritance, chromosomal disorders, single gene disorders, multifactorial/polygenic disorders, genetic diagnosis and prenatal diagnosis, pedigree drawing
- Embryogenesis or different organ system especially heart, genitourinary system, gastrointestinal tract Applied anatomy and functions of different organ systems

- Physiology of micturition and defecation; placental physiology; fetal and neonatal circulation; regulation of temperature, blood pressure, acid base balance, fluid electrolyte balance and calcium metabolism
- Vitamins and their functions
- Hematopoiesis, hemostasis, bilirubin metabolism
- Growth and development at different ages, growth charts; puberty and its regulation
- Nutrition, requirements and sources of various nutrients
- Pharmacokinetics of common drugs, microbial agents and their epidemiology
- Basic immunology, ethical and medico-legal issues

Understanding, where necessary, the definition, epidemiology, etiopathogenesis, presentation, complications, differential diagnosis and treatment of the following, but not limited to:

Growth and development

- principles of growth and development
- abnormal growth and development
- failure to thrive and short stature
- normal growth and development,
- sexual maturation and its disturbances
- Autism (as mentioned in objective 21)

Neonatology

- perinatal care
- care in the labor room and resuscitation
- prematurity
- common transient phenomena
- infections
- jaundice
- neurologic disorders
- renal disorders
- thermoregulation and its disorders
- low birth weight
- newborn feeding
- respiratory distress
- apnea
- anemia and bleeding disorders
- gastrointestinal disorders
- malformations
- understanding of perinatal medicine

Nutrition

- maternal nutritional disorders; impact on fetal outcome
- infant feeding including complementary feeding
- protein energy malnutrition
- adolescent nutrition
- nutritional management of systemic illness (GI, hepatic, renal illness)
- nutrition for the low birth weight
- breast feeding
- vitamin and mineral deficiencies
- obesity
- parenteral and enteral nutrition

Cardiovascular

- congenital heart diseases (cyanotic and acyanotic)
- infective endocarditis
- disease of myocardium (cardiomyopathy, myocarditis)
- rheumatic fever and rheumatic heart disease
- arrhythmia
- diseases of pericardium
- systemic hypertension

Respiratory

- congenital and acquired disorders of nose tonsils and adenoids
- congenital anomalies of lower respiratory tract
- foreign body in larynx trachea & bronchus
- asthma
- pneumonia, bronchiolitis
- recurrent, interstitial pneumonia
- atelectasis
- diseases of pleura
- infections of upper respiratory tract
- obstructive sleep apnea
- acute upper airway obstruction
- subglottic stenosis (acute, chronic)
- aspiration pneumonia, GER
- suppurative lung disease
- lung cysts, mediastinal mass

Gastrointestinal and liver disease

- disease of oral cavity
- peptic ulcer disease
- intestinal obstruction
- malabsorption syndrome
- irritable bowel syndrome
- Hirschsprung disease
- hepatitis
- chronic liver disease
- metabolic diseases of liver
- disorders of deglutition and esophagus
- congenital pyloric stenosis
- acute & chronic pancreatic disorders
- acute, persistent and chronic diarrhea
- inflammatory bowel disease
- anorectal malformations
- hepatic failure
- Budd-Chiari syndrome
- cirrhosis and portal hypertension

Nephrologic and Urologic disorders

- acute and chronic glomerulonephritis
- hemolytic uremic syndrome
- VUR and renal scarring
- renal tubular disorders
- congenital and hereditary renal disorders
- posterior urethral valves
- undescended testis, hernia, hydrocoele
- nephrotic syndrome
- urinary tract infection
- involvement in systemic diseases
- neurogenic bladder, voiding dysfunction
- renal and bladder stones
- hydronephrosis
- Wilms tumor

Neurologic disorders

- seizure and non-seizure paroxysmal events
- meningitis, encephalitis
- epilepsy, epileptic syndromes
- brain abscess

- febrile encephalopathies
- neurocysticercosis and other neuroinfestations
- SSPE
- neurometabolic disorders
- neuromuscular disorders
- learning disabilities
- acute flaccid paralysis and AFP surveillance
- movement disorders
- Guillain-Barre syndrome
- HIV encephalopathy
- cerebral palsy
- neurodegenerative disorders
- mental retardation
- muscular dystrophies
- malformations
- Tumors

Hematology & Oncology

- deficiency anemias
- aplastic anemia
- thrombocytopenia
- blood component therapy
- bone marrow transplant/stem cell transplant
- myelodysplastic syndrome
- neuroblastoma
- hemolytic anemias
- pancytopenia
- disorders of hemostasis
- transfusion related infections
- acute and chronic leukemia
- Lymphoma
- hypercoagulable states

Endocrinology

- hypopituitarism/hyperpituitarism
- pubertal disorders
- adrenal insufficiency
- adrenogenital syndromes
- hypoglycemia
- gonadal dysfunction and intersexuality
- diabetes insipidus
- hypo- and hyper-thyroidism
- Cushing's syndrome
- diabetes mellitus
- short stature
- obesity

Infections

- bacterial (including tuberculosis)
- fungal
- rickettsial
- protozoal and parasitic
- control of epidemics and infection prevention
- viral (including HIV)
- parasitic
- mycoplasma
- nosocomial infections
- safe disposal of infective material

Emergency and Critical Care

- emergency care of shock
- respiratory failure
- status epilepticus
- fluid and electrolyte disturbances
- poisoning
- scorpion and snake bites
- cardio-respiratory arrest
- acute renal failure
- acute severe asthma
- acid-base disturbances
- accidents

Immunology and Rheumatology

- arthritis (acute and chronic)
- immunodeficiency syndromes
- vasculitides
- systemic lupus erythematosus

ENT

- acute and chronic otitis media
- post-diphtheritic palatal palsy
- allergic rhinitis/sinusitis
- hearing loss
- acute/chronic tonsillitis/adenoids
- foreign body

Skin Diseases

- exanthematous illnesses
- pigment disorders
- infections
- atopic, seborrheic dermatitis
- alopecia
- vascular lesions
- vesicobullous disorders
- Steven-Johnson syndrome
- drug rash
- ichthyosis

Eye problems

- refraction & accommodation
- cataract
- strabismus
- disorders of retina, including tumors
- partial/total loss of vision
- night blindness
- conjunctival and corneal disorders

Behavioral and Developmental disorders

- rumination, pica
- sleep disorders
- breath holding spells
- mood disorders
- attention deficit hyperactivity disorders
- enuresis, encopresis
- habit disorders
- anxiety disorders
- temper tantrums
- autism (as mentioned in objective 21)

Social/Community Pediatrics

- National health programs related to child health
- Vaccines: constituents, efficacy, storage, contraindications and adverse reactions
- rationale and methodology of pulse polio immunization
- child labor, abuse, neglect
- disability and rehabilitation
- National policy of child health and population
- Principles of prevention, control of infections (food, water, soil, vector borne)
- Investigation of an epidemic
- IMNCI
- adoption
- rights of the child
- juvenile delinquency

Orthopedics

- major congenital orthopedic deformities
- common bone tumors
- bone and joint infections

Approach to Clinical Problems

Growth and development

- precocious and delayed puberty
- impaired learning
- developmental delay

Neonatology

- low birth weight newborn
- sick newborn

Nutrition

- lactation management and complementary feeding
- failure to thrive
- protein energy malnutrition (underweight, wasting, stunting) and micronutrient deficiencies

Cardiovascular

- Murmur
- congestive heart failure
- arrhythmia
- cyanosis
- systemic hypertension
- shock

GIT and Liver

- Acute diarrhea
- abdominal pain and distension
- vomiting
- gastrointestinal bleeding
- hepatosplenomegaly
- persistent and chronic diarrhea
- ascites
- constipation
- jaundice
- hepatic failure and encephalopathy

Respiratory

- Cough/chronic cough
- wheezy child
- hemoptysis
- respiratory distress

Infections

- acute onset pyrexia
- recurrent infections
- nosocomial infections
- prolonged pyrexia with and without localizing signs
- fever with exanthem

Renal

- Hematuria/dysuria
- voiding dysfunctions
- hypertension
- bladder/bowel incontinence
- renal failure (acute and chronic)

Hematology and Oncology

- anemia
- bleeding

Neurology

- limping child
- paraplegia, quadriplegia
- macrocephaly and microcephaly
- acute flaccid paralysis
- convulsions
- cerebral palsy
- floppy infant
- headache

Endocrine

- thyroid swelling
- obesity
- ambiguous genitalia
- short stature

Miscellaneous

- skin rash
- epistaxis
- arthralgia, arthritis
- lymphadenopathy
- proptosis

TEACHING AND LEARNING METHODS

Postgraduate teaching programme

General principles

Acquisition of practical competencies being the keystone of PG medical education, PG training should be skills oriented. Learning in PG program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

Teaching methodology

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars, journal clubs, clinical meetings, and combined conferences with allied departments. The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision. Department should encourage e-learning activities.

Formal teaching sessions

In addition to bedside teaching rounds, at least 5-hr of formal teaching per week are necessary. The departments may select a mix of the following sessions:

- Journal club t Once a week
- Seminar Once a fortnight
- Case discussions once a month
- Interdepartmental case or seminar Once a month

[Cardiology, Pediatric Surgery]

Note: These sessions may be organized as an institutional activity for all postgraduates preferably when they join the Residency Program.

- Attend accredited scientific meetings (CME, symposia, and conferences).
- Additional sessions on resuscitation, basic sciences, biostatistics, research methodology, teaching methodology, hospital waste management, health economics, medical ethics and legal issues related to pediatric practice are suggested.
- There should be a training program on Research methodology for existing faculty to build capacity to guide research.
- The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- A postgraduate student of a postgraduate degree course in broad specialities/super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.
- Department should encourage e-learning activities.
- **Log book:** During the training period, the post graduate student should maintain a Log Book indicating the duration of the postings/work done in Pediatric Wards, OPDs and Casualty. This should indicate the procedures assisted and performed, and the teaching sessions attended. The purpose of the Log Book is to:
 - a) Help maintain a record of the work done during training,
 - b) Enable Consultants to have direct information about the work; intervene if necessary,
 - c) Use it to assess the experience gained periodically.

The log book shall be used to aid the internal evaluation of the student. The Log books shall be checked and assessed periodically by the faculty members imparting the training.

Rotations:

The postgraduate student should rotate through all the clinical units in the department. In addition, following special rotations should be undertaken:

Mandatory

Neonatology (including perinatal medicine) Intensive care, Emergency

Desirable

Posting in Out Patient Services of the following specialties is recommended

Skin

Pediatric Surgery

Physical Medicine and Rehabilitation

Community

Note: Additionally, the PG students may be sent to allied specialties/ sub-specialties/ superspecialties (cardiology, neurology *etc.*) depending on facilities available. It should be ensured that the training conforms to the curriculum.

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently; for this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

FORMATIVE ASSESSMENT, during the training programme

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and clinical examination. The thesis is assessed separately.

Quarterly assessment during the Diploma training should be based on:

- 1. Journal based / recent advances learning**
- 2. Patient based /Laboratory or Skill based learning**
- 3. Self directed learning and teaching**
- 4. Departmental and interdepartmental learning activity**
- 5. External and Outreach Activities / CMEs**

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure II).

SUMMATIVE ASSESSMENT ie., assessment at the end of training

The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

The postgraduate examination shall be in two parts:

1. Theory Examination:

The examinations shall be organised on the basis of 'Grading' or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination for Diploma shall be held at the end of 2nd academic year. An academic term shall mean six month's training period.

There shall be three theory papers

Paper I: Basic sciences and Neonatology

Paper II: General and Community Pediatrics

Paper III Systemic Pediatrics

2. Practical/clinical and Oral/viva voce examination

Practical examination

Case I

Case II (Newborn)

Case III, IV (Ambulatory)

Oral/Viva voce examination should be comprehensive and on defined areas by each examiner separately.

Recommended Reading:

Books (latest edition)

1. Nelson's Textbook of Pediatrics, Kliegman et al (Editors)
2. Manual of Neonatal care, Cloherty
3. Nada's Pediatric Cardiology, Kaene
4. PG Textbook of Pediatrics, IAP P Gupta et al (Editors)
5. Clinical Methods in Pediatrics, P Gupta
6. Care of the newborn, Meharban Singh

Journals

03-05 international Journals and 02 national (all indexed) journals

Orientation sessions for Residents joining MD in Paediatrics

This could be spread over 4-5 sessions once or twice a week depending on departmental routine and feasibility.

For all Residents

- Orientation to the Hospital: Various Departments and facilities available
- Communication skills: Patients and colleagues
- Literature search
- Basic research methodology
- Protocol writing and thesis

Pediatric Residents

- Introduction to Residency in Paediatrics
- Universal precautions and appropriate disposal of hospital waste
- Management of shock
- Congestive cardiac failure
- Normal fluid and electrolyte requirement and their disorders
- Interpretation and management of disorders of acid-base balance
- Evaluation of a sick newborn
- Management of seizures, hypothermia and hypoglycemia in the newborn
- Management of seizures and status epilepticus
- Management of comatose patients
- Hospital management of severe PEM
- Acute kidney injury
- Fulminant hepatic failure
- Management of respiratory distress
- Management of acute diarrhea
- Approach to a bleeding child and its management
- Rational antibiotic therapy

Postgraduate Students Appraisal Form

Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM.....TO.....

Sr. No.	PARTICULARS	Not Satisfactory			Satisfactory			More Than Satisfactory			Remarks
		1	2	3	4	5	6	7	8	9	
1.	Journal based / recent advances learning										
2.	Patient based /Laboratory or Skill based learning										
3.	Self directed learning and teaching										
4.	Departmental and interdepartmental learning activity										
5.	External and Outreach Activities / CMEs										
6.	Thesis / Research work										
7.	Log Book Maintenance										

Publications

Yes/ No

Remarks*

*REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE

SIGNATURE OF CONSULTANT

SIGNATURE OF HOD