DM NEPHROLOGY

Curriculum and Syllabus 2013

Branch Code: 406

SRM Medical College Hospital & Research Centre
SRM University
SRM Nagar, Kattankulathur
Kancheepuram (Dt). 603 203
<table>
<thead>
<tr>
<th>S.NO</th>
<th>CONTENT</th>
<th>PAGE NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GOALS AND OBJECTIVES</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>COURSE OVERVIEW</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>COURSE CONTENT</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>SYLLABUS</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>MAINTENANCE OF LOGBOOK</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>THESIS</td>
<td>14</td>
</tr>
<tr>
<td>7</td>
<td>SCHEME OF EXAMINATION</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>EXAMINATION AND EVALUATION</td>
<td>17</td>
</tr>
<tr>
<td>9</td>
<td>MODEL QUESTION PAPER</td>
<td>20</td>
</tr>
<tr>
<td>10</td>
<td>RECOMMENDED BOOKS &amp; JOURNALS</td>
<td>24</td>
</tr>
</tbody>
</table>
DM NEPHROLOGY

1. A. GOALS

The goal of DM Nephrology is to produce a competent Nephrologist who:

- Has acquired the competence pertaining to Nephrology that is required to be practiced in the community and at all levels of health care system
- Has acquired the skills to manage the patient effectively pertaining to nephrology
- Has acquired skill in effectively communicating with patient and his attendants.
- Has the desired skills to independently manage emergency cases
- Is aware of the latest developments in the field of nephrology oriented to principles of research methodology
- Has acquired skills in educating medical and paramedical professionals.

B. OBJECTIVES

At the end of the DM Nephrology, the student should be able to

- practice the specialty of nephrology in keeping with the principles of professional ethics
- recognize and identify the various renal problems
- institute diagnostic, therapeutic, rehabilitative and preventive measures to provide holistic care to the patient
- take detailed history, perform full physical examination and make clinical diagnosis, perform relevant investigative and therapeutic procedures
- interpret important imaging and laboratory results
- Independently perform basic surgical procedures
- manage emergency efficiently
- Demonstrate empathy and human approach towards patients and their families.
- demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education to patients, families and communities,
- develop skills as a self-directed learner, recognize continuing educational needs, use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine, facilitate learning of medical/nursing students, practicing physicians, paramedical health workers and other providers as a teacher/trainer
- organize and supervise the desired managerial and leadership skills
2. COURSE OVERVIEW

Duration of the Course

The period of certified study and training for the Post-Graduate DM Nephrology shall be Three Academic years.

Commencement of Academic Session

The academic session for the Post-Graduate shall commence from the month of August/September of the Academic Year.

Date of Examination

The candidates admitted up to 30th September of the academic year shall be registered for that academic year and shall take up their Final Third Year regular examination in August/September of the due year and February/March of the academic year after completion of three (3) years.

Number of Examinations

The University shall conduct not more than two examinations in a year, for any subject, with an interval of not less than four (4) and not more than six (6) months between the two examinations.

Attendance

All students joining the postgraduate training programme shall work as full time residents during the period of training, attending not less than 80% (eighty percent) of the training during each calendar year, and will be given full time responsibility, assignments and participation in all facets of the educational process.

The period of training for obtaining the degree shall be three completed years including the period of examination.
3. COURSE CONTENT

TRAINING METHODS AND AREAS OF TRAINING

i. The candidates will work in the department under the guidance of Assistant Professors, Associate Professors and Professors. They will be trained in the decision making process both in clinical and investigative aspects of nephrology. The candidates shall work taking up the responsibility of investigative and therapeutic management of patients under the guidance of senior teachers in nephrology.

ii. The candidates will attend nephrology out patient department and Renal transplant OP. The candidates will write case sheets of the new patients and discuss the problems of old patients with Associate Professor and Professor of Nephrology.

iii. Training in renal biopsy and interpretation of biopsy and other invasive procedures will be given.

iv. The candidate shall maintain log book and weekly review by the professor or associate professor.

DIALYSIS

(a) HEMODIALYSIS

The candidates will be posted in Hemodialysis units in rotation where he or she will be trained in both technical and clinical aspects of Hemodialysis including double lumen venous catheterization, permcath insertion. Dialyser reuse etc.

They will also be trained in Continuous Renal Replacement Therapy (CRRT) – mode of dialytic therapy in critically ill patients.

The candidates will also be trained during this period in plasma pheresis and Hemoperfusion.

(b) PERITONEAL DIALYSIS

All candidates will be trained to perform acute intermittent Peritoneal Dialysis including its benefits and complications. Apart from that they will be trained in the management Continuous Ambulatory Peritoneal Dialysis (CAPD) patients.
RENAL TRANSPLANTATION

The candidates will be trained in the workup of living kidney donors and recipients and prepare recipients for Renal Transplantation, manage them post operatively in the immediate and long term follow up.

They will also be trained in wait listing the appropriate Chronic Renal Failure (CRF) patients without living donors, preparing them for Renal Transplantation as and when the cadaver renal donor is available and managing them post operatively.

<table>
<thead>
<tr>
<th></th>
<th>8.00-9.00</th>
<th>9.00-10.30</th>
<th>9.00-1.00</th>
<th>2.00-3.00</th>
<th>3.00-4.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>Topic Discussion</td>
<td>Ward rounds and bedside discussion</td>
<td>Nephrology Clinic</td>
<td>Diabetic Nephro Clinic</td>
<td>Interventions/Procedures</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Inter departmental Meeting*</td>
<td>Ward rounds and bedside discussion</td>
<td>Nephrology Clinic</td>
<td>Topic Review</td>
<td>Interventions/Procedures</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Topic Discussion</td>
<td>Ward rounds and bedside discussion</td>
<td>Nephrology Clinic</td>
<td>Cardio Renal Clinic</td>
<td>Interventions/Procedures</td>
</tr>
<tr>
<td>Thursday</td>
<td>Renal Histopath discussion</td>
<td>Nephrology Grand Rounds</td>
<td>Topic Review</td>
<td>Interventions/Procedures</td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>Topic Discussion</td>
<td>Ward rounds and bedside discussion</td>
<td>Nephrology Clinic</td>
<td>Transplantation Clinic</td>
<td>Interventions/Procedures</td>
</tr>
<tr>
<td>Saturday</td>
<td>Journal Scan/Evidence Based Nephrology</td>
<td>Ward rounds and bedside discussion</td>
<td>Nephrology Clinic</td>
<td>Topic Review</td>
<td>Interventions/Procedures</td>
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</tbody>
</table>

*Nephro -Uro 1st Tuesday,  Nephro Radiology 2nd Tuesday,  Nephro Cardio 3rd Tuesday, Nephro Rheumatology 4th Tuesday*

1st of every month visit to rural health centre, Mamandur
TEACHING EXERCISE  FREQUENCY & DURATION

1. Nephrology Grand Rounds - Once a week 3 Hours
2. Clinical Bed side discussions - Four times a week 2 Hours
3. Seminars - Once in 2 weeks 2 Hours
4. Journal Club - Once in a week’s 1 Hour
5. Topic review - Once in 2 weeks 1 Hour
6. Topic discussion - 3 days per week 40 Minutes
7. Renal Histopath discussion - Once a week 1 Hour
8. Nephrology case discussion - Once in 2 weeks 2 Hours
9. Renal Radiology meet - Once a week 1 Hour
4. SYLLABUS

ASSESSMENT OF RENAL DISEASE

History and clinical examination of patients with renal disease
Urinalysis and microscopy
Clinical assessment of renal function
Renal function in the newborn infant
The aging kidney
Imaging in renal disease
Renal biopsy
Immunological investigation of renal disease

BASICS

Embryology of the kidney
Anatomy of the kidney
Renal circulation
Biostatistics
Research Methodologies
Solute transport / Both organic and inorganic
Renal Acidification
Urine Concentration & Dilution
Role of kidney in blood pressure regulation
Endocrine and Autocrine function of the kidney

PHARMACOLOGY AND DRUG

Handling of drugs in kidney disease
Drug-induced nephropathies
Clinical use of diuretics
Systemic cancer therapies and the kidney

FLUID AND ELECTROLYTE DISORDERS

Hypo-/hypernatremia: disorders of water balance
Hypo-/hyperkalemia
Hypo-/hypercalcemia
Hypo-/hyperphosphatemia
Hypo-/hypermagnesemia
Clinical acid-base disorders
EPIDEMIOLOGY AND RISK FACTORS
Epidemiology of kidney disease
Kidney disease in Indian subcontinents
Risk factors of CKD
Nephron endowment
Aging and kidney disease

PEDIATRIC NEPHROLOGY
Malformation of the kidney
Fluid, Electrolyte, Acid base disturbance
Disease of kidney and Urinary track
Dialysis in Children
Pediatric Transplantation

GLOMERULAR DISEASE
Proteinuria and/or hematuria
Nephrotic syndrome
Minimal change disease
Focal segmental glomerulosclerosis
Immunoglobulin A nephropathy and Henoch-Schönlein purpura
Membranous nephropathy
Mesangiocapillary glomerulonephritis
Acute endocapillary glomerulonephritis
Crescentic glomerulonephritis
Antiglomerular basement membrane (Goodpasture’s) disease
Infection-related glomerulonephritis
Malignancy-associated glomerular disease
Glomerular disease in the tropics

THE KIDNEY IN SYSTEMIC DISEASE
Diabetes mellitus
Amyloid and immunotactoid glomerulopathy
Plasma cell dyscrasias
Sarcoidosis
Systemic vasculitis
Mixed cryoglobulinemis and hepatitis C infection
Systemic lupus erythematosus
Scleroderma-systemic sclerosis
Rheumatoid arthritis, connective tissue disease, and sjögren’s syndrome
Sickle cell neuropathy
Cancer and the kidney
TUBULAR DISEASE
Isolated defects of tubular function
Fanconi syndrome
Renal tubular acidosis
Hypokalemia tubular disorders
Nephrogenic diabetes insipidus

CHRONIC INTERSTITIAL DISEASE
Analgesic nephropathy
Nonsteroidal anti-inflammatory drugs and the kidney
Nephrotoxic metals
Balkan nephropathy
Aristochic acid nephropathy (‘Chinese herb nephropathy’) and other rare causes of chronic interstitial nephritis

URINARY TRACT INFECTION
Lower and upper urinary tract infection in adults
Urinary tract infection in children
Renal tuberculosis or other mycobacterial infections
Fungal infections and the kidney

RENAL STONE DISEASE
Medical management of stone disease
Surgical management of stone disease
Nephrocalcinosis
Renal stone disease in children

ACUTE KIDNEY INJURY (AKI)
Clinical approach to AKI
Renal replacement therapies in AKI
Dialysis and hemoperfusion treatment of acute poisoning
Glomerulonephritis, vasculitis, and nephritic syndrome
Acute tubulointerstitial nephritis
Hemolytic uremic syndrome and thrombotic thrombocytopenic purpura
Hepatorenal syndrome
Ischemic AKI
Pigment-induced AKI
AKI in tropical countries
AKI in infants and children
AKI in preanancy
AKI in the elderly
CHRONIC KIDNEY DISEASE (CKD)
Assessment of CKD
Endocrine disorders in CKD
Sexual disorders in CKD
Hypertension in CKD
Cardiovascular risk factors in CKD
Gastrointestinal disorders in CKD
Liver disorder in CKD
Hematological disorders in CKD
Skeletal disorders in CKD
β2-Microglobulin amyloidosis in CKD
Immune function in CKD
Coagulation disorders in CKD
Dermatologic disorders in CKD
Neuropsychiatric disorders in CKD

SPECIAL PROBLEMS IN CKD
CKD in children
CKD in the elderly
CKD in diabetic patients
CKD in pregnancy

DIALYSIS
Dialysis strategies
Vascular access
Hemodialysis, hemofiltration and hemodiafiltration
Peritoneal dialysis
Adequacy of dialysis
Medical management of the dialysis patient
Psychological aspects of treatment for renal failure

RENAL TRANSPLANTATION
Donor & Recipient issues
Transplantation immunobiology
Medical & surgical complications following transplantation
Early management of transplant recipients
Immunosuppressant for renal transplantation
INHERITED RENAL DISEASE
Investigation of inherited renal disease
Autosomal dominant polycystic kidney disease
Nephronophthisis
Alport’s syndrome
Primary hyperoxalurias

STRUCTURAL AND CONGENITAL ABNORMALITIES
Renal dysplasia
Vesicoureteric reflux and reflux nephropathy
Urinary tract obstruction
Congenital abnormalities of the urinary tract
Medullary sponge kidney

DURATION OF THE COURSE: – 3 YEARS:

Suggested period of postings:
1. Male Ward - 9 Months
2. Female Ward - 9 Months
3. Dialysis Unit - 7 Months
4. Transplantation - 7 Months
5. Other Centers - 2 Months
6. Pediatric Nephrology - 2 Months

5. MAINTENANCE LOG BOOK


Maintenance of performance record Log book is mandatory. Certified and assessed copy should be made available at the time of practical examination for review by examiners,

Log book should be made contain:

1. Certificate duly signed by teacher, Head of department, Head of Institute stating Dr.……….. has worked in department from………to……….for a period of 3 years. This performance record book contains authentic record of work done and assessment for last 3 years.
2. Record of training:
   - Name of the trainee.
   - Name of the Hospital.
   - Training period.
   - Name of teacher.
3. Posting.
5. Teaching programme.
6. Presentation at Journal club: Date, Article Name, Assessment.
7. Seminars: Date, Topic / Subject, Assessment.
8. Case presentation: Date, Teacher’s Signature.
9. Death Audit / C PC: Date, Case discussed, Assessment. & Signature.
10. Procedures: Date, Name of patient, Type, Complications observed.
11. Teaching activity: Date, Topic, Class.
12. Participation in Research Activity: name of project, Duration.
13. Conference / Workshop attended paper presentation / Publications.

6. THESIS

Every student registered as post graduate shall carry out work on an assigned research project under the guidance of a recognized post graduate teacher, the result of which shall be written up and submitted in the form of a thesis.

Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the students to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature. Thesis shall be submitted at least six months before the theoretical and clinical / practical examination.

The thesis shall be a bound volume of a minimum of 50 pages and not exceeding 75 pages of typed matter (Double line spacing and on one side only) excluding certification, acknowledgements, annexure and bibliography.

Thesis should consist of
(a) Introduction
(b) Review of literature
(c) Aims and objectives
(d) Material and methods
(e) Result
(f) Discussion
(g) Summary and conclusion
(h) Tables
(i) Annexure
(j) Bibliography
(k) Ethics committee clearance certificate

Six copies of thesis shall be submitted six months prior to the commencement of the theory examinations on the date prescribed by the Controller of Examinations of this University. The thesis should be approved by the Professor of that branch and the same has to be forwarded to the Controller of Examinations, by the Head of the Department through the Dean of the college.

Two copies in addition are to be submitted as an electronic version of the entire thesis in a standard C.D. format by mentioning the details and technicalities used in the C.D. format.
The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and clinical; and on the acceptance of the thesis by two examiners, the candidate shall be allowed to appear for the final examination.

EVALUATION OF THESIS :

ACCEPTED / NOT ACCEPTED

No marks will be given

7. SCHEME OF EXAMINATION

INTERNAL ASSESSMENT:

This will be based on the daily interaction between the faculty members and post graduates.

EXAMINATION

Consists of theory, clinical and oral examination.

(a) THEORY:

(i) 4 papers

Paper I: Basic Sciences as applied to Nephrology
Paper II: Clinical Nephrology
Paper III: Dialysis and Transplantation
Paper IV: Recent Advances
Duration: 3 Hours
Marks for each paper: 100

(ii) Type of questions

2 Essay for 20 marks each =40
10 Short for 06 marks each =60

Total 100

(b) CLINICAL AND ORAL EXAM

There should not be more than 3 candidates per day.
There will be 2 external and 2 internal examiners.
(c) PATTERN OF EXAMINATION

(i) Clinical

1 long case - 1 hour
2 Short Cases - 30 minutes each.
Ward Rounds (4 cases)

(ii) Oral Examination

Viva
2 Histopathology slides
2 Radio imaging projections

(d) TOTAL MARKS

(i) Theory

Paper I - 100 Marks
Paper II - 100 Marks
Paper III - 100 Marks
Paper IV - 100 Marks
Total - 400 Marks

(Separate minimum marks required to pass theory exam = 200 marks)

(ii) Clinical

Long Case - 100 x 1 = 100
Short Case - 50 x 2 = 100
Ward Rounds - 25 x 4 = 100
Total = 300

(iii) Oral

Viva - 50 Marks
2 Histopathology slides - 25 Marks
2 Radio imaging projections - 25 Marks
Total - 100 Marks
Clinical and Oral total - 400

Separate minimum marks required to pass in clinical / practical and viva voce exam = 200
MARKS QUALIFYING FOR A PASS

<table>
<thead>
<tr>
<th></th>
<th>Maximum Marks</th>
<th>Qualifying for a pass 50% Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>Clinical and Viva Voce</td>
<td>400</td>
<td>200</td>
</tr>
</tbody>
</table>

A student 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.

* "The postgraduate medical students are required to pass theory and practical examinations separately. An examinee should obtain minimum 40% marks in each theory paper and not less than 50% marks cumulatively in all the four papers for Degree examination to be cleared as “Passed” at the said Degree examination”

*As per Medical Council of India notification date 03.09.2014 and the same approved in the 28th Academic council meet of SRM University held on 23/03/2015.

8. EXAMINATION AND EVALUATION

(I) EXAMINERS

(a) All the Post Graduate Examiners shall be recognized Post Graduate Teachers holding recognized Post Graduate qualifications in the subject concerned.

(b) For all Post Graduate Examinations, the minimum number of Examiners shall be four, out of which at least two (50%) shall be External Examiners, who shall be invited from other recognized universities from outside the State and other two will be internal examiners for D.M.

(c) Under exceptional circumstances, examinations may be held with 3 (three) examiners provided two of them are external and Medical Council of India is intimated the justification of such action prior to publication of result for approval. Under no circumstances, result shall be published in such cases without the approval of Medical Council of India.

(d) In the event of there being more than one centre in one city, the external examiners at all the centers in that city shall be the same. Where there is more than one centre of examination, the University shall appoint a Supervisor to coordinate the examination on its behalf.

(e) The guidelines regarding appointment of examiners are as follows:-

1. No person shall be appointed as an examiner in any subject unless he/she fulfils the minimum requirements for recognition as a Post Graduate teacher as laid down by the Medical Council of India and has teaching experience of 8 (Eight) years as a Lecturer / Assistant Professor out of which he/she has not less than 5 (Five) years teaching
experience after obtaining Post Graduate degree. For external examiners, he/she should have minimum three years experience of examinership for Post Graduate diploma in the concerned subject. Out of internal examiners, one examiner shall be a Professor or Head of Department.

2. There shall be at least four examiners in each subject at an examination out of which at least 50% (Fifty percent) shall be external examiners. The external examiner who fulfils the condition laid down in clause – 1 above shall ordinarily be invited from another recognized university, from outside the State: provided that in exceptional circumstances examinations may be held with 3 (three) examiners if two of them are external and Medical council of India is intimated with the justification of such examination and the result shall be published in such a case with the approval of Medical council of India.

3. An external examiner may be ordinarily been appointed for not more than three years consecutively. Thereafter he/she may be reappointed after an interval of two years.

4. The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his subject.

5. The same set of examiners shall ordinarily be responsible for the written, practical or part of examination.

6. In the event of there being more than one centre in one city, the external examiners at all the centers in the city shall be the same.

7. There shall be a Chairman of the Board of paper – setters who shall be an external examiner and shall moderate the question papers.

8. Where there is more than one centre of examination, there shall be Co-ordinator appointed by the University who shall supervise and Co-ordinate the examination on behalf of the University with independent authority.

9. The Head of the Department of the institution concerned shall ordinarily be one of the internal examiners and second internal examiner shall rotate after every two year.

(2) Number of candidates

The maximum number of candidates to be examined in Clinical / practical and Oral on any day shall not exceed three for D.M. degree examination.

3) Number of examinations

The university shall conduct not more than two examinations in a year, for any subject, with an interval of not less than 4 and not more than 6 months between the examinations.
II. Doctor of Medicine (D.M.) Nephrology

The examination shall consist of: Theory and Clinical/Practical and Oral.

(a) Theory

There shall be four theory papers; one paper out of these shall be on Basic Medical Sciences, and another paper on Recent Advances. The theory examination will be held sufficiently earlier than the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the start of the clinical/Practical and Oral examination.

(b) Clinical / Practical and Oral

Practical examination shall consist of carrying out special investigative techniques for Diagnosis and Therapy. Oral examination shall be comprehensive to test the candidate’s overall knowledge of the subject.

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 voice examination.

Evaluation of Answer Scripts

The answer books shall be valued by two examiners. One of the two examiners will be from this university and the other will be from any other university. The Average of the two marks secured by the candidate will be taken into account. If the difference between two marks exceeds 20%, the answer scripts shall be valued by the third examiner. The average of the nearest two marks shall be considered as the final mark.
9. MODEL QUESTION PAPER

D.M - NEPHROLOGY
Paper I - BASIC SCIENCES AS APPLIED TO NEPHROLOGY

Time: 3 hours  
Maximum: 100 marks

Answer ALL questions

I. Elaborate on:  

(2 x 20 = 40)

1. How do you investigate a patient suspected to have renal tubular acidosis, outline the management of type 1 renal tubular acidosis?

2. Role of protein restriction in dietary management of chronic kidney disease stage 4, write out the diet for a 55 year old male with stage 4 chronic kidney disease, who is not a diabetic

II. Write notes on:  

(10 x 6 = 60)

1. What is tubular maximum; define renal glycosuria and its clinical implications.

2. Factors affecting glomerular filtration rate, what are the methods available to estimate it

3. Mode of action and indications for the use of Metalazone.

4. Genetics of polycystic kidney disease and the implications of this.

5. Indications for the combined use of angiotensin converting enzyme inhibitors and angiotensin receptor blockers advantage or not.

6. What are the prognostic factors in a case of IgA nephropathy.

7. Role of fish oil in management of renal diseases.

8. What is the fractional excretion of sodium, its diagnostic significance.

9. What is Cystatin C and what is its usefulness in clinical practice

10. Use of diuretics in non oedematous states.
Answer ALL questions

I. Elaborate on: (2 x 20 = 40)

1. What is amyloid? How is it classified? Describe the renal lesions in amyloidosis.

2. Describe the renal lesions on systemic sclerosis. What is scleroderma crisis and how is it managed?

II. Write notes on: (10 x 6 = 60)

1. What is pseudohyperkalemia? What are the manifestations of acute hyperkalemia and how do you treat this?

2. How would you investigate a case suspected to have diabetes Insipidus? What is the differential diagnosis?

3. What is the current opinion on the role of Dopamine in acute kidney Injury?

4. What are the RIFLE and AKIN classification? What is the difference between the two and advantages of each?

5. Describe the kidney lesions seen with malarial infection.

6. What is the abnormal serology and pathology seen in the kidney in Wegners Granulomatous? How is the condition treated?

7. What is Schols solution? What is its composition and indications for its use?

8. What are direct rennin inhibitors? What is the advantage of using it over converting enzyme inhibitors or angiotensin receptor blockers?

9. What is e GFR? What is its importance? What are the common methods of estimating e GFR?

10. What is Masugis nephritis? How it produced and what is the human equivalent?
D.M – NEPHROLOGY
Paper III – DIALYSIS AND TRANSPLANTATION

Time: 3 hours

Maximum: 100 marks

Answer ALL questions

I. Elaborate on: (2 x 20 = 40)

1. What are the pulmonary renal syndromes? How do you investigate these? Mention the management of any of the conditions.

2. Hepatitis C virus infection associated kidney disease. Add a brief note on pre kidney transplant management of a case with this infection.

II. Write notes on: (10 x 6 = 60)

1. Use of citrate for hemodialysis. What are the indications and precautions? How is it done?

2. Wilhelm Kolff and his contributions to care of patients with kidney disease.

3. Use of plasma exchange in nephrology.

4. Hanta virus and renal lesions associated with this infection.

5. Renal lesions seen with Mycobacterium leprae infection.

6. What are the variants of focal segmental glomerulosclerosis? Discuss the prognosis after kidney transplant in a patient with this condition.

7. Use of Tacrolimus for non organ transplant situations and efficacy.

8. What predisposing factors, clinical features, histology, treatment and Outcome of Atheroembolic renal disease?

9. Classification of vasculitis. What are the Clinical features, laboratory investigations and treatment of Churg Strauss disease?

D.M - NEPHROLOGY
Paper - IV RECENT ADVANCES

Time: 3 hours
Maximum: 100 marks

Answer ALL questions

I. Elaborate on:  
\(2 \times 20 = 40\)

1. What is a marginal kidney donor? How do you manage the recipient of a kidney from such a donor?
2. Indications for the use of mTOR inhibitors post kidney transplant, side effects and management of a patient on mTOR.

II. Write notes on:  
\(10 \times 6 = 60\)

1. Use of stem cell therapy in Nephrology.
2. Usefulness of allograft biopsy in the management of a kidney transplant recipient.
3. Indications, procedure, advantages and disadvantages of automated Peritoneal Dialysis.
4. What is Microinflammation? What is the evidence for its role in chronic kidney disease?
5. Use of Bortezumib in Nephrology.
6. Renal involvement with snake envenomation, lesions, treatment and outcome.
7. Variants of minimal change nephropathy, management of a steroid dependent child with this condition.
8. Enumerate podocyte disorders and write briefly on the Finnish type of congenital nephritic syndrome.
10. Indications for combined kidney pancreas transplantation and the monitoring of such a recipient.
10. RECOMMENDED BOOKS AND JOURNALS:
1. Diagnostic Atlas of Renal Pathology, Fogo, Agnes B 7th ED. Elsevier, 2005
3. Hypertension companion to to Brenner & Rectors the Kidney, Oparil, Suzanne, 2nd Ed. Elsevier, 2005
13. Evidence-Based Nephrology, Molony, and Donald. A, John wiley, 2009
20. Acid-Base Disorder and their Treatment, Gennari, John F (Et al), Taylot & Francis, 2005

**JOURNALS**

**International**

1. Transplantation
2. Kidney International
3. Hemodialysis International
4. Clinical Journal of the American Society of Nephrology

**Indian**

1. Indian Journal of Nephrology

**Online Journals**

1. BMC Nephrology
2. Clinical and Experimental Nephrology
3. International Urology and Nephrology
4. Journal of Artificial Organs
5. Hong Kong Journal of Nephrology
6. Clinical Queries: Nephrology
7. Journal of American Society of Hypertension
8. Journal of Cardiothoracic- Renal research
9. Indian Journal of Transplantation
10. Pediatric Nephrology