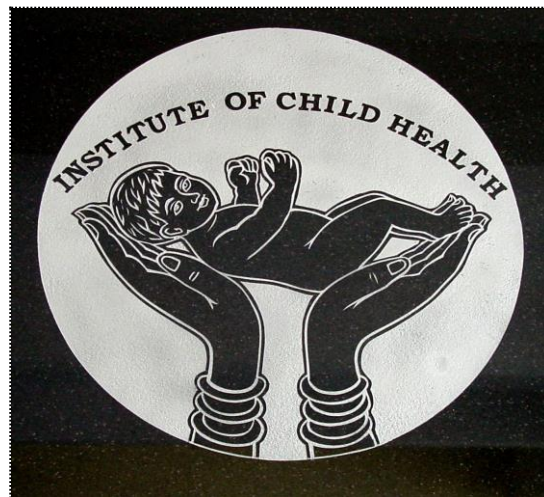


**INDIRA GANDHI INSTITUTE OF CHILD HEALTH
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**PROSPECTUS
FOR
FELLOWSHIP IN PEDIATRIC NEPHROLOGY**

FELLOWSHIP CURRICULUM IN PEDIATRIC NEPHROLOGY

1. Name of the subject : FELLOWSHIP IN PEDIATRIC NEPHROLOGY

2. Please describe:

A. Goals

The goal of this course is to provide training in pediatric nephrology to pediatricians to enable them to provide medical care to infants and children with congenital, inherited and acquired renal and genitourinary disorders.

B. Statement of objectives of the course

After completing the course, the student should be able to

- Analyze the problems scientifically, taking into account the biological basis and epidemiology of renal disease in children
- Provide acute care to patients with renal disease
- Recognize surgically treatable conditions
- Implement a follow up plan for patients with chronic kidney disease
- Seek and analyze new literature in the specialty and apply it in their work
- Assessing the need for Peritoneal dialysis, hemodialysis
- Assessing the need for and assisting and performing Acute peritoneal dialysis and Renal biopsy

C. Course Contents {Syllabus}

During the training satisfactory understanding and expertise should be obtained in both In Patient and Out Patient clinic, in the following:

- Pathophysiology of congenital & acquired diseases of the kidney and urinary tract in the growing child

- Etiology, clinical features, diagnosis and differential diagnosis of congenital & acquired renal diseases in the fetus, infant and child, their evaluation and management
- Performance/knowledge of Renal biopsy, interpretation of renal histology, Renal ultrasound
- Techniques for the assessment of glomerular and tubular function
- Application of acute peritoneal dialysis, CAPD, CCPD, hemodialysis
- Use of diet and drugs for the treatment of renal diseases
- Understanding the management of surgical conditions of the urinary tract
- Understanding Bladder Dysfunction and Urodynamics

CURRICULUM CONTENT

A. Investigations:

1. Imaging

Knowledge:

To understand the role, limitations and interpretations of commonly used imaging modalities.

To know the practicalities and safety precautions associated with each test.

Skills:

To request the differential radiological investigations. To be able to interpret scan images

Should involve directly with the radiologist and sonologist in various imaging procedures and ultrasound

2. Renal Physiology

Knowledge, Skills:

To request and interpret investigations for assessment of: a) GFR from height and plasma creatinine

b) Calcium, phosphate and bone mineral metabolism

c) Urinary concentrating and diluting ability

d) Tubular handling of fluid and electrolytes

e) Acid – base balance

To understand the practicalities, limitations and precautions for measurement of:

a) Creatinine Clearance

b) Protein and Calcium excretion

c) Tubular handling

d) Tests for urinary acidification

3. Renal Biopsy

Knowledge:

To know the indications, procedure and complications

Skills :

To perform a kidney biopsy safely

To recognize common histological appearances and consequences for diagnosis, prognosis and treatment.

Should perform with assistance and without assistance.

B. Urinary tract infection(UTI) and vesicouretric

reflux: Knowledge:

To understand the epidemiology, clinical features and issues in diagnosis

Role of imaging , other investigations and therapy

To understand options/ management of UTI and VUR

Skills:

To be able to provide medical support and urological

services To appropriately assess a child with bladder

dysfunction

C. Structural malformations:

Knowledge :

To know the presentations of developmental variants and abnormalities, including obstruction.

To be aware of different reconstructive procedures

Skills :

To be able to provide medical support to urological services.

D. Disorders of micturition and neuropathic bladder:

Knowledge:

To know the common renal and non renal diagnoses associated with enuresis

Understand the appropriate use of urodynamic studies and instigate management strategies.

Skills :

To appropriately assess a child with bladder dysfunction

E. Hematuria:

Knowledge :

To understand the pathophysiology and etiology of macroscopic and microscopic hematuria

Skills:

To be able to perform urinalysis.

To demonstrate appropriate investigation and management of the child with hematuria, including role of imaging, urological assessment, renal biopsy and genetic and molecular studies.

F. Proteinuria :**Knowledge:**

To know and differentiate between physiological and pathological causes of proteinuria

To know the methods of investigations, indication for biopsy and management of a child with proteinuria

G. Antenatal renal problems:**Knowledge:**

Renal disorders in the fetus, signs and symptoms

Skills:

Parental counseling and management

H. Glomerular diseases:**Knowledge:**

To know the etiology and immunological basis of glomerulonephritis

To know the different forms of presentation and their appropriate management

To understand the clinical course and prognosis of acute and chronic

glomerulonephritis To know the indications for immunosuppressive agents, cytotoxic drugs and dialysis.

I. Nephrotic Syndrome:**Knowledge :**

To know the pathophysiology of nephrotic syndrome

To understand the investigation of nephrotic syndrome including indications for renal biopsy To know the pharmacology and side effects of steroids, and other immunosuppressive agents

Skills :

To detect and manage associated complications

To manage the initial presentation of nephrotic syndrome

To manage steroid- sensitive, steroid dependent and steroid – resistant nephrotic syndrome, including indications and choice of treatment

To be able to manage congenital nephrotic syndrome

J. Systemic lupus erythematosus:

Knowledge:

To understand the classification, clinical course and treatment options in lupus nephritis

Skills :

To perform clinical examination, plan and interpret investigations , including histology and immunology

K. Vasculitides:

Knowledge :

To know the causes, presentation, patterns of multisystem involvement and spectrum of disease

To describe the investigations and monitoring of the patient with vasculitis

To list the different therapeutic options available, including adverse side effects

Skills :

To be able to appropriately investigate and treat vasculitis, including use of immunosuppression

L. Hemolytic Uremic

Syndrome: Knowledge:

To understand its pathophysiology and epidemiology

To know the presentation and clinical course of diarrhea positive and atypical HUS

To understand principles of treatment, role of plasma exchange and long term management including implications for transplantation

Skills:

To be able to investigate, diagnose and manage the initial presentation of HUS

M. Interstitial nephritis:

Knowledge:

To list the causes of interstitial nephritis/ tubulointerstitial disease

Skills:

To appropriately investigate and manage the child with interstitial nephritis, including use of corticosteroids

N. Hypertension:

Knowledge:

To define and understand the diagnosis of hypertension, know the common conditions in different age groups

To describe the possible mechanisms causing essential and secondary hypertension

To describe the investigations in these cases

To describe the mechanism of action and side effects of anti hypertensive agents

Skills:

To be able to investigate a child with hypertension

To be competent in management of hypertensive emergencies

To be competent in the management of chronic hypertension, and in using various drugs

O. Nephrolithiasis:

Knowledge:

To know the etiology of renal stone formation, including underlying tubular abnormalities

To know the biochemical and radiological investigations

To understand the medical (including prevention of stones) and surgical management

Skills :

To demonstrate ability to appropriately investigate the child with renal stones
To manage the child with renal stones

P. Tubular disorders:

Knowledge :

To understand the causes and different presentations of primary and secondary tubular disorders

To understand the investigation of tubulopathies

Skills :

To be competent in the investigation and management of tubular disorders

Q. Cystic disease:**Knowledge :**

To list the different causes of renal cystic disease in different age groups

To describe the mode of inheritance and methods of screening, including for multi cystic dysplasia

To know the clinical course of polycystic kidney disease, nephronophthisis

Skills:

To examine and investigate the child with renal cysts in different age groups
To manage a child with cystic kidney disease

R. Genetic disorders:**Knowledge:**

To know the presentation and management of common inherited renal disease including renal involvement in syndromes, familial nephritis and cystic kidney disease

To understand basic genetic principles

Skills:

To be able to advise parents of the risk of recurrence and the need for family screening

S. Fluid and electrolyte disturbances:**Knowledge :**

To understand the physiology of fluid and electrolyte imbalance

To know the principles of treatment of fluid and electrolyte imbalance
To know the endocrine diseases associated with imbalance

Skills :

To be able to manage fluid and electrolyte imbalances in non -renal disease including overdose

T. Acute kidney injury:

Knowledge:

To know the differential diagnosis of AKI

To know the investigation including role of biopsy

To describe the methods to correct fluid/biochemical abnormalities and indications for dialysis

To know the treatment of reversible causes of AKI

Skills :

To perform a reliable and accurate clinical assessment of the patient's fluid status

To be able to appropriately manage the complications of AKI – conservative and dialysis To be able to select and practically manage the different dialysis modalities including peritoneal dialysis and hemodialysis

To be able to begin treatment of the underlying cause

U. Chronic kidney disease (CKD); chronic renal failure (CRF):

Knowledge:

To know the epidemiology, causes of CKD

To know the investigations required in a child with new presentation, including assessment of the degree of renal failure and reversibility of the condition

To understand the natural history and prognosis of common diseases causing CKD, and treatment strategies that may ameliorate the condition

To understand factors involved in failure to thrive

To describe the pathophysiology, investigation and indications for treatment in mineral bone disease

To describe the pathophysiology of renal anaemia, its investigation and appropriate management

Skills:

To identify/appropriately manage the underlying cause

To diagnose and treat the child with CKD including biochemical disturbance, bone disease and anaemia

To appropriately counsel the family to facilitate the selection of dialysis modality and prior

to referral for renal transplantation

To make an accurate assessment of nutritional status & use appropriate advice with the assistance of dietitians

To show ability to prevent, diagnose and manage mineral bone disease

V. Transplantation:

Desirable Knowledge:

To understand the ethical issues surrounding organ donation/ transplant; principles of recipient selection, indications and contraindications

To know transplant work-up

To know the basic surgical procedures involved - desirable To

know the medications used, including side-effects

To know the indications for renal transplant biopsy

To understand the immune mechanisms of rejection, know the recurrence rate of disease & complications

W. Renal replacement therapy:

Knowledge:

To describe the principles of dialysis and dialytic procedures in AKI and ICU setting ; peritoneal dialysis.

To describe the methods of vascular access, and their complications

Skills:

To list the complications occurring during dialysis To

be able to plan the initiation of hemodialysis To

manage different forms of vascular access

To adjust the prescription, manage the complications of hemodialysis

X. Peritoneal Dialysis:

Knowledge :

To describe the principles of acute and chronic dialysis, & the advantages/disadvantages compared to hemodialysis

To know the complications of peritoneal dialysis, both infective and mechanical

Skills :

To be able to prescribe/monitor patients on dialysis
To manage the complications of peritoneal dialysis

Y. Pharmacology:**Knowledge :**

To define principles of pharmacokinetics and drug handling in renal impairment
To list ways in which different classes of drugs act on the nephron and affect renal function
To list the effects of hemodialysis, hemofiltration and peritoneal dialysis on drug prescribing
To describe principles of drug interactions, especially immunosuppressive agents

Skills :

To prescribe safely to patients with renal disease

Z. Communication and counselling to include affective**skills: Knowledge:**

Counselling techniques for renal biopsy in relation to the child and the parents
Counselling techniques in children with ESRD
Counselling techniques for transplant patients
Communication with parents, families and care takers
Communication with inter department staff, co medical staff
Communication with other departments

Skills :

Ability to understand with empathy needs of the sick children, social psychological and economical burden of their parents
To maintain friendly relationship with colleagues, juniors and inter departmental staff

D. Teaching / Learning Activities:

The fundamental components of the teaching programme should include:

1. Case presentations & discussion- 1 per week
2. Seminar – 1 per month
3. Journal club- 1 every alternate week

4. Daily rounds in nephrology general ward
5. Grand rounds in NICU, PICU , Pediatric surgery ward, nephrology general ward
6. Clinical Audit
7. A poster and have one oral presentation at least once during their training period in a recognized conference.
8. Clinico – Pathological conference

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan interesting and difficult case unit discussions. The training program would focus on knowledge, skills and attitudes behavior, all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

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

Seminars: Trainees would be required to present a minimum of 10 topics based on the curriculum in a period of one year to the combined class of teachers and students. A free discussion would be encouraged in the symposia. The topics of the symposia would be given to the trainees with the dates for presentation.

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

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

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

Research: The student would carry out the research paper. He/ she would also be given exposure to take part in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

E. Rotation and Posting In other departments:

- | | |
|--|--------|
| 1. Pediatric surgery | -1week |
| 2. Genetics, Nuclear imaging, Nephrologist | -1week |
| 3. Hemodialysis Unit | - 1 |
| month To attend cases in Emergency room, NICU and PICU | |

F. Monitoring of teaching/Learning activities:

Monitoring of teaching 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.

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

After Theory Examination, Candidate has to appear for Clinical Assessment.

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

A. 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.

B. 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.

C:Scheme of Examination:

The summative assessment of competence will be done in the form of Fellowship Exit

Examination leading to the award of the degree of Fellowship in Pediatric Nephrology.

The Fellowship Exit Examination is a two-stage examination comprising the theory and practical part. The final exit examination (both theory and practical) will be conducted as per the RGUHS university , KARNATAKA guidelines for fellowship programme.

a) Written b) Clinical: Number and Type of Cases c) Viva - Voce

G. Recommended Books and Journals:

Kliegman, Stanton, St.Geme, Schor	Nelson Textbook of Paediatrics	Elsevier
Forfar and Arneil	Textbook of Paediatrics	Churchill Livingstone
Avner Ellis D	Pediatric Nephrology	Springer
Denis F Geary Schaefer	Comprehensive Pediatric Nephrology	Mosby, Elsevier
RN Srivastava, Arvind Bagga	Pediatric Nephrology	Jaypee brothers
John T Daugirdas, PGBlake	Handbook of Dialysis	Lippincott Williams and Wilkins
DuBose Hamm	Acid- Base and Electrolyte Disorders	Springer

Journals

Name of the Journal	Publishing Company
Indian Pediatrics	Indian Academy Of Pediatrics
Indian Journal of Practical Pediatrics	Indian Academy Of Pediatrics
Pediatric Nephrology	Springer link
Kidney International	Science Direct
Clinical Journal of American society of Nephrology	American Society of Nephrology
Indian Journal of Nephrology	Indian Society of Nephrology

Signature of the
Programme Co-ordinator

Signature of the Head
of the Institute

Place:
Date :

Institutional / Departmental academic activities

1. Case presentations & discussion - 1 per week
2. Seminar - 1 per month
3. Journal club- 1 every alternate week
4. Daily rounds in nephrology general ward
5. Grand rounds in NICU, PICU Pediatric surgery ward, nephrology general ward.
6. Interdepartmental meeting - 1 per month
7. Clinical Audit
8. A poster and have one oral presentation at least once during their training period in a recognized conference.

Clinico – Pathological conference