



JSS
ACADEMY
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(DEEMED TO BE UNIVERSITY)

MYSURU

JSS Academy of Higher Education & Research

(Deemed to be University)
Accredited "A" Grade by NAAC
Sri Shivarathreeshwara Nagar, Mysuru – 570 015

Faculty of Medicine

Regulation & Syllabus

DM NEPHROLOGY
2016

DM Nephro

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REGULATION AND SYLLABUS FOR SUPER SPECIALITY DEGREE PROGRAMS 2016

DM NEPHROLOGY

CONTENTS

| | | Page No |
|-------------|------------------------------|----------------|
| Chapter I | Regulation | 01 |
| Chapter II | Goals and General Objectives | 06 |
| Chapter III | Syllabus | 08 |

CHAPTER I

Regulations for Super Speciality Degree in Medical Sciences

1. Branch of Study

Super Speciality Degree courses may be pursued in the following subjects:

a. DM (Doctor of Medicine)

- i. Neurology
- ii. Medical Gastroenterology
- iii. Nephrology

b. MCh (Master of Chirurgie)

- i. Urology

2. Eligibility for Admission

Super Speciality Degree courses: A candidate should have passed recognised degree of M.D. or M.S. (or its equivalent recognised degree) in the subject shown against them in a medical college recognized by the Medical Council of India, or from a recognized medical college affiliated to any other Deemed to be University recognized as equivalent thereto and has obtained permanent registration of any State Medical Council shall be eligible for admission.

| Sl. No. | Name of the Degree | Eligibility for admission |
|----------------|-----------------------------|-------------------------------------|
| 1 | DM Neurology | MD (Medicine) or MD Paediatrics) |
| 2 | DM Medical Gastroenterology | MD (Medicine) or MD Paediatrics) |
| 3 | DM Nephrology | MD (Medicine) or MD Paediatrics) |
| 4 | MCh Urology | MS (Surgery) |

3. Obtaining Eligibility Certificate by the Deemed to be University before making admission

No candidate shall be admitted for any Super Speciality courses unless the candidate has obtained and produced the eligibility certificate issued by the Deemed to be University. The candidate has to make an application to the Deemed to be University with the following documents along with the prescribed fee:

- a. UG and PG pass/degree certificate issued by the Deemed to be University.
- b. Mark cards of all the Deemed to be University examinations passed before PG course.
- c. Attempt certificate issued by the Principal.
- d. Certificate regarding the recognition of the medical college by the Medical Council of India

- e. Completion of internship certificate.
- f. In case internship was done in a non-teaching hospital, a certificate from the Medical Council of India that the hospital has been recognized for internship.
- g. Registration by any state Medical Council.
- h. Proof of ST/SC or Category I, as the case may be.
- i. Candidates should obtain the eligibility certificate before the last date for admission as notified by the Deemed to be University.

A candidate who has been admitted to super specialty course should register his/her name in the Deemed to be University within a month of admission after paying the registration fee.

4. Intake of students

The intake of students to each course shall be in accordance with the MCI and GOI permissions in this regard.

5. Course of study

Super Specialty Degree Courses: The course of study shall be for a period of 3 years.

6. Method of training

The training of super specialty degree shall be residency pattern, with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate should be required to participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies. Clinical subjects' students shall be posted to allied specialty departments or institutions.

7. Attendance, Progress and Conduct

- A candidate pursuing super specialty degree course, should work in the concerned department of the institution for the full period as full time student. No candidate is permitted to run a clinic/laboratory/nursing home while studying postgraduate course, nor can he/she work in a nursing home or other hospitals/clinic/laboratory while studying super specialty course.
- Each year shall be taken as a unit for the purpose of calculating attendance.
- Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself/herself from work without valid reasons.
- Every candidate is required to attend a minimum of 80% of the training during each academic year of the post graduate course. Provided, further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every year.
- Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the Deemed to be University Exam-

inations.

8. Monitoring Progress of Studies:

- **Work diary / Log Book:** Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinised and certified by the Head of the Department and Head of the Institution, and presented in the Deemed to be University practical/clinical examination.
- **Periodic tests:** In case of degree courses of three years duration (MD/ MS, DM, MCh.), the concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other at the end of the second year. The third test may be held three months before the final examination. The tests may include written papers, practical / clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the Deemed to be University, when called for.
- **Records:** Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the Deemed to be University or MCI.

9. Dissertation

- Every candidate pursuing super specialty degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.
- The dissertation should be written under the following headings
 - a. Introduction
 - b. Aims or Objectives of study
 - c. Review of Literature
 - d. Material and Methods
 - e. Results
 - f. Discussion
 - g. Conclusion
 - h. Summary
 - i. References
 - j. Tables
 - k. Annexure
- The written text of dissertation shall be not less than 50 pages and shall not exceed 150pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.
- Four copies of dissertation thus prepared shall be submitted to the Controller of Examinations, six months before final examination, on or before

the dates notified by the Deemed to be University.

- The dissertation shall be valued by examiners appointed by the Deemed to be University. Approval of dissertation work is an essential precondition for a candidate to appear in the Deemed to be University examination.
- Before submitting the dissertation to the Deemed to be University the candidate should have presented at least one scientific paper based on the dissertation at a national/international conference or Published or submitted for publication with acceptance, at least one scientific paper based on the dissertation in a national/international indexed journal. The candidate should be the first author.
- Guide: The academic qualification and teaching experience required for recognition by this Deemed to be University as a guide for dissertation work is as per Medical Council of India, Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least five years teaching experience as Lecturer or Assistant Professor gained after obtaining higher specialty degree shall be recognised as post graduate teachers.
- **Co Guide:** A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognised for teaching/training by JSS Deemed to be University/ Medical Council of India. The co-guide shall be a recognised post graduate teacher of JSS Deemed to be University.
- **Change of guide:** In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the Deemed to be University.

10. Schedule of Examination

The examination for DM and MCh courses shall be held at the end of three years.

11. Scheme of Examination

DM/MCh

The examination shall consist of theory, clinical/practical and viva voce examination.

- **Theory (Written Examination):** The theory examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the first paper will be on basic medical sciences. Recent advances may be asked in IV Paper.
- **Practical / Clinical Examination:** In case of practical examination it should be aimed at assessing competence, skills of techniques and procedures as well as testing student's ability to make relevant and valid observations, interpretations and experimental work relevant to his / her subject. In case of clinical examination it should aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should examine at least one long case and two short cases. The maximum marks for Practical / Clinical shall be 200.
- **Viva-Voce:** Viva Voce examination shall aim at assessing thoroughly, depth of knowledge, logical reasoning, confidence and oral communication skills. The maximum marks shall be 100. This also includes spotters like instruments, anaesthesia machines, drugs, ECG, X – ray.
- **Examiners:** There shall be at least four examiners in each subject. Out of them, two shall be external examiners and two shall be internal exam-

iners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

- Criteria for declaring as pass in Deemed to be University Examination*: A candidate shall secure not less than 50%marks in each head of passing which shall include (1) Theory (2) Practical including clinical and viva voce examination.
- A candidate securing less than 50%of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Registrar (Evaluation).
- Declaration of distinction. A successful candidate passing the Deemed to be University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate marks is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

12. Number of Candidates per day

The maximum number of candidates for practical/clinical and viva-voce examination shall be as under:

DM /MChCourse: Maximum of 6 per day.

CHAPTER II

GOALS AND GENERAL OBJECTIVES OF SUPER SPECIALTY MEDICAL EDUCATION PROGRAM

GOAL

The goal of super specialty medical education shall be to produce competent specialists and/or medical teachers:

1. Who shall recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of the national health policy.
2. Who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system.
3. Who shall be aware of the contemporary advance and developments in the discipline concerned.
4. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology and
5. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

GENERAL OBJECTIVES

At the end of the super specialty training in the discipline concerned the student shall be able to:

1. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
2. Practice the speciality concerned ethically and in step with the principles of primary health care.
3. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
4. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and primitive measure/strategies.
5. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
6. Plan and advise measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
7. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
8. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.
9. Play the assigned role in the implementation of national health programme, effectively and responsibly.
10. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.

11. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
12. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
13. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and para-medical health workers.
14. Function as an effective leader of a health team engaged in health care, research or training.

STATEMENT OF THE COMPETENCIES: Keeping in view the general objectives of postgraduate training, each discipline shall aim at development of specific competencies which shall be defined and spelt out in clear terms. Each department shall produce a statement and bring it to the notice of the trainees in the beginning of the programme so that he or she can direct the efforts towards the attainment of these competencies.

COMPONENTS OF THE SUPER SPECIALTY CURRICULUM:

The major components of the super specialty curriculum shall be:

- Theoretical knowledge
- Practical and clinical skills
- Thesis skills.
- Attitudes including communication skills.
- Training in research methodology.

CHAPTER III

Syllabus D.M Nephrology

AIMS AND OBJECTIVES

The programme aims at training a physician in the specialty of Nephrology encompassing the related knowledge, skills, research methodology and attitudes which will enable him/her to function as an independent clinician/consultant, a teacher or a research scientist.

During the period of training the candidate is expected

- To acquaint himself/herself with the past and current literature on relevant aspects of basic, investigative and clinical nephrology.
- To acquire performance skills for diagnostic and therapeutic procedures and interventions.
- To diagnose, plan and interpret investigations and treat various acute and chronic kidney ailments by relevant therapeutic methods.
- To identify, frame and carry out research proposals in the speciality.
- To acquire thorough knowledge of internal medicine and allied general and clinical disciplines to ensure appropriate and timely referrals.
- To acquaint with relevant education delivery system to be able to function as a health educator.
- Training will be exclusively on whole time in-service basis on the residency pattern.
- The programme will impart a sound training in the diagnosis and management of patients with renal disorders. During the training period, the candidate shall take part in all the activities of the department including in-patient and outpatient nephrology care, laboratory and investigative work up, lectures, seminars, conferences, group discussions and various other clinical and teaching assignments. The candidate will work as a member of the renal team and will be given the responsibility of investigation and therapy of all patients under the direct guidance of the consultants in Nephrology. He will be first on call for routine and emergency renal consultants.
- Each candidate will go through the following rotations in various areas/ subspecialties of nephrology during 3 years of training in Nephrology.
 - i. Inpatients services/Out-patient Clinics/Consultations 6 months / year
 - ii. Dialysis 3 months/ year
 - iii. Renal transplantation 3 months/ year

The candidate would be involved in the pre-transplant, immediate post-transplant and late post transplant medical management of renal transplant recipients and the donors including immunosuppressive therapy, immunological monitoring, diagnostic and therapeutic interventions in patients with allograft dysfunction including renal allograft biopsy and ultrasound evaluation of the allograft.

Candidates will be exposed to:

- Critical Care Nephrology Intensive care nephrology including management of electrolyte and acid base problems, CRRT and dialysis of critically ill patients with multiorgan failure.

- Interventional Nephrology Various procedures in nephrology including renal ultrasonography, renal biopsy, insertion of peritoneal dialysis catheter and hemodialysis, vascular access and monitoring.
- Research Posting During this period, the candidate will complete his on-going research projects and would also familiarize himself/herself with research methodologies with laboratory techniques being carried out in HLA lab, immunofluorescence and EM laboratories and also with routine laboratory investigations being done in the Renal Lab.

Clinical training schedule will include the following:

- Bedside rounds - daily
- Mortality meeting - once a month
- Seminar - once in two weeks
- Grand rounds - once a week
- Journal club - once in week
- Renal histology meeting - once in a month.
- Clinical case discussion - once a week
- Others:
 - Transplant meeting - once in 2 weeks
 - Nephro-urology meeting - once a month
 - Nephro-radiology meeting - once a month
- Out patient nephrology care including renal transplant clinic

Didactic Lectures

A minimum of 15-20 lectures/year covering the recent advances in all aspects of renal diseases would be delivered by consultant faculty. In addition, candidates will be required to attend the complete, short term basic and clinical courses on

- i. Bio-statistics
- ii. Research methodology and experimental lab medicine relevant to Nephrology
- iii. Use of Computers in Medicine
- iv. Bio ethics, ethical issues in transplantation including "Human Organ Transplant Act"

Interventional Procedures

- A candidate will be required to have achieved proficiency in performing and supervising hemodialysis, peritoneal dialysis and renal biopsies. He would be expected to have performed a minimum of 50 renal biopsies, 300 hemodialysis including CVVHD, CRRT and 50 peritoneal dialysis. The candidate would be expected to involve and be trained in all aspects of CAPD programme. The candidate would also be expected to have inserted at least 50 internal jugular, 50 femoral and 50 subclavian vascular access catheters. The candidate would maintain record of all the procedures/interventions in a log book, which would be certified by the Head of the department. A proficiency certificate from the head of the department regarding the clinical competence and skillful performance of procedures by the candidate will be necessary before he would be allowed to appear in the examination. Internal assessment would be done to monitor and evaluate the training in various areas/ subspecialties of Nephrology.

Investigative work-up

- The candidate is expected to perform routine urine examination and ultrasonography. In addition he/she must familiarize himself/herself with the following investigations:

Laboratory:

- Electrolyte and acid base analysis
- Renal function tests
- Auto analyzer functioning
- Renal pathology interpretation including immuno-fluorescence and electron microscopy.

Radiological:

- Intravenous urography
- Micturating cystourethrography
- Digital subtraction angiography
- Selective renal angiography and interventional angioplasty and stenting
- Selective renal venography
- Doppler studies
- Antegrade and retrograde pyelography
- CT imaging
- Magnetic resonance imaging

Nuclear Medicine:

- Various renal isotope imaging and functional techniques
- Urodynamic studies

Microbiology:

- Viral, Bacterial and fungal cultures, Serological and PCR techniques
- Immunological test:
- ANCA, ANA, anti DsDNA, complement, anti GBM ab, cryoglobulin, immuno-electrophoresis
- Tissue typing:
- Cross match, serological typing, molecular HLA typing, PRA
- Renal function testing
- Renal plasma flow, GFR
- Renal concentrating and diluting capacity
- Microalbuminuria
- Proteinuria measurement
- Urinary acidification
- Renal sodium and potassium handling

Research

- Each candidate will be required to undertake research under the guidance of the consultants. The candidate will participate in all the departmental research activities.
- Applied basic sciences knowledge relevant to the field of nephrology including electrolyte and acid base disorders. Investigative techniques, selection and interpretation of results
- Pathogenesis of renal diseases and renal histopathology Diseases of the urinary tract (glomerular diseases, urinary tract infection, tubulointerstitial diseases, inherited diseases, toxic nephropathies, systemic diseases with renal involvement, renal stone disease, urinary tract obstruction, vascular

- diseases of kidney, hypertension, neoplasia etc)
- Renal failure (diagnosis and medical management)
- Principles and practice of dialysis.
- Renal transplantation
- Recent advances in nephrology.
- Biostatistics and clinical epidemiology
- Ethics ,psychosocial, economics of management of renal diseases, human organ transplant act and medicolegal aspects of transplantation.

EXAMINATION SYSTEM:

Assessment

All the DM residents are assessed daily for their academic activities and also periodically.

General Principles

The assessment is valid, objective and reliable.

It covers cognitive, psychomotor and affective domains.

Formative, continuing and summative (final) assessment is also conducted in theory as well as practical.

In addition, research project is also assessed separately.

Formative Assessment

The formative assessment is continuous as well as end of term.

The former is based on the feedback from the consultants concerned.

Formative assessment will provide feedback to the candidate about his/her performance and help to improve in the areas they lack. Record of internal assessment should be presented to the board of examiners for consideration at the time of final examination.

Internal Assessment

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sr. No. Items Marks

1. Personal Attributes 20
2. Clinical Work 20
3. Academic activities 20
4. End of term theory examination 20
5. End of term practical examination 20

1. Personal attributes:

Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.

Motivation and Initiative: Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.

Honesty and Integrity: Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

Interpersonal Skills and Leadership Quality: Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

2. Clinical Work:

Availability: Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.

Diligence: Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.

Academic ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.

Clinical Performance: Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

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

4. End of term theory examination conducted at end of 1st, 2nd year and after 2 years 9 months

5. End of term practical/oral examinations after 2 years 9 months.
Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year.

Average of the three years should be put as the final marks out of 20.

Marks for **academic activity** should be given by the all consultants who have attended the session presented by the resident.

The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.

Written examination: There will be 4 papers; each of 3 hours duration carrying 100 marks each. Each paper shall consist of ten short notes of 10 marks each.

- Paper I: Basic Sciences as applicable to nephrology
- Paper II : Clinical Nephrology Part I
- Paper III : Clinical Nephrology Part II
- Paper IV : Recent advances in nephrology

Clinical examination: The maximum marks for Practical / Clinical exam shall be 200 marks

Viva voce shall be conducted for 100 marks

- There would be four examiners. These would include two internal and two external examiners. There would two short and one long clinical case. Candidate would also be assessed on histopathology slides, radiological

investigations and oral viva-voce.

- The candidate must pass separately in theory (pass percentage – 50%), practical (pass percentage-50%) and in aggregate of the two (pass percentage – 50%).

SUGGESTED BOOKS AND JOURNALS

Following books and journals are suggested for reading. Latest edition should be made available in central/departmental library.

Book Editor

1. The Kidney Brenner and Rector Current Edition
2. Diseases of kidney and urinary tract Schrier and Gottschalk Current Edition
3. Heptinstall's Pathology of the kidney J Charles Jennets
4. Hand book of dialysis Daugirdas Current Edition
5. Kidney Transplantation Peter Morris Current Edition
6. Oxford Text Book of Nephrology Alex davision, Stewart Cameron et al Current Edition
7. Massry and Glassock's Text Book of Nephrology Saul G Massry and RJ Glassock
8. The Kidney: Physiology and Pathophysiology DW Seldin and G Giebisch
9. Essential Atlas of Nephrology RW Schier
10. Immunological Renal Diseases EG Neilson and WG Couser

Journals

1. American Journal of Nephrology
2. Kidney International
3. American Journal of Kidney Diseases
4. Nephrology Dialysis and Transplantation
5. Journal of American Society of Nephrology
6. Seminars in Nephrology
7. Indian Journal of Nephrology
8. Electronic edition of Upto date in Nephrology and Hypertension
9. Current opinion in Nephrology and Hypertension
10. New England J of Medicine
11. Lancet

NORMAL STRUCTURE AND FUNCTIONS OF KIDNEY

- Embryology of the kidney
- Anatomy of the kidney
- The renal circulations and glomerular ultrafiltration
- Metabolic basis of solute transport
- Transport of sodium, chloride and potassium
- Aldosterone regulation of ion transport
- Transport of calcium, magnesium and phosphate
- Renal handling of organic solutes
- Renal acidification mechanisms
- Urine concentration and dilution
- The cell biology of vasopressin action
- Vasoactive molecules and the kidney
- Arachidonic acid metabolites and the kidney

DISORDERS OF BODY FLUID VOLUME AND COMPOSITION

- Disorders of sodium balance
- Disorders of water balance
- Disorders of acid – base balance
- Disorders of potassium balance
- Disorders of calcium, magnesium and phosphate balance

EPIDEMIOLOGY AND RISK FACTORS IN KIDNEY DISEASE

- Epidemiology of kidney disease
- Demographics of kidney disease
- Risk factors and chronic kidney disease
- Nephron endowment
- Aging and kidney disease

EVALUATION OF THE PATIENT WITH KIDNEY DISEASE

- Approach to the patient with kidney disease
- Laboratory assessment of kidney disease: Glomerular filtration rate, urinalysis and proteinuria
- Interpretation of electrolyte and acid-base parameters in blood and urine
- Diagnostic kidney imaging
- The renal biopsy
- Biomarkers in acute and chronic kidney diseases

COMPONENTS OF THE super specialty CURRICULUM:

- Acute kidney injury
- Primary Glomerular disease
- Secondary glomerular disease
- Overview of therapy for glomerular disease
- Microvascular and macrovascular diseases of the kidney
- Tubulointerstitial diseases
- Urinary tract infection
- Urinary tract obstruction
- Diabetic nephropathy
- Nephrolithiasis
- Renal neoplasia
- Renal disease in cancer patients

GENETICS OF KIDNEY DISEASE

- Genetic basis of kidney disease
- Inherited disorders of the glomerulus
- Inherited disorders of the renal tubule
- Cystic diseases of the kidney

HYPERTENSION AND THE KIDNEY

- Primary and secondary hypertension
- Renovascular hypertension and ischemic nephropathy
- Hypertension and kidney disease in pregnancy
- Antihypertensive drugs
- Diuretics

THE CONSEQUENCES OF ADVANCED KIDNEY DISEASE

- Adaptation to nephron loss and mechanisms of progression in chronic kidney disease
- Mechanisms and consequences of proteinuria
- The pathophysiology of uremia
- Chronic kidney disease – mineral bone disorder
- Cardiovascular aspects of kidney disease
- Hematologic aspects of kidney disease
- Endocrine aspects of chronic kidney disease
- Neurologic aspects of kidney disease
- Dermatologic conditions in kidney disease

CONSERVATIVE MANAGEMENT OF KIDNEY DISEASE

- Dietary approaches to kidney diseases
- A stepped care approach to the management of chronic kidney disease
- Vitamin D, calcimimetic agents and phosphate binders
- Prescribing drugs in kidney disease

DIALYSIS AND EXTRACORPOREAL THERAPIES

- Hemodialysis
- Peritoneal dialysis
- Critical care nephrology
- Plasmapheresis
- Extracorporeal treatment of poisoning
- Interventional nephrology

KIDNEY TRANSPLANTATION

- Transplantation immunobiology
- Donor and recipient issues
- Clinical management

PEDIATRIC NEPHROLOGY

- Malformation of the kidney: Structural and functional consequences
- Fluid, electrolyte and acid-base disorders in children
- Diseases of the kidney and urinary tract in children
- Dialysis in children
- Pediatric transplantation

GLOBAL CONSIDERATIONS IN KIDNEY DISEASE

- Latin America
- Africa
- Near and Middle East
- Indian subcontinent
- Far East
- Renal disease in the Oceania region

CHALLENGES IN NEPHROLOGY

- Ethical dilemmas facing Nephrology: Past, Present and Future
- Health disparities in Nephrology
- Tissue Engineering, Stem cells and Cell Therapy in Nephrology



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