POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

PROSPECTUS

BOARD CERTIFICATION IN NEPHROLOGY

(To be effective from the year 2019)

SPECIALTY BOARD IN NEPHROLOGY
THE BOARD OF STUDY IN MEDICINE

Contents

This prospectus is made under the provisions of the Universities Act, The Postgraduate Institute of Medicine Ordinance, and the General By-Laws No. 1 of 2016 and By-Laws No. 2 of 2016 for Degree of Doctor of Medicine (MD) and Board Certification as a Specialist.

1. Introduction

The successful completion of post-MD (Medicine) training program in Nephrology will entitle the trainee to be eligible for Certification by the Postgraduate Institute of Medicine as a Specialist in Nephrology. Changes in the higher education sphere in relation to training and assessments coupled with advances in the subspecialty have necessitated revision of the prospectus. The program meets the requirements of the relevant qualification descriptors and level descriptors of the Sri Lanka Qualifications Framework, and is set at Level 12 of the Sri Lanka Qualifications Framework.

This Post MD Subspecialty program helps provide the skilled manpower needs of the projected tertiary level health care centres by producing specialists with up-to date knowledge and skills who shall provide leadership to the health care teams to achieve the desired outcomes.

2. Eligibility for entry into training program

The candidates who are successful at the MD (Medicine) Examination shall be selected. Persons already Board Certified by the PGIM in any Specialty or Subspecialty are not eligible to apply.

3. Selection process and number to be selected

Order of merit at the MD (Medicine) examination shall be the criterion for selection of trainees. Available training opportunities will be indicated by the PGIM in the public circular for the MD (Medicine) examination. The number of candidates will be predetermined by the Specialty Board each year and approved by the Board of Study in Medicine and Board of Management in consultation with the Ministry of Health. The candidates will also be informed of the number of positions available at the post-MD allocation meeting.

4. Outcomes, competencies, and learning objectives

To be certified as a Specialist in Nephrology to practice independently in Sri Lanka, on completion of the in-service training, the Trainee should:

a) have administrative and organizational skills
b) be able to clearly document and prioritize problems
c) have skills appropriate to a specialist (diagnostic, operative, counseling, risk management, management of medico-legal issues)

d) have appropriate attitudes

e) be able to carry out and also supervise research and clinical audits

f) be committed to Continuous Professional Development

g) be able to disseminate knowledge effectively

h) have adequate knowledge of the English Language and be able to communicate effectively

i) have adequate knowledge and skills in Information Technology

The objectives of the training program are for the trainee to achieve competencies in:

i. Patient care
ii. Medical knowledge
iii. Interpersonal and communication skills (Professional Ethics)
iv. Professionalism
v. Practice-based and Evidence-based approach
vi. Procedural Skills
vii. Research

At the completion of training the trainee should have:

i. Acquired a sound knowledge in the basic sciences.

ii. Acquired an extensive knowledge of the patho-physiological processes of the diseases of the system.

iii. Developed skills in the diagnosis and management of pathological states presenting in practice.

iv. Developed correct attitudes for good clinical practice.

v. Developed the skills required for the organization of services and evaluate its outcome.

vi. Developed the skills required to conduct audits and scientific research, with a view to contributing to the scientific knowledge in this field and participating in the task of improving the services in the community.

vii. Developed the skills required to be a medical teacher / resource person in order to impart medical education to medical personnel and the public.

viii. Developed the ability to critically appraise research publications and practice evidence-based medicine

ix. Developed the ability to maintain the highest standards of professionalism, moral and ethical conduct

x. Cultivated the commitment to engage in continuing professional development.

5. Curriculum and content areas

The trainee embarking on specialist training in the subspecialty has already acquired adequate core knowledge and skills in General Medicine. Hence the curriculum here focusses on advanced training in the subspecialty. Details of the curriculum and the training content are given in **Annex 1**

6. Structure of the training program

Once the selection is made, the candidate would come under the general purview of the Specialty Board in Nephrology. Each trainee would be allocated a Principal Trainer by the Specialty Board in Nephrology who will guide the trainee through the training program.

Details and duration of the program: Total duration of the training program is four years. This shall consist of three years of local training and one year of overseas training. Alternatively, this shall consist of two years of local training and two years of overseas training. Details of the structure of the Training Programme is given in **table 1**.

Table 1: Structure of the training program

Stage and assessments	Clinical Rotation	Research	Duration
Year 1	Clinical Nephrology with Principal Trainer	Approval of the research proposal	**12 months**
Assessment at the end of first year			
Year 2	Urology	Continue research project	**2 weeks**
	Surgical transplantation		**2 weeks**
	Paediatric Nephrology and Paediatric Urology		**3 weeks**
	Histopathology		**1 week**
	Transplant Immunology		**2 weeks**
	Intensive care and procedure		**2 weeks**
	Elective		**4 weeks**
	Clinical Nephrology with second Trainer		**26 weeks**
	Clinical Nephrology with Principal Trainer		**10 weeks**
Assessment at the end of second year			
Year 3	Clinical Nephrology training with principal Trainer or Overseas Training	Completion of Research project and publication	**12 months**
Year 4	Overseas training		**12 months**
Pre Board Certification Assessment and board certification			

Local training: The training program shall have a coordinator nominated by the Specialty Board in Nephrology and named trainers who shall undertake educational supervision. The Program coordinator shall coordinate training rotations in liaison with the Director / PGIM and Chairpersons of relevant Boards of Study.

Training will be under the supervision of the Principal Trainer in centers with broad range of training opportunities recognized by the Board of Study for Senior Registrar training.

Training rotations specified in Year 2 can be undertaken only after completion of 12 months of training in Clinical Nephrology with the Principal Trainer specified in Year 1. To commence overseas training specified in Year 3 and 4, a trainee should have completed a minimum of 12 months of the training program and have successfully completed the Assessment at the end of first year.

All subspecialty attachments in Year 2 must be done under the supervision of Specialists in the respective fields. Both the trainer and the center must be approved by the Specialty Board in Nephrology. Subspecialty attachments in Year 2 of the training program will be limited to the sessions specified by the supervising Consultant of the subspecialty with the concurrence of the Principal Trainer.

7. Learning activities

7.1 On-call commitment

During the local training period in Nephrology, the trainee shall perform on-call duties at a frequency determined by the need of the center of training. Trainee must be on-call **at-least** once in three days.

7.2 Nephrology referrals

The trainee could undertake to see Nephrology referrals from other units under the supervision of the trainer.

7.3 Teaching

The trainee must gain experience in teaching undergraduates, postgraduates, nursing staff and ancillary medical staff, and must show evidence to that effect in the Portfolio.

7.4 Multi-Disciplinary Team Meetings

The trainee shall arrange and participate in regular meetings with other units/departments e.g. Radiology/Pathology.

7.5 Continuing Professional Development activities

The trainee shall participate in appropriate CPD activities and is encouraged to participate in international Nephrology meetings.

7.6 Research Project leading to a Research Paper

Successfully carrying out a research project is a ***mandatory requirement*** to be eligible to appear for the Pre-Board Certification Assessment (PBCA). The Research Project shall be initiated in the first year of the training program. The research project shall be an observational or interventional study in clinical, epidemiological, genetic, or immunological aspects of the subspecialty.

The research project proposal have to be assessed and approved by the Specialty Board in Nephrology ***before embarking on the proposed study***. The draft proposal prepared according to **Annex 2** should be all-inclusive and detailed with all relevant particulars being included. The supervisor shall be the Principal Trainer/Overseas Trainer. The submitted proposal will be evaluated by an evaluator and comments submitted to the Specialty Board (see **Annex 3**). The research project should be commenced within a period of one year after approval and completed before the end of the training program. Instruction to the supervisor is given in **Annex 4.** The supervisor should submit a progress report to the Specialty Board

in Nephrology every six months using the form in **Annex 5**. All projects would need relevant approvals (eg. ERC) and interventional studies have to be registered with the Sri Lanka / other acceptable Clinical Trials Registry.

The trainee is expected to submit findings of the study for publication in a peer-reviewed journal. Either the published article or evidence of the study being accepted for publication should be provided to the Specialty Board in Nephrology. In the event that the trainee fails to publish the findings of the study, the completed research report should be submitted with the Portfolio according to the format in **Annex 6.** Two examiners appointed by the Specialty Board in Nephrology will assess the completed research report based on the marking scheme in **Annex 7**.

7.7 Clinical Audit

In addition to the prescribed Research Project, the trainee shall complete a Clinical Audit cycle and formally present it at the hospital during either the local or the overseas training period. The generic details of clinical audit are given in **Annex 8.** Documentary evidence of such an audit presentation must be included in the trainee's Portfolio.

7.8 Portfolio

During the 48 months of subspecialty training, the trainee has to document evidence of training and maintain a portfolio **(Annex 9).** The portfolio shall include evidence of**;** Subject expertise, Teaching, Research and audit, Ethics and medico-legal issues, Information technology, Life-long learning, and Reflective practice.

The completed Portfolio must be submitted to the PGIM at the completion of the training program and shall be assessed and used at the Pre-Board Certification Assessment (PBCA) to evaluate the trainee's competence to practice independently as a Specialist.

8. Trainers and Training Units

Trainers: Specialists with at least three years of experience after Board Certification will be appointed as trainers for local training. Overseas training shall be carried out by recognized Consultants in centers recognized by the Board of Study in medicine in concurrence with the specialty board in nephrology.

a. Local training in Clinical Nephrology with Principal Trainer

The trainees will be assigned to centers recognized by the PGIM for training in Clinical Nephrology. The training centers accredited by the PGIM should possess the following minimum requirements: a Nephrology unit, out-patient Nephrology clinics, Hemodialysis unit (Dialysis catheter insertion), Transplantation, renal biopsy.

b. Local training in Clinical Nephrology with Second Trainer

The training will be done in a center recognized by the PGIM for training in Clinical Nephrology. The training center should possess the following minimum requirements: A Nephrology ward, out-patient Nephrology clinics, Hemodialysis unit.

c. Training in Urology

The center should be recognized by the PGIM for training in Urology. The trainer shall be a Board-certified Specialist Urologist.

d. Training in Surgical Transplantation

The training shall be in a center recognized by the PGIM with adequate facilities for surgical transplantation. The trainer should be a Board-certified Specialist Transplant surgeon. Facilities outside the training center (including the private sector) may be utilized by the trainer, with the approval of the Specialty Board in Nephrology and the Board of Study in Medicine, solely for enhancing the training experience.

e. Training in Paediatric Nephrology and Urology

The Principal trainer together with the relevant specialists will supervise the training in Paediatric Nephrology and Urology.

f. Transplant Immunology

Principal Trainer together with Transplant Immunologist / Transfusion Specialist shall supervise the training in Transplant immunology.

g. Histopathology

Principal Trainer together with Consultant Pathologist shall supervise the training in Histopathology.

h. Intensive care

Principal trainer together with Specialist Intensivist shall supervise the training in Intensive care.

i. Elective Training

The training should be in an area relevant to Nephrology and approved by the Principal Trainer in a centre recognized by the PGIM.

j. Overseas training

The training centre, the trainer, and the training program should be approved by the Specialty Board in Nephrology.

9. Monitoring progress

During the training period the trainee shall be assessed by the respective trainers periodically.

9.1 Progress Reports

Each completed section of the training program shall be followed by the submission of a Progress Report by the Trainers using the form in **Annex 10**. These reports should be received by the PGIM within one month of completing the relevant section of training.

The trainees should liaise with the trainers and make sure that the reports are received by the PGIM in time. This includes local as well as overseas training.

Any grade of “average”, “good” or “excellent” would be a satisfactory evaluation result. The grading of “poor” would be considered to constitute an adverse report.

Suitable and appropriate action will be taken by the Board of Study in Medicine according to the General Regulations and Disciplinary Code of the PGIM in the event of the receipt of an adverse progress report at any stage of training.

Satisfactory Progress Reports are a mandatory requirement to qualify for the Pre–Board Certification Assessment (PBCA)

9.2 Multi-Source Feedback

All trainees shall be evaluated through the Multi-Source Feedback System of the PGIM.

9.3 Evaluation/Appraisals

The trainees shall undergo an Appraisal at the end of first year, second year and after the completion of training (third and fourth years combined, Pre-Board Certification Assessment) (i.e. Two appraisals and one PBCA) prior to Board Certification. The details of these are given in the **table 2**.

Table 2: Appraisals

Evaluation	Examiners	Components	Objectives
Appraisal (one hour) After 1st Year and 2nd Year Training	Three Nephrology Trainers (Board-certified Nephrologist) including the coordinator. Principal Trainer to be present as an observer	1. Viva voce 2. Assessment of training portfolio	1. Satisfy the examiners that the trainee is fit to proceed to the next stage of training 2. Identify deficiencies in the program and in the trainee that should be rectified by the next stage
Pre-Board Certification Assessment (PBCA)	Three Nephrology Trainers (Board-certified Nephrologist) including the coordinator. Principal Trainer to be present as an observer	1. Assessment of training portfolio 2. Assessment of the research report if applicable. 3. Viva voce –This is to evaluate knowledge, clinical competence and depth of experience. The Viva will comprise discussion on recent advances in Nephrology, evidence-based Nephrology, all components of the training and progress reports from trainers,	Satisfy the examiners that the trainee is suitable to be Board Certified as a Specialist in Nephrology

Marking scheme for assessments
Excellent – 80 and more marks
Good – 70 – 79 marks
Average: 50 – 69 marks
Poor: 49 and less mark

Pass mark: ≥50%

Trainees who do not achieve ≥ 50% at the Assessment at the end of 12 months will be allowed to repeat the Assessment in the year 2 of their training. It is compulsory that the trainee successfully complete the Assessment in order to proceed to overseas training.

10. Eligibility for Pre–Board Certification Assessment (PBCA)

The trainee shall be eligible to appear for the PBCA after;

1. Satisfactory completion of the local training program.
2. Satisfactory completion of 1st and 2nd year appraisals.
3. Satisfactory completion of the overseas training program.
4. Acceptance of progress reports.

5. Submission of the Portfolio including the audit report.
6. Acceptance of the research report or publication / acceptance for publication based on the research project.
7. Satisfactory Multi-Source Feedback.

11. Format of PBCA

This shall consist of 2 components (C1 and C2) and assessed by three examiners.

C1. Assessment of the training portfolio (20 minutes)

A mark of 50% or more for the Portfolio assessed by three examiners appointed by the Specialty Board in Nephrology. The Portfolio *must* conform to the format specified.

C2. *Viva voce* (40 minutes)

This is to evaluate knowledge, clinical competence and depth of experience.

The Viva will comprise discussion on recent advances in Nephrology, evidence-based Nephrology and all components of the training including the appraisal of the training portfolio, progress reports from trainers, and clinical audit conducted by the trainee during the training period.

Pass mark: The candidate will have to secure a minimum of **40% in each component** (C1 and C2) *and* a minimum **overall mark of 50%** (C1+C2) to be eligible for Board Certification.

Failed candidates: A failed candidate would need to follow a Counseling Session and sit for the PBCA again within a period of 3 months. The candidate would need to repeat only the failed component/s. In the repeat examination, the candidate should achieve a mark of ≥ 50%, in the component in which he or she was earlier unsuccessful, to qualify.

On successful completion at the first repeat attempt after counseling, the date of Board certification shall be backdated. If unsuccessful, the date of Board certification will be the date of passing the subsequent assessment following further training for a minimum period of six months in a unit allocated by the BoS Medicine in concurrence with the Specialty Board in Nephrology.

12. Board Certification

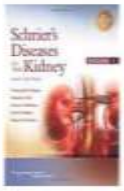
A trainee who has successfully completed the Pre-Board Certification Assessment shall be eligible for Board Certification as a Specialist in Nephrology, on the recommendation of the Speciality Board in Nephrology and the Board of Study in Medicine.

13. Recommended learning materials

- Text book and journal references

Trainees should use the latest edition of text books.

Title	Author/Editor	Year	Edition	ISBN	Publisher	Image
Comprehensive Clinical Nephrology	Richard J. Johnson, John Feehally, Jurgen Floege (Authors)	2018	6th	ISBN-10: 032347909X ISBN-13: 978-0323479097	Elsevier	
Brenner and Rector's The Kidney, (2 Volume Set)	Karl Skorecki, Glenn M. Chertow , Philip A. Marsden , Maarten W. Taal, Alan S. L. Yu (Authors)	2015	10th	ISBN-10: 1455748366 ISBN-13: 978-1455748365	Elsevier	
Oxford Textbook of Clinical Nephrology	Neil Turner, Neil N. Turner, Norbert Lameire , David J. Goldsmith , Christopher G. Winearls , Jonathan Himmelfarb , Giuseppe Remuzzi (Editors)	2015	4th	ISBN-10: 0199592543 ISBN-13: 978-0199592548	Oxford University Press	
The Urinary Sediment: An Integrated View	Giovanni Fogazzi , Claudio Ponticelli , Eberhard Ritz (Authors)	1999	2nd	ISBN-10: 0192630741 ISBN-13: 978-0192630742	Oxford University Press	

Handbook of Dialysis	John T. Daugirdas, Peter G. Blake, Todd S. Ing(Authors)	2014	5th	ISBN-10: 1451144296 ISBN-13: 978-1451144291	LWW (Lippincott Williams & Wilkins)	
Kidney Transplantation - Principles and Practice: Expert Consult - Online and Print (Morris, Kidney Transplantation)	Stuart J. Knechtle, Peter J Morris (Authors)	2013	7th	ISBN-10: 1455740969 ISBN-13: 978-1455740963	LWW	
Designing Clinical Research	Dr. Stephen B Hulley, Steven R Cummings, Warren S Browner, Deborah G Grady, Thomas B Newman (Authors)	2013	4th	ISBN-10: 9781608318049 ISBN-13: 978-1608318049	LWW	
Schrier's Diseases of the Kidney [2 Volume Set]	Robert W. Schrier, Thomas M. Coffman , Ronald J. Falk , Bruce A. Molitoris, Eric G. Neilson (Authors)	2012	9th	ISBN-10: 1451110758 ISBN-13: 978-1451110753	LWW	

- Publications (and website) of International Society of Nephrology: Kidney International, Nature review Nephrology etc.
- Publications (and website) of American society of Nephrology: Clinical Journal of American Society of Nephrology, Journal of American Society of Nephrology, American Journal on kidney Disease etc
- Publications (and website) of European Renal Association- European Dialysis and Transplantation Association: Nephrology Dialysis and Transplantation etc
- Publications of Asia-Pacific Society of Nephrology: Nephrology etc.
- Journals on Transplantation: Transplantation, Transplantation proceeding, American Journal of Transplantation
- Patient-oriented discussions and case-based learning on ward rounds and clinics
- Specialist clinics
- Monthly Journal Clubs
- Clinical Forums/Lectures of the Ceylon College of Physicians (CCP) and Sri Lanka Society of Nephrology (SLSON)
- Annual Scientific Sessions of the CCP, SLSON, Sri Lanka Medical Association etc.

ANNEX 1: TRAINING CONTENT AND CURRICULUM

1. Training Content and Curriculum

1.1 Renal anatomy and physiology

1.2 Investigation of renal disease (Urine analysis, renal function assessment, imaging and biopsy)

1.3 Fluid and electrolyte (acid-base) disorders

1.4 Glomerular disease

1.5 Diabetic Nephropathy

1.6 Hypertensive renal disease

1.7 Acute Kidney Injury

1.8 Dialysis

1.9 Transplantation

1.10 Inherited and cystic disease of the kidney

1.11 Tubulo-interstitial disease and vascular disease

1.12 Urinary tract infection

1.13 Nutritional effects of renal disease

1.14 Urological disease

1.15 Renal disease in pregnancy

1.16 Pharmacology of drugs in renal disease

1.17 Professionalism and ethical conduct

1.18 Research, design, methods and responsible conduct

1.19 Ordering and upkeep of equipment and supplies

This section lists the specific knowledge, skills and attitudes to be obtained throughout training in Renal Medicine.

Part A defines the knowledge, skills and attitudes required for different renal presentations and conditions

Part B defines the procedural competencies that a trainee must attain by the end of renal training.

This was adopted with modifications from the Specialty Training Curriculum for Renal Medicine prepared by the Royal College of Physicians UK in May 2007

Part A - Clinical Competencies in Renal Medicine

Asymptomatic Proteinuria

The trainee will be able to carry out specialist assessment and treatment of patients with the asymptomatic proteinuria		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of proteinuria and to correlate with the causes of asymptomatic proteinuria To differentiate between physiological and pathological causes of asymptomatic proteinuria To describe the methods of investigation of the patient with asymptomatic proteinuria	To take a relevant history and to perform a thorough examination To undertake the appropriate investigation of asymptomatic proteinuria and as a consequence differentiate between pathological and physiological causes To explain the indications for renal biopsy To demonstrate the likely outcome of the condition, its long term prognosis and requirement for long term review	To appreciate the role of primary care in the initial screening for proteinuria and involvement in future management

Microscopic haematuria

The trainee will be able to carry out specialist assessment and treatment of patients with microscopic haematuria		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of haematuria, both macroscopic and microscopic To describe the methods of investigation of the patient with microscopic haematuria	To take a relevant history and perform a thorough examination To demonstrate the cause of microscopic haematuria by laboratory means including phase contrast microscopy To recognise which patients require urological assessment and imaging techniques To explain the indications for renal biopsy To demonstrate the likely outcome of the condition, its prognosis and requirement long term review	To appreciate the role of the urologist To appreciate the role of primary care in the initial screening for microscopic haematuria and involvement in future management

Hypertension

The trainee will be able to carry out specialist assessment and treatment of patients with hypertension with particular respect to renal disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define what is understood by hypertension To describe the possible mechanisms causing primary (essential) hypertension To list the causes of secondary hypertension, the methods of investigation and treatment and their limitations To list the British Hypertension Guidelines for the treatment of hypertension and their particular relevance to renal disease and diabetes mellitus To describe the mechanisms of action and potential side effects of anti-hypertensive agents with particular reference to renal disease	To take a relevant history and perform a thorough examination to make a diagnosis and assess the patient who may have hypertension To assess the likelihood of a secondary cause and to manage the investigation of such a patient To demonstrate which patient, with secondary hypertension, is suitable for definitive treatment and to recognize its limitations To manage anti-hypertensive drug therapy To demonstrate the use of home and ambulatory BP measurement to accurately assess BP	To recognize the role of primary care in the management of hypertension To recognize importance of patient centered care and education to change lifestyle, achieve compliance and BP treatment targets

Urinary Tract Infection

The trainee will be able to carry out specialist assessment and treatment of patients with urinary tract infection		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the acute presentation and long-term consequences of urinary tract infection To list the bacteriological causes of urinary tract infection To define underlying anatomical causes of urinary tract infection and the familial nature of some abnormalities To demonstrate the management of recurrent urinary tract infection including methods of investigation To define the mechanisms of action of antimicrobials and their limitations and adverse effects To describe the type of reconstructive procedures undertaken in children and the relevance to future management including transplantation	To take a relevant history and perform an appropriate examination To recognise which patients require investigation and the extent To demonstrate the significance of past history of urinary tract infection and its relevance to the development of chronic renal impairment To define when to prescribe antibiotics	To discuss familial disorders To recognise the role of microbiologists, urologists and specialist nurses

Urinary Tract Obstruction and Neurogenic Bladder

The trainee will be able to carry out specialist assessment and treatment of patients with urinary tract obstruction. The trainee will be able to work closely with urologists, radiologists and paediatricians in the medical management of urinary tract obstruction and neurogenic bladder		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the anatomy of the urinary tract and the sites and causes of urinary obstruction To describe the acute presentation and long term consequences of urinary tract obstruction, its investigation and management To define the fluid and electrolyte disturbances occurring after the relief of obstruction and their management To describe the type of reconstructive procedures undertaken in children and adults and the relevance to future management including transplantation	To take a relevant history and perform an appropriate examination of the patient with possible urinary tract obstruction To manage the patient with appropriate investigation and treatment including the involvement of radiologists and urologist To explain the measures to be taken in patients with urinary tract obstruction and bladder dysfunction (including neurogenic bladder) to avoid infection and prevent progressive renal damage To recognise the need for long term review	To recognise the role of urologists, radiologists, paediatricians, microbiologists and primary care. To recognise the role of specialist nurses and community nurses

Renal Stone Disease

The trainee will be able to assess and investigate the patient with renal stone disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the causes of renal stones and the circumstances under which they may be manifest with particular reference to their effect on renal function To describe the biochemical investigation and imaging techniques available To define the underlying tubular abnormalities and their genetic basis which predispose to renal stone disease To describe the indications for treatment to prevent the development of renal stones	To take a history (including family history) and examination of the patient with renal stone disease To manage the appropriate investigation (biochemical and imaging) and treatment of the patient with a renal stone(s) To recognise the limitations of medical treatment to prevent stones. To involve urologists and radiologists when indicated	To explain the significance of the family history To encourage the use of simple methods to reduce the risk of stone development To recognise the role of the radiologist, biochemist and urologist

Disorders of Fluid and Electrolyte and Acid Base Regulation

The trainee will be able to carry out specialist assessment and treatment of patients with disorders of fluid, electrolyte and acid base regulation		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of sodium, potassium and hydrogen ion imbalance; calcium, phosphate and bone mineral metabolism; and the pathophysiology of water imbalance To describe the methods used to investigate fluid, electrolyte and acid base regulation; and bone mineral metabolism and calcium metabolism in renal patients To describe the management of fluid, electrolyte and acid base disorders and abnormalities of bone mineral metabolism	To take an accurate clinical history, including family history, in the assessment of patients To perform reliable and accurate clinical examination of the patient including assessment of fluid balance To interpret biochemical investigations To interpret radiological and histological investigation of bone mineral disorders To manage these disorders effectively	To explain the implications of familial disorders To recognise the role of nurses and dietitians in the long term management

Infection in the Renal Patient

The trainee will be able to supervise and manage patients with renal disease who develop infection, manage the particular problems of infection in immunocompromised patients and manage viral infection in patients on renal replacement therapy		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the strategies to prevent blood borne viral infections in patients on renal replacement therapy To list the particular infectious problems to which immunocompromised are prone To list the particular infections which may occur in patients on dialysis To describe the mode of action, adverse effects and indications for the use of antimicrobial agents in renal patients	To diagnose, investigate and treat infection in renal patients To develop protocols for the diagnosis, investigation and management of infection in renal patients To manage preventative measures to minimize risk of blood borne viral infection	To counsel patients about blood borne infection including HIV infection and the screening for blood borne viruses with relatives and carers where appropriate To recognise role of nurses in prevention and management of infection in renal patients and to work closely with microbiologists

Nephrotic syndrome

The trainee will be able to carry out specialist assessment and treatment of patients with the nephrotic syndrome		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of the nephrotic syndrome and its causes and relationship to systemic diseases To describe how to investigate the nephrotic syndrome to establish its severity and likely cause To describe management of the nephrotic syndrome, including the indications for ACE inhibitors, lipid lowering agents and anticoagulants; and specific use of corticosteroids and other immunosuppressive agents	To take a relevant history, including family history, and perform an appropriate examination To use the appropriate investigations including renal biopsy To manage the patient with nephrotic syndrome and demonstrate the indications for different methods of treatment To manage long term review	To discuss familial disorders To recognise the role of nurses and dietitians in the long term management

Renal Disorders in Pregnancy

The trainee will be able to carry out specialist assessment and treatment of patients with renal disorders, including renal transplant patients, who become pregnant. The trainee will be able to carry out specialist assessment of patients who develop renal disorders during pregnancy		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe how pregnancy may affect renal function in normal patients and in those with preexisting renal disease including those on renal replacement therapy To list the adverse effects of drug treatment on both patient and fetus To list which renal disorders may be inherited	To demonstrate how to prepare the patient with a pre-existing renal disorder (including renal transplant) for pregnancy with particular emphasis on minimizing the risk to patient and fetus To manage hypertension in pregnancy and the safe use of anti- hypertensive drugs To manage the renal consequences of pre-eclampsia and acute renal failure in pregnancy and the puerperium To explain the inheritance of renal disorders	To recognise the role of obstetricians and midwives in the management of patients both preconception, during pregnancy and postpartum To work closely with obstetricians and intensivists in the management of acute renal failure in pregnancy and the puerperium To recognise the need for genetic counselling in inherited kidney disorders

Acute Kidney Injury

The trainee will be able to carry out specialist assessment and treatment of patients with acute kidney injury		
Knowledge	**Skills**	**Attitudes and Behaviour**
To list the causes of acute kidney injury To describe different methods of investigating the severity and causes of acute kidney injury To describe the methods to correct fluid and biochemical abnormalities and strategies to treat reversible causes of acute kidney injury	To take an accurate clinical history in the assessment of acute kidney injury including drug history, surgical history, family, social and environmental history To perform a reliable and accurate clinical examination of the patient To perform a reliable and accurate assessment of the patient's fluid balance To interpret the appropriate use of the following investigations • Biochemistry • Haematology • Microbiology • Ultrasound scanning • CT/MRI scanning • Immunology • Renal biopsy To instigate correct management (including renal replacement therapy) and measures to treat the underlying cause	To recognize the role of renal unit staff, ward and critical care nurses. To recognise the role of microbiologist, radiologist, urologist and surgeon To recognise the role of the histopathologist

Chronic Kidney Disease

The trainee will be able to carry out specialist assessment and treatment of patients with chronic kidney disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To list the causes of chronic kidney disease To describe the classification (stages) of chronic kidney disease To understand the basis and use of eGFR To describe the investigations used in to assess the degree of renal impairment and its causes with particular emphasis on reversibility of the condition To define the natural history and prognosis of chronic kidney disease from different causes and to describe the treatment strategies both general and specific to ameliorate the condition To be aware of drugs whose dose need changing with impaired renal function To understand the definition, pathophysiology, risk factors, screening, disease progression, prevention and prognosis of chronic kidney disease of uncertain aetiology (CKDu) in Sri Lanka	To take an accurate clinical history in the assessment of chronic kidney disease including drug history, family, social and environmental history To perform reliable and accurate clinical examination of the patient To undertake appropriate use of investigations • Biochemistry •Haematology •Microbiology •Ultrasound scanning CT/MRI scanning •Immunology •Renal biopsy To manage the patient with chronic kidney disease to ensure that reversible causes are identified and treated; and that appropriate preparation for renal replacement therapy is planned where necessary	To appreciate the role of the multi-professional team in the management of chronic renal failure To appreciate the role of primary care in the management of patients with stable chronic kidney disease To use national standards and local guidelines in management of patient To use drug formularies to ensure that appropriate drug dosages are prescribed

Nutrition in Renal Patients

The trainee will be able to identify the nutritional needs of renal patients		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the causes of malnutrition in patients with acute and chronic renal disease and the methods of assessment To describe the relationship between nutritional needs and adequacy of renal replacement therapy To describe the investigation and treatment of hyperlipidaemias To demonstrate the rationale for the use of protein restriction in the conservative management of chronic renal impairment	To make an accurate clinical assessment of nutritional status To use appropriate dietary advice with the assistance of dietitians To prescribe and monitor drug treatment for hyperlipidaemia To manage the nutritional needs of patients with acute renal failure and patients with multisystem failure	To appreciate the role of dietitians and develop close working relationships to reinforce advice and education to patients To appreciate the role of nurses and other health care professionals in the management of nutritional needs

Chronic Glomerulonephritis

The trainee will be able to carry out specialist assessment and treatment of patients with chronic glomerulonephritis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To list the causes of chronic glomerulonephritis To describe the methods of investigation To define the natural history and prognosis for chronic glomerulonephritis of different causes To describe the management strategies, both general and specific, to treat different causes of chronic glomerulonephritis	To take an accurate clinical history in the assessment of chronic glomerulonephritis including drug history, family, social and environmental history To perform a reliable and accurate clinical examination of the patient To make appropriate use of investigations • Biochemistry • Haematology • Microbiology • Ultrasound scanning • CT/MRI scanning • Immunology • Renal biopsy To demonstrate the use of general and specific measures to treat glomerulonephritis	To use all available evidence to inform decisions on management

Adult Polycystic Kidney Disease

The trainee will be able to carry out specialist assessment and treatment of patients with adult polycystic disease and will be able to assess family members of patients with adult polycystic disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of adult polycystic kidney disease including its extrarenal manifestations To describe the mode of inheritance and genetic defects and methods of screening To describe the long term management, including preservation of renal function and use of renal replacement therapy	To take an accurate clinical history, including family history, in the assessment of adult polycystic kidney disease To perform a reliable and accurate clinical examination of the patient To interpret screening tests and appreciate their limitations To plan the long-term management of a patient with polycystic kidney disease	To appreciate the stress and concerns of patients and relatives in the assessment of a family member with adult polycystic kidney disease and the importance of genetic counselling To appreciate that many patients with polycystic kidneys have pain and ensure that this is adequately controlled

Renal Vasculitis

The trainee will be able to carry out specialist assessment and treatment of patients with renal vasculitis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of renal vasculitis, the spectrum of disease and its relation to systemic vasculitis To describe the clinical and laboratory methods to investigate and monitor the patient	To take a relevant history and perform an appropriate examination both to make a diagnosis and categorise the patient To plan the appropriate investigations, including renal biopsy, and treatment. To balance the use of immunosuppression and plasmapheresis against the adverse effects of treatment To monitor and manage the patient in the short and long term	To discuss the relevant treatment options and the results in the context of clinical studies To appreciate the role of other specialists and their cooperation in management

Interstitial Nephritis

The trainee will be able to carry out specialist assessment and treatment of patients with interstitial nephritis and tubulointerstitial disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of interstitial nephritis and tubulointerstitial disease, its causes and relationship to other systemic conditions To describe the methods investigations and management of the condition	To take a relevant history, including drug history and exposure to other substances, and perform an appropriate examination To plan investigations, including renal biopsy To decide on the treatment and appropriate use of corticosteroids	To discuss the relevant treatment options and the results in the context of clinical studies and to involve other specialists if indicated

Diabetic Nephropathy

The trainee will be able to carry out specialist assessment and treatment of patients with diabetic nephropathy and implement strategies to prevent the development of diabetic nephropathy and delay progressive renal impairment		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the pathophysiology of diabetic nephropathy, its predisposing factors and screening methods To describe the importance of • hypertension • glycaemic control • hyperlipidaemia • ACE inhibitor and A11 receptor antagonist therapy To demonstrate the role of pancreatic and combined renal pancreatic transplantation To demonstrate knowledge of indications for referral to specialist renal clinics	To take a relevant history and perform an appropriate examination to make a diagnosis and assess the patient who may have diabetic nephropathy To diagnose non-diabetic renal disease in the diabetic patient To implement and monitor treatment of hypertension, hyperlipidaemia and use of ACE inhibitors and AII receptor antagonists To plan the long term management of the patient with diabetic nephropathy who requires renal replacement therapy	To involve patients and carers together with dietitians and specialist nurses in the long term care To discuss the role of smoking in the development of vascular disease in the diabetic patient To work closely with diabetologists to draw up protocols for referral and management of diabetics with renal disease To work close with primary care for management of diabetes and stable CKD and proteinuria

Systemic Lupus Erythematosus

The trainee will be able to carry out specialist assessment and treatment of patients with systemic lupus erythematosus (SLE)		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the pathogenesis of SLE and underlying immunological mechanisms To list the histological classification of renal SLE and its clinical consequences To describe the different treatment options for SLE	To take a relevant history and perform an appropriate examination to make a diagnosis and assess the patient who may have SLE To plan and interpret the investigations of such a patient To interpret renal histological findings and immunological markers for the diagnosis and management of SLE To manage acute renal failure in a patient with SLE including the appropriate use of plasmapheresis To undertake long term management of the patient with SLE	To discuss the relevant treatment options and the results in the context of clinical studies To discuss the impact on reproductive potential To discuss the problems with renal transplantation To appreciate the multidisciplinary approach to investigation and treatment

Cardiovascular Disease in Renal Patients

The trainee will be able to carry out specialist assessment and treatment of renal patients with cardiovascular disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the impact of cardiovascular disease on the morbidity and mortality of patients with renal disease and those on renal replacement therapy To list the risk factors and means to modify them To describe the management of acute coronary syndromes and associated problems in the renal patient To describe the risk of acute renal failure after angiographic procedures and how this can be avoided	To take a relevant history and perform an appropriate examination to make a diagnosis and assess the patient who may have cardiovascular disease To assess the risk factors for cardiovascular disease To recognise which patients need a cardiology opinion or specialist investigations To manage acute coronary syndrome in a renal patient	To involve patients and carers in the management of risk factors and acknowledge the role of other health care professionals To work closely with cardiologists and develop protocols for care

Renovascular Disease

The trainee will be able to carry out specialist assessment and treatment of patients with hypertension and/or renal impairment secondary to renovascular disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To list the causes of renovascular disease and its pathophysiology To describe the methods to investigate renovascular disease To define the indications for and methods of intervention To define the general management of the vascular problems of patients with atherosclerotic renovascular disease To describe the risk of acute renal failure after angiographic procedures and how this can be avoided	To take a relevant history and perform an appropriate examination to make a diagnosis and assess the patient who may have renovascular disease To plan and interpret the investigations To recommend medical management or intervention based on clinical assessment and investigations To outline the likely outcome of the condition and its long term prognosis	To discuss the relevant treatment options and the results in the context of clinical studies To appreciate the multidisciplinary approach to investigation and treatment

Hyperlipidaemias

The trainee will be able to carry out assessment and treatment of patients with hyperlipidaemia, with particular respect to renal disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define hyperlipidaemia and dyslipidaemia and to describe their relevance as risk factors for patients with renal disease To describe the dietary and drug treatment of hyperlipidaemia To define the use of statins	To take a relevant history and perform an appropriate examination to make a diagnosis and assess the patient who may have hyperlipidaemia To investigate the patient for lipid disorders To monitor drug therapy To interpret the guidelines for treatment of hyperlipidaemia in the context of cardiovascular disease and hypertension	To involve dietitians and other health care professionals in the management of hyperlipidaemias

Hereditary Nephritis

The trainee will be able to carry out specialist assessment and treatment of patients with hereditary nephritis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the pathological features of hereditary nephritis and its clinical manifestations To define the spectrum of disease including thin basement membrane disease and Alport's syndrome To describe the molecular and genetic abnormalities in Alport's syndrome	To take a history, including family history, and perform an examination of patients who may have hereditary nephritis To plan and undertake appropriate investigations including renal biopsy To manage the progressive nature of renal disease in Alport's syndrome	To explain the mode of inheritance of hereditary nephritis and deal with anxieties in the wider family

Less Common Renal Conditions

The trainee will be able to carry out specialist assessment and treatment of patients with less common renal disease and multisystem disease which effects the kidney		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the pathogenesis of renal disease in amyloidosis, scleroderma, mixed essential cryoglobulinaemia, Fabry's disease (as examples)	To take a relevant history and perform an appropriate examination to make a diagnosis and assess the patient who may have multisystem disease affecting the kidney To plan and interpret the investigations of such a patient To work closely with other specialists involved in the care of such patients	To appreciate the multidisciplinary approach to investigation and treatment of these diseases

Drug Prescribing in Renal Disease

The trainee will be able to prescribe drugs to patients with acute and chronic renal impairment including dialysis and renal transplant patients		
Knowledge	**Skills**	**Attitudes and Behaviour**
To define the principles of pharmacokinetics and the handling of drugs in the presence of renal impairment To list the effect of hemodialysis, haemofiltration, haemodiafiltration and peritoneal dialysis upon drug prescribing To describe the principles of drug interactions with particular reference to immunosuppressive Drugs To define how drugs may affect renal function	To prescribe safely and efficiently to patients with renal disease To educate patients with renal disease on the importance of compliance and reporting of problems To devise methods to reduce complications of prescribing in patients with renal disease To devise methods to improve compliance	To inform other health care professionals of the implications of prescribing in renal disease To appreciate role of pharmacists and other health care professionals in safe prescribing

Renal Bone Disease

The trainee will be able to supervise and manage patients with chronic kidney disease at risk of developing renal bone disease		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the pathophysiology of renal bone disease and to contrast the differences between osteomalacia, hyperparathyoid associated disease and adynamic bone disease To describe the use of biochemical tests, imaging techniques and histological methods in the diagnosis and management of renal bone disease To describe the indications for and the use of phosphate binders, vitamin D preparations and parathyroidectomy and means to monitor treatment and adverse effects	To prevent, diagnose and manage renal bone disease in patients with chronic renal failure before initiation of renal replacement therapy To manage the bone disease in patients on peritoneal dialysis, hemodialysis and with a renal transplant To decide which patients need parathyroidectomy and calcimimetics and how to manage them	To appreciate the role of dietitians and dialysis staff in the prevention and management of renal bone disease with education and involvement of the patient To appreciate the multidisciplinary nature of management of renal bone disease

Renal Anaemia

The trainee will be able to supervise and manage patients with chronic kidney disease who develop anaemia		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the pathophysiology of renal anaemia and the haematological and biochemical methods to diagnose, assess and monitor treatment in renal anaemia To define the indications for and the use of human recombinant erythropoietin and its complications To define the indications for and use of oral and parenteral iron therapy and its complications To list the causes of erythropoietin resistance and its investigation	To diagnose and treat renal anaemia, to monitor the effects of treatment and manage failure of treatment To prescribe and monitor iron replacement therapy To audit the use of erythropoietin and iron therapy	To ensure that all patients predialysis and on dialysis who will benefit from erythropoietin receive therapy To appreciate role of nurses in the initial counselling of patients, initiation and the long term management of renal anaemia To involve management and purchasers in the development of protocols for the use of erythropoietin

Acute Renal Replacement Therapy

The trainee will be able to supervise and manage acute renal replacement therapy		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the principles of hemodialysis, haemofiltration and haemodialfiltration and indications for their use To recognize the role of hybrid techniques of renal replacement therapy To recognize the role of peritoneal dialysis in acute renal replacement therapy To compare and contrast each method To describe the methods of creating vascular access and intra-peritoneal access for acute renal replacement therapy	To assess the suitability of a patient for hemodialysis, haemofiltration, haemodiafiltration, hybrid techniques and peritoneal dialysis To adjust the prescription of hemodialysis, haemofiltration haemodiafiltration, hybrid techniques and PD and monitor change To manage drug prescribing To manage nutrition To manage the patient with multiorgan failure or systemic disease requiring acute renal replacement therapy	To appreciate role of nurses in the management of acute renal replacement therapy To appreciate the role of anaesthetists and intensivists in the management of patients with multisystem disease of multiorgan failure requiring acute renal replacement therapy

Plasmapheresis

The trainee will be able to supervise and manage patients requiring plasmapheresis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the principles of plasmapheresis, its indications and complications To describe its use in the context of other treatment modalities and for non- renal conditions	To assess the suitability of a patient for plasmapheresis To manage the patient with acute renal failure requiring both plasmapheresis and acute renal replacement therapy To assess response to treatment and monitor change	To appreciate role of nurses in the management of plasmapheresis To appreciate the multidisciplinary approach to the patient with multisystem disease

Peritoneal Dialysis – General Principles

The trainee will be able to supervise and manage patients on chronic peritoneal dialysis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the principles of peritoneal dialysis and to compare and contrast chronic ambulatory peritoneal dialysis and automated peritoneal dialysis To describe the different methods of insertion of peritoneal dialysis catheters and their advantages and disadvantages To describe the methods to assess adequacy of peritoneal dialysis	To assess the suitability of a patient for peritoneal dialysis in the context of other methods of renal replacement therapy To adjust the prescription of peritoneal dialysis and monitor change To manage the nutrition of peritoneal dialysis patients To appreciate the cost implications of different catheters, fluids and systems in peritoneal dialysis To work closely with management and purchasers to ensure cost effective peritoneal dialysis treatment	To discuss the relevant treatment options and the comparisons of hemodialysis, chronic ambulatory peritoneal dialysis and automated peritoneal dialysis in a manner that will allow clear understanding of choice To discuss the implications of failure of peritoneal dialysis and the complementary nature of renal replacement therapy To discuss the withdrawal of dialysis with patients, carers and other health care professionals Appreciate role of nurses in the initial counselling of patients, initiation and the long-term management of peritoneal dialysis

Peritoneal Dialysis – Complications

The trainee will be able to identify and manage the complications of chronic peritoneal dialysis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the diagnosis and management of peritoneal dialysis peritonitis including non – bacterial infections To describe the diagnosis and management of catheter and exit site associated infection To describe the diagnosis of mechanical problems associated with peritoneal dialysis (including hernia, leaks, catheter malfunction) To describe the methods to assess failure of ultrafiltration and adequacy of dialysis	To adjust the prescription of peritoneal dialysis and monitor change following complications To manage the treatment of peritoneal dialysis peritonitis and its complications; and catheter associated problems To manage peritoneal dialysis failure To be able to communicate to patient about potential complications and need to change to APD (from CAPD) or to HD when needed	To appreciate the multidisciplinary approach to the management of complications of peritoneal dialysis To appreciate the use of local protocols for management of peritonitis and exit site infections

Hemodialysis – General Principles

The trainee will be able to supervise and manage patients on chronic hemodialysis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the principles of hemodialysis and compare and contrast hemodialysis with other treatment modalities To describe the methods of creating vascular access for hemodialysis To define the methods to assess adequacy of hemodialysis	To assess the suitability of a patient for hemodialysis and to plan (when possible) the initiation of hemodialysis To prepare the patient both physically and psychologically for hemodialysis To anticipate and overcome difficulties with vascular access To adjust the prescription of hemodialysis and monitor change	To develop a framework to discuss problems with hemodialysis including the withdrawal of dialysis To appreciate role of nurses in the initial counselling of patients, initiation and the long term management of hemodialysis To appreciate the multidisciplinary nature of management of hemodialysis

Hemodialysis– Clinical Management

The trainee will be able to undertake the planning of hemodialysis, its prescription and measurement of its adequacy.		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the means to deliver purified water, the necessary standards and methods of assessing these To describe different dialysis membranes and dialysate fluids To describe the theory of sodium profiling and ultrafiltration To define the methods to assess adequacy of hemodialysis	To adjust the prescription of hemodialysis and monitor change To advise on ultrafiltration, sodium profiling and use of different dialysate solutions To assess the suitability of different methods of vascular access To organise the day to day management of a dialysis unit	To appreciate role of nurses and other health care professionals in the day to day management of hemodialysis and changes in prescription To work closely with management and purchasers to ensure cost effective treatment

Hemodialysis– Complications

The trainee will be able to manage the complications of hemodialysis		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the complications of arterio-venous fistulae and artificial grafts including thrombosis, haemorrhage, infection, stenosis and poor flow To define the methods of dealing with dialysis line sepsis, poor flow and line blockage To describe the management of hard water syndrome, air embolism and EtO reactions. To define the principles behind the causation and management of intradialytic hypotension To describe the pathophysiology and management of dialysis associated amyloid	To identify and manage the complications of vascular access involving, when necessary, surgeons and radiologists To manage dialysis related sepsis and develop protocols with microbiologists To develop protocols to deal with acute dialysis emergencies	To appreciate role of nurses and other health care professionals in the day to day management of hemodialysis and its complications To appreciate the multidisciplinary nature of management of hemodialysis complications with development of close working relationships with surgeons and radiologists in the management of vascular access complications

Renal Transplantation – Pre-Transplant

The trainee will be able to supervise and manage patients who are suitable for renal transplantation		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the principles of renal transplantation, its medical and surgical, social and ethical contraindications To describe the ethical and legal framework for renal transplantation, with particular reference to the Human Tissue Act To compare and contrast renal transplantation with other treatment modalities To describe the recommendations for live related and live unrelated renal transplantation To describe the advantages and disadvantages of pre-dialysis transplantation To describe the theoretical and practical application of blood grouping, HLA matching and donor – recipient cross matching To describe the mode of action of immunosuppressive agents and their adverse effects	To assess the suitability of a patient for a renal transplant To discuss the pros and cons of renal transplantation To discuss the issues of live related and live unrelated renal transplantation and transplantation pre- dialysis To counsel patients and relatives in all aspects of renal transplantation To plan and carry out protocols for pre transplant assessment	To appreciate role of nurses in the initial counselling of patients To appreciate the multidisciplinary nature of management of renal transplantation

Renal Transplantation –Acute Stage

The trainee will be able to manage patients in the early stages of renal transplantation		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the medical and surgical problems which occur in the first three months following renal transplantation To describe the indications for ultrasound scanning, isotope scanning and radiological investigations in the acute stage following renal transplantation To define methods used to diagnose acute rejection including biopsy techniques To define the mode of action of immunosuppressive agents and their adverse effects and to describe methods used to treat and overcome acute rejection To describe strategies in the acute stage of renal transplantation which will influence long term graft function	To assess renal transplant function To interpret the methods used to diagnose acute rejection, surgical complications and medical complications of renal transplantation To plan and modify immunosuppressive therapy To counsel patients and relatives in all aspects of renal transplantation	To appreciate role of nurses in the care of patients undergoing renal transplantation To appreciate the multidisciplinary nature of management of renal transplantation

Renal Transplantation –Chronic Stage

The trainee will be able to undertake the long-term supervision and management of renal transplant recipients		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the medical and surgical problems which occur in the first three months following renal transplantation To define the mode of action of immunosuppressive agents and their adverse effects To describe strategies in the acute and chronic phases of renal transplantation which will influence long term graft function To describe the strategies to prevent the development of cardiovascular disease	To assess renal transplant function, to investigate deteriorating renal function and adjust immunosuppressive therapy accordingly To interpret investigations to identify non- immunological problems and manage them To manage the medical complications of a failing renal transplant To manage cardiovascular disease in a renal transplant patient To counsel patients and relatives in all aspects of renal transplantation, and in particular those with a failing graft who require discussion of future management on renal replacement therapy	To encourage patients, relatives and carers to participate the in joint care To appreciate role of nurses in the care of patients with a renal transplant To appreciate the multidisciplinary nature of management of renal transplantation

End of Life Care

The trainee will be able to identify patients with chronic kidney disease who require end of life palliative care, and will be able to supervise and manage their care as part of a multi-disciplinary team		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the many symptoms of chronic kidney disease related to its complications and associated comorbidities To describe the principles of pain relief and use of analgesia in end stage renal disease To describe factors affecting survival in patients with end stage renal disease To describe the principles of bereavement management To describe clinical features of dying To describe a medicolegal framework for decisions about treatment and advanced directives To be aware of integrated care pathways for dying patients	To identify patients who require end of life management and palliative care. To counsel patients and carers concerning conservative (non- dialysis, non-transplant) management of end stage kidney failure. To control the symptoms of end stage renal disease To recognise and instigate management of depression To discuss the withdrawal of dialysis with patients, carers and other health care professionals To be able to recognize complex symptoms that need referral to specialist palliative care	To appreciate the role of other health professionals, such as palliative care nurses and physicians, in the care of patients who require end of life management. To appreciate the role of primary care. To appreciate the multicultural aspects of bereavement To appreciate that patients have physical, social, spiritual and psychological needs To be aware of the complex needs of patients and families when facing death To appreciate the need for good communication with the patient and their family

Tropical nephrology

The trainees should be able to carry out specialist assessment and treatment of patients with kidney injury resulting from causes mainly confined to tropics		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe pathogenesis, prevention, management and prognosis of acute kidney injury in snake bites, leptospirosis, Hanta virus, dengue haemorrhagic fever and toxic nephropathies	To take an accurate clinical history including exposure, timing and the type of the injurious agent To perform a reliable and accurate clinical examination of the patient To perform appropriate investigations and to interpret the results to confirm the diagnosis and assess the severity To instigate the correct management (including renal replacement therapy)	To recognize the role of multi-disciplinary team in the management including the physician, microbiologist, toxicologist and the psychiatrist etc.

Part B – Procedure Based Competencies

Renal Biopsy

The trainees will be competent in performing native and transplant renal biopsy		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the anatomy of both native and transplant kidneys To define the indications for renal biopsy of native and transplant kidneys To describe the complications and methods to minimize these	To decide when a renal biopsy is indicated To discuss the indications, benefits and adverse events of the procedure to patients, relatives and carers in a manner that will allow informed consent To perform renal biopsy on native and transplant kidneys To use ultrasound to localize kidneys and use ultrasound guidance to assist in renal biopsy To interpret renal biopsy with the assistance of a renal histopathologist To manage the complications of renal biopsy	To appreciate the role of radiologist or radiographer (if appropriate) and histopathologist. To have appropriate self-confidence and recognition of limitations

Insertion of Temporary Hemodialysis Catheters

The trainees will be competent in carrying out the insertion of temporary hemodialysis catheters		
Knowledge	**Skills**	**Attitudes and Behaviour**
To describe the anatomy of the central venous system in the upper thorax and neck and of the femoral veins To define the indications for insertion of temporary hemodialysis catheters, the complications and means to minimize these To describe the treatment of catheter sepsis and blocked catheters	To discuss the indications, benefits and adverse events of the procedure to patients, relatives and carers in a manner that will allow informed consent To perform insertion of temporary hemodialysis catheters using the Seldinger technique using both internal jugular and femoral veins To use ultrasound guidance (where appropriate) for localizing and cannulation of jugular and femoral veins To explain the use of the catheter and its management to the patient, relatives and carers	To appreciate role of nurses in the management of a catheter after its insertion and to ensure education of patients and carers To demonstrate appropriate self- confidence and recognition of limitations

ANNEX 2: FORMAT OF DETAILED PROJECT PROPOSAL

Section 1

1. Name of trainee
2. Name(s) of supervisor(s)
3. Training centre

Section 2

1. Project title
2. Background and justification
3. Objectives of study
4. Research plan

a. Design
b. Setting
c. Method
d. Sample size and sampling techniques
e. Outcome measures
f. Statistical analyses and plan of presentation of results
g. Ethical considerations
h. Work plan and time lines

5. References
6. Funding for study
7. Signature of trainee

Section 3

Recommendation of supervisor(s)

Signature of Supervisor 1 Signature of Supervisor 2

Date Date

Section 4

Date of submission to PGIM

Date of approval by BOS Signature of Secretary BOS

ANNEX 3: REPORT OF THE RESEARCH PROJECT FOR REVIEWER

Assessment of the Detailed Project Proposal by Reviewers

Name of Trainee:

Training Centre:

Supervisor:

Name of Reviewer:

Title of Project:

……

……

1. Title and Introduction: Rationale (Justification)–problem identified and quantified.

Hypothesis and expected outcome, impact and relevance of the study. Comments:

……

……

2. Literature Review: Adequacy (evidence of a systematic search for related. similar, relevant studies)

Comments:

……

……

3. Objectives: Clearly defined. Relevant and stated in measurable terms. Comments:

……

…… ……

4. Method: Appropriate study design to address the objectives with clear detailed description of subjects, sampling technique and sample size, interventions, data collection and management. The study should be, internally valid and reproducible. Where specific details are available in the literature, reference should be made to the original papers, and comments kept to a minimum. If modifications have been made to the published techniques, these should be described in full. Appropriate statistical tests planned should be mentioned and ethical issues addressed.

Comments:

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5. Ethical considerations/institution from where ethical approval will be /has been obtained:

Comments:

.....

....

6. References: According to the Vancouver system and relevant to the study. Properly documented in the Bibliography and appropriately cited in the text.

Comments:

.....

....

Recommendation of
Reviewer:……
……

Final Judgment: Pass/Fail

If a pass grade is not obtained, what corrections are required? (Attach a separate sheet if necessary)

.....

.....

Signature:

Date: ……

Recommendation of the Specialty Board:

Signature of Chairperson/Secretary:

Date: …….

ANNEX 4: INSTRUCTIONS TO SUPERVISORS OF RESEARCH PROJECTS

- The objective of the research project is to prove the trainee's capability to plan, carry out and present his / her own research. The purpose of this training is to ensure maturity, discipline and scholarship in research.

- The supervisor should guide the student in planning and designing, carrying out the research and in presentation of the work.

- The research project must be original and must comprise the trainee's own work.

- It must contribute to existing knowledge relevant to Sri Lanka and afford evidence of originality as shown by independent, critical assessment and / or discovery of new facts in the area under study.

- It should be satisfactory with regard to literary presentation.

- The research project should be certified by the supervisor as suitable for submission.

- General Comments on the contents: The objectives should be clearly stated and should be feasible to achieve within the time frame. Other published work relevant to the problem (both international and local) should be comprehensively and critically evaluated. An appropriate study design and method should be used to achieve the objectives stated. The results should be appropriately analyzed, interpreted and presented effectively. The discussion should include comments on the significance of results, how they agree or differ from published work. If they differ, the probable reasons for these differences need to be discussed. Theoretical / practical applications of the results, if any should be given. The conclusions should be valid and be based on the results obtained on the study.

- Ethics: Approval should be obtained by a recognized Ethics Review Committee prior to commencement of the research project.

- If at any time the supervisor is not satisfied with the work progress of the trainee, the trainee should be made aware of the deficiencies and corrective measures suggested. This should be conveyed in writing to the trainee with a copy to the Specialty Board in Neurology. In such instances, a follow-up report should be forwarded within three months or earlier.

ANNEX 5: PROGRESS REPORT ON RESEARCH PROJECT

To be forwarded by the supervisor to the Specialty Board in Nephrology once in SIX months.

1. **Name of trainee:**
2. **Training Center:**
3. **Supervisor:**
4. **Title of project:**
5. **Description of work carried out to date:**
   To be filled in by trainee: briefly describe progress in lab / field work and dissemination of findings.

Supervisor's comments

6. **Is the work on schedule**? Yes / No
7. **Progress in writing**: satisfactory / unsatisfactory
8. **Constraints** (if any)
9. **Recommendation of supervisor**:

Signature: Date:

10. **Recommendation of the Specialty Board in Nephrology:**

Signature of Secretary : Date:

ANNEX 6: RESEARCH REPORT FORMAT

General instructions

The past tense should be used. The metric system and the International System (SI) of units should be used whenever possible.

Length

The text should *not* exceed 10,000 words, which equals to approximately 20 - 30 pages. With figures, references, etc., the total length is likely to be in the region of 30 - 40 pages.

Submission

The research report should be included in the Portfolio only if the trainee does not succeed in publishing the study in a peer-reviewed journal. If published, only the published article should be included in the Portfolio.

Layout

Use the format adopted in research articles published in The Ceylon Medical Journal.

ANNEX 7: RESEARCH REPORT MARKING SCHEME

1. Title (05)
2. Abstract (05)
3. Introduction (10)
4. Objectives (10)
5. Review of literature (10)
6. Materials and methods (15)
7. Results (15)
8. Discussion (including limitations) (20)
9. References (05)
10. The overall presentation (05)

To pass the trainee should score 50 % or more.

ANNEX 8: GUIDELINES FOR CLINICAL AUDITS

The Clinical audit is an activity that has been defined as "a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria. Where indicated, changes are implemented, and further monitoring is used to confirm improvement in health care delivery" [in Principles of Best Practice in Clinical Audit (2002, NICE/CHI)]. The process facilitates learning and helps to evaluate the benefits and pitfalls of selected management options.

The main stages of the clinical audit process are:
1) Selecting a topic.
2) Agreeing standards of best practice (audit criteria).
3) Collecting data.
4) Analysing data against standards.
5) Feeding back results.
6) Discussing possible changes.
7) Implementing agreed changes.
8) Allowing time for changes to embed before re-auditing.
9) Collecting a second set of data.
10) Analysing the re-audit data.
11) Feeding back the re-audit results.
12) Discussing whether practice has improved.

The number of audits: One (1)

The length of the report:
An audit report shall be of a maximum of 2000 words.

Timelines:
Trainees must carry out the clinical audit in their training centres and formally present the audit findings at the hospital meetings where the work is done and obtain documentary evidence of such presentation which should be included in the trainee's portfolio.

Implication of assessment:
Documentary evidence of presentation of the completed clinical audit and inclusion of the audit report in the trainee's portfolio is a prerequisite to be eligible to appear for the pre board certification assessment (PBCA).

ANNEX 9: PORTFOLIO

Maintaining a portfolio will enable the Trainee to reflect on the training experience and identify and correct any weaknesses in the competencies expected. This will also enable the trainee to recognize and analyse significant clinical events experienced so that appropriate changes in patient care could be adopted in order to improve the quality of care provided. The Trainer needs to conduct regular assessments and provide feedback. Documentary evidence shall be included in the portfolio certifying that the Trainee has satisfactorily acquired the required competencies.

The trainer shall ensure that the trainee has achieved desired competency levels in each module by one or more work place based assessments such as multisource feedback (MSF), objective structured assessment of technical skills (OSATS), mini-clinical evaluation exercise (Mini-CEX), direct observation of procedural skills (DOPS), case-based discussions (CbD), acute care assessment tool (ACAT), patient survey (PS), audit assessment and teaching observation. Evidence of work place based assessments should be included in the portfolio maintained by the trainee.

The portfolio is a framework containing evidence of achievement of learning outcomes over time. This evidence is supplemented by the portfolio builders' reflections on their learning and can be used to provide feedback to the learner. The training portfolio should include evidence of specialized procedures (renal biopsy, dialysis catheter insertion...), immediate post-transplant care, outpatient clinic duties, subspecialty attendance, grand rounds, conferences, teaching courses, on-call commitments and teaching. The portfolio must be built by the trainee and be up to date at all times during the training period including the overseas period. The portfolio will be regularly inspected and signed by the trainers. The portfolio will have to be produced at the assessments.

The fundamental basis of Portfolio maintenance is Reflective Practice, which is an important tool in postgraduate training.

Reflective practice consists of -

a) focused self-assessment
b) reflecting on experience
c) reflecting on strengths, weaknesses and areas for development
d) design of own strategies that leads to improvement in practice

Using such a process, there is improved training by self-identification of strengths and weaknesses, which is expected to promote deep learning, document what the trainee already knows, identify areas for

improvement and helps in planning further learning. This approach promotes self-directed learning and critical thinking skills.

The Portfolio should consist of

- Documentation of all aspects of training and learning experienced by the trainee.
  It must comprise a case record book of a minimum of five case records. Each case record should not exceed 3000 words. A published case report in a refereed journal can be substituted for a case, if the supervisor certifies that the trainee's contribution for the publication justifies exemption.
  - Details of Continuing Professional Development (CPD) activities:
  - Records of scientific presentations made.
  - Regular reflective entrees on all aspects of patient care and professional training.
  - A record of individual activity-based entrees on the trainee's own experience.
  - Published article or report of the research project undertaken during the training period.
  - Evidence of presentation of clinical audit findings and the clinical audit report.
  - Procedural skills Renal biopsy (Native + Transplant) over 50, hemodialysis lines over 40 and acute peritoneal dialysis catheter over 10

The portfolio should be maintained in separate sections to conform to the above format. Entries in the Portfolio should be made by the trainee at the time of acquiring the skill and *authenticated (signed)* by the trainer.

The trainers and supervisors will use the portfolio to assess the progress of the trainee and to provide a feedback at regular intervals during the training period. The trainers and supervisors are expected to assess the level of competencies in different areas of training and provide advice and assistance to the trainees to achieve the expected levels of skills empowerment.

The Specialty Board in Nephrology expects the Trainee and the Trainers to make the best use of the Portfolio in order to achieve the objectives of the training program. The portfolio should be kept as a ring binder which will allow easy insertions of documents by the Trainee.

The Portfolio should be submitted after completion of training. It will be assessed by a panel of two examiners appointed by the Specialty Board in Nephrology. A minimum mark of 60% is required.

ANNEX 10: PROGRESS REPORT - ASSESSMENT FORM

Name of the trainee: Name of the trainer:

Institution: Period covered:

(Please tick [√] in appropriate cages)

Training modality	***Excellent***	***Good***	***Average***	***Poor***	***Comments***
Clinical skills: -					
History taking	☐	☐	☐	☐	
Examination	☐	☐	☐	☐	
Clinical decision making	☐	☐	☐	☐	
Use of diagnostic tests	☐	☐	☐	☐	
Procedural / Technical skills	☐	☐	☐	☐	
Doctor-patient relationship	☐	☐	☐	☐	
Communication skills	☐	☐	☐	☐	
Staff relationships	☐	☐	☐	☐	
Professional responsibility	☐	☐	☐	☐	
Participation in research activities	☐	☐	☐	☐	
Participation in Seminars,	☐	☐	☐	☐	
Case presentations /audits etc.	☐	☐	☐	☐	
Punctuality	☐	☐	☐	☐	
Attitudes	☐	☐	☐	☐	
Overall assessment at the end	☐	☐	☐	☐	

General / Specific comments / Feedback given to the trainee

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Signature of Trainer: - Date: -

Name and Designation: -