Handbook

On

Specialist Training in Nephrology

Specialty Board of Nephrology 2006

Ministry of Health Malaysia
Academy of Medicine Malaysia
&
Malaysian Society of Nephrology

CONTENTS

1. CRITERIA FOR CREDENTIALLING OF PAEDIATRIC AND ADULT NEPHROLOGISTS

I. Any doctor can request to be registered as a paediatric/adult nephrologist if he/she fulfils ALL the following requirements:

1.1. A recognised basic medical degree

A basic medical degree recognised by the Malaysian Medical Council

1.2. A postgraduate qualification in paediatrics or internal medicine recognised by the Malaysian Internal Medicine or Paediatric Specialty Board

1.3. Completed postgraduate training in Nephrology in accredited training centres

1.3.1. Minimum duration of training

Completion of a minimum of 3 years of Nephrology training in centres which fulfill the criteria stipulated by the Specialty Board of Nephrology (appendix 1) under the supervision of nephrologist trainers who fulfill the criteria stipulated by the Specialty Board.

1.3.2. Evidence of satisfactory postgraduate training as supported by:

Log book of core procedures

Satisfactory supervisors' reports on the core procedures (appendix 2) and core competencies (appendix 3).

Supportive documents of training, if any

II. * For a physician/paediatrician who has been practicing before 1990 and who may not fulfill all the above criteria, to be credentialed as a nephrologist:

He/she should have a minimum of one year training in Nephrology in a recognised centre
Spends a significant proportion of his/her time in clinical practice in Nephrology

** grandfathers' clause will follow the criteria streamlined by the Academy of Medicine Malaysia for all subspecialties.*

2. TRAINING and SUPERVISION

2.1 Criteria for Acceptance into Training Program

A candidate is eligible for admission into the training program after completion of a postgraduate degree in paediatrics or internal medicine recognised by the Malaysian Internal Medicine or Paediatric Specialty Board.
All trainees must register with the Specialty Board of Nephrology at the point of entry into the training programme at a recognised centre.
All trainees will be given a training number at the point of entry.

2.2 Training Supervision

Each trainee shall be trained by at least 2 supervisors who must have a minimum of 2 years experience practising as a nephrologist. *Each trainer may have up to 3 trainees at any one point in time. The duties of the supervisor in addition to teaching and mentoring includes monitoring of a trainee's progress and submitting progress reports to the Specialty Board at 4 – 6 monthly intervals.

**The trainer to trainee ratio will temporarily remain as 1:3 until the Academy of Medicine Malaysia recommends a streamlined ratio for all subspecialties .*

3. ASSESSMENT

All four components listed below are mandatory

3.1. Logbook (30%)

The trainee shall maintain a logbook upon entry into the training programme and entries shall be made regularly (appendix 4).

3.2. Supervisor's report (20%)

The supervisor shall submit a progress report on the trainee at least 6 monthly and/or on completion of a particular posting (appendix 5).

NB:
Weightage for the supervisor's reports are as follows:

Total = 8
General Nephrology = 2
HD =2
PD = 1
Transplant = 1
Critical Care Nephrology = 1
Referrals = 1

3.3. Research, presentation and publications (15%)

3.4. Exit evaluation [in evolution] (35%)

A candidate who achieves a total of at least 50% of the marks is deemed to have successfully completed training to become a nephrologist.

APPENDIX 1.1

CRITERIA FOR ACCREDITATION OF INSTITUTIONS INVOLVED IN THE TRAINING OF ADULT NEPHROLOGISTS

1. Accreditation for General Nephrology training

In-patient services – The department should have at least 12 beds for general Nephrology with a mix of male and female patients.
Out-patient services – There shall be at least three clinic sessions per week.
Core nephrology procedures – as per core procedural skills of nephrologists on completion of subspecialty training – ie. there should be at least 30 renal biopsies per year and 30 ultrasound examinations per year performed in the institution.

2. Accreditation for Dialysis training

2.1. Haemodialysis

The institution should perform at least 6000 chronic haemodialysis treatments per year under its supervision.
There should be an appropriate mix of new patients and patients who have been dialysed for more than 5 years.
The center should perform acute haemodialysis treatments for at least 15 patients with acute renal failure per year.
The centre should have facilities for continuous renal replacement therapy and plasmapheresis.

2.2. Peritoneal dialysis

a. The centre for initiating chronic PD treatment including insertion of Tenckhoff catheters, training for PD and measurement of dialysis adequacy and PET.
b. The centre should follow-up at least 40 patients on chronic PD therapy.

3. Accreditation for Renal Transplantation training

a. The criteria to train general Nephrology fellow is that the transplant programme should perform at least 10 renal transplants per year while the criteria to train renal transplant fellow (able to lead transplant programme) is 30 transplants per year. Hence it is recommended that those who wish to commence transplant programme, the centre should perform at least 20 renal transplants a year to maintain its accreditation status.
b. The centre performs potential donor and recipient work-up.
c. The centre manages transplant recipients in the early post transplant period in both in-patient and out-patient setting.
d. The centre has facilities for monitoring immunosuppressive drug levels.
e. The centre has access to tissue typing laboratory, diagnostic imaging services, radioisotope studies and renal pathology services.

f. The centre follows up at least 100 long term renal transplant recipients.
g. The centre has facilities for evaluation of impaired graft function.
h. The centre conducts regular meetings with urologists/transplant surgeons.

Any centre can apply to be accredited for full or part of the training programme to the Specialty Board of Nephrology.

APPENDIX 1.2

CRITERIA FOR ACCREDITATION OF INSTITUTIONS INVOLVED IN THE TRAINING OF PAEDIATRIC NEPHROLOGISTS

1. Accreditation for General Nephrology training

At the training institution the number of patients and their care must be of such a standard as to be able to meet the training requirements within the time set.
Core Nephrology procedures – as per core procedural skills of nephrologists on completion of subspeciality training – ie. there should be at least 10 renal biopsies per year and 30 ultrasound examinations per year performed in the institution.

2. Accreditation for Dialysis training

2.1. Haemodialysis

The center should have haemodialysis facilities to provide acute and chronic hemodialysis to babies and children.
The centre should have facilities for continuous renal replacement therapy and plasmapheresis.

2.2. Peritoneal dialysis

a. The centre should be able to initiate chronic PD treatment including insertion of Tenckhoff catheters, training for PD and measurement of dialysis adequacy and PET.
b. The centre should follow-up at least 10 patients on chronic PD therapy.

3. Accreditation for Renal Transplantation training

a. The centre performs potential donor and recipient work-up.
b. The centre manages transplant recipients in the early post transplant period in both in-patient and out-patient setting.
c. The centre has facilities for monitoring immunosuppressive drug levels.
d. The centre has access to tissue typing laboratory, diagnostic imaging services, radioisotope studies and renal pathology services.
e. The centre has facilities for evaluation of impaired graft function.
f. The centre conducts regular meetings with urologists/transplant surgeons.

4. Other paediatric specialities

The centre should have within the institution or linked to one in the following specialties: anaesthetics, cardiology, dietetics, endocrinology, histopathology, psychiatry, psychology, radiodiagnostics, paediatric surgery, transplant surgery, (paediatric) urology and social work.

APPENDIX 2

CORE PROCEDURAL SKILLS OF SUBSPECIALISTS ON COMPLETION OF FELLOWSHIP/SUBSPECIALTY TRAINING

Name of Subspecialty: NEPHROLOGY

No.	Procedures	Minimal training necessary for competence	Maintenance of competence	Please indicate (√) the procedures that a generalist can perform with the required minimum training	Minimum training necessary for a generalist to perform the procedure competently
1.	Percutaneous renal biopsy	1. Minimum training duration – 6 months 2. Minimum successful procedures – 30 3. Supervised by credentialed consultant who has maintained credential status	Remains in active nephrology practice		
2.	Interpretation of basic renal histopathology	1. Minimum training duration – 1 year 2. Supervised by credentialed renal histopathologist	Continued interest in the field		

3.	Haemodialysis	1. Minimum training duration – 6 months 2. Supervised by credentialed nephrologist	Remains in active nephrology practice	√*	1. Minimum training duration – 200 hours 2. Supervised by credentialed nephrologist
4.	Chronic Peritoneal Dialysis	1. Minimum training duration – 6 months 2. Supervised by credentialed nephrologists	Remains in active nephrology practice		
5.	Continuous renal replacement therapy (CRRT)	1. Minimum CRRT procedures – 10 2. Supervised by credentialed nephrologists	Remains in active nephrology practice		
6.	Plasmapheresis	1. Minimum plasmapheresis procedures – 5 2. Supervised by credentialed nephrologist	Remains in active nephrology practice		

7.	Other extracorporeal therapies e.g. immunoadsorption, haemoperfusion	Trained in basic extracorporeal therapies e.g. plasmapheresis/haemodialysis	Remains in active nephrology practice		
8	Basic renal ultrasound	1. 30 ultrasound examinations 2. Supervised by credentialed nephrologists /radiologist	Remains in active nephrology practice		
9	Insertion of temporary vascular access	1. Minimum successful procedures – 10 2. Supervised by credentialed nephrologist	Remains in active nephrology practice	√	1. Minimum successful procedures – 10 2. Supervised by credentialed nephrologists

* subject to periodic review

Specialised procedures for a subspecialist on completion of further accredited training program

Name of Subspeciality: NEPHROLOGY

No.	Procedures	Minimal training necessary for competence	Maintenance of competence
1.	Insertion of permanent peritoneal dialysis catheters	1. Minimum successful procedures – 5 2. Supervised by credentialed nephrologists/ surgeon	Remains in active nephrology service
2.	Insertion of permanent vascular access catheters	1. Minimum successful procedures – 5 2. Supervised by credentialed nephrologists/surgeon/radiologist	Remains in active nephrology service

APPENDIX 3

CORE COMPETENCIES ACQUIRED BY A SPECIALIST UPON COMPLETION OF TRAINING IN NEPHROLOGY

Patient Care
Gathering essential and accurate information; performing a complete history and physical examination; and ordering appropriate diagnostic studies.

Making informed diagnostic and treatment decisions; analysing and synthesising information; and knowing one's limits of knowledge and expertise and when to obtain appropriate consultation.

Developing and carrying out patient care management plans; prescribing and performing procedures; effectively counseling patients and families and, in so doing, allaying fears and providing comfort.

Interpersonal and Communication Skills
Demonstrate interpersonal and communication skills that result in effective information exchange and collaboration with patients, their families and professional associates.

Professionalism
Demonstrate a commitment to carry out professional responsibilities, adhering to ethical principles and being sensitive to diversity.

Practice-based Learning and Improvement
Investigate and evaluate patient care practices, appraising and assimilating scientific evidence and using that evidence to improve patient management; demonstrating a willingness to learn from errors.

Systems-based Practice
Practice quality health care that is cost-effective and advocating for all patients with kidney and related diseases within the health care system.

Medical Knowledge (see following pages)

Medical Knowledge for paediatric Nephrology training

GOAL 1: Normal Kidney Function. Understand normal kidney function, development and physiology.

OBJECTIVES:

a. Demonstrate an understanding of the following:

1. Embryological development
2. Differences between neonatal and infant and child function
3. Definition of clearance and ways to measure and calculate creatinine clearance.
4. Free water clearance
5. Renal handling of sodium, potassium, calcium, phosphate
6. Role of the kidney in acid base homeostasis
7. Role of the kidney in growth and development and bone homeostasis
8. Hormonal function of renin, parathyroid hormone, antidiuretic hormone
9. Aldosterone and atrial diuretic hormone
10. Renal metabolism of drugs and adjustments in drug doses with decreased renal function
11. Define glomerular filtration rate and normal values for age
12. Know gross anatomy of the kidney and microscopic anatomy of glomerulus, tubule, interstitium and collecting system

GOAL 2: Renal Conditions with/without Systemic Involvement. Understand how to recognise and initiate management of renal conditions which may require referral.

OBJECTIVES:

a. Acute renal failure:

1. Define and identify acute renal failure
2. Know the major causes of acute renal failure
3. Know indications for acute haemo or peritoneal dialysis, CVVH, and CVVHD.
4. Be familiar with medical management of hyperkalemia, hypocalcaemia, and hyperphosphataemia

b. Hypertension:

1. Be aware of standard graphs defining blood pressure values in children.
2. Know the proper method and equipment for obtaining blood pressure in children.

3. Be familiar with and know how to prescribe anti-hypertensive medications for both acute and chronic hypertension
4. Know the major causes for hypertension in children and how they vary with age
5. Define and be able to recognise and treat a hypertensive crisis

c. Urinary tract infection:

1. Know the definition of a urinary tract infection and ways to differentiate upper from lower tract infections
2. Know the most common infectious organisms as they relate to age and appropriate therapies
3. Know the appropriate radiological and medical evaluation for a urinary tract infection
4. Be able to define grades of vesicoureteral reflux and be aware of appropriate management and referral for each
5. Be able to identify and manage acute pyelonephritis
6. Be aware of renal scarring and related risks

d. Haematuria:

1. Know the definition of microscopic and gross haematuria
2. Be able to develop a differential diagnosis of haematuria
3.. Be able to work-up haematuria

e. Proteinuria

1. Know the definition of proteinuria
2. Be able to develop a differential diagnosis of proteinuria
3. Be able to work-up proteinuria
5. Be familiar with minimal change nephrotic syndrome and when it is appropriate to begin oral prednisone
6. Know the risks and complications of nephrotic syndrome and how to manage each complication.

f. Fluids and electrolytes:

1. Know and be able to calculate fluid deficit and ongoing fluid loss
2. Recognise and be able to appropriately manage hyponatraemic, hypernatraemic and isonatraemic dehydration
3. Be able to develop a differential diagnosis for hyper and hypokalaemia and management of each
4. Be familiar with the following diseases and their therapies: Barter's syndrome, congenital adrenal hyperplasia, diabetes insipdus, syndrome of inappropriate antidiuretic hormone secretion (SIADH), hypoaldosteronism, pseudohypoaldosteronism, rickets, hyperparathyroidism.

g. Acid and base:

1. Be able to develop a differential diagnosis for acidosis and alkalosis
2. Be able to define acidosis and alkalosis
3. Define anion gap acidosis and know the therapies
4. Be familiar with Fanconi's syndrome and its most common causes

h. Glomerular disease:

1. Be familiar with the presentation, complications and management of each of the following: post infectious glomerulonephritis, Alport's syndrome, haemolytic uraemic syndrome, and Henoch-Schonlein purpura.
2. Describe the clinical manifestations and treatment of Lupus nephritis, mesangio-capillary glomerulonephritis, membranous nephritis and nephrotic syndrome – specifically minimal change disease, mesangial hypercellularity and focal sclerosing glomerulonephritis.

i. End stage renal disease:

1. Know the complications of end stage renal disease and their specific therapies
2. Know the definitions of renal insufficiency and renal failure based upon GFR
3. Be familiar with various forms of renal replacement therapy – haemodialysis, peritoneal dialysis and renal transplantation. Know the major indications for each and the role of the general pediatrician in each.

j. Congenital Disease

1. Be familiar with the presentation, complications and management of each of the following: posterior urethral valves, uretero-pelvic junction obstruction, polycystic kidney disease, renal dysplasia, prune belly syndrome, duplicated collecting system, horsehoe kidney and Wilm's syndrome.

k. Poisoning:

1. Know the role of the kidney in the metabolism of drugs and poisons
2. Be familiar with the indications for dialysis, alkalinisation or urine, and fluid loading

Medical Knowledge for adult Nephrology training

GENERAL NEPHROLOGY	Procedure(s)
Renal Anatomy and Physiology Trainees should acquire a good understanding of the structure and function of the kidney including cell membrane structure and function, glomerular structure and function and correlation of renal tubular structure and function. They should also understand renal blood flow and GFR and factors affecting them.	
Assessment of Renal Function Trainees are expected to clearly understand the various functions of the kidney and the means to assess these functions. The various methods to assess the GFR including radioisotope techniques, clearance studies and plasma creatinine have to be understood in the context of their practical utility, limitations and economics. Urine concentration and dilution, acidification of urine and production of hormones are other aspects or renal functions that have to be understood.	**Practical Skills** Phase contrast examination of the urine sediment
Urinalysis Urinalysis is an essential step in the evaluation of patients with renal diseases. Trainees are expected to be familiar with the physical, chemical and microscopic characteristics of the urine and their correlation with pathology.	Ultrasound examination of the kidneys and outflow tracts
Investigation of Renal Disease Trainees must be familiar with all the imaging studies utilised in the evaluation or renal disease including : plain x'ray of the abdomen, IVU, Angiography, Retrograde and antegrade pylography, Micturating cystourethrogram, CT scan, Spiral CT Scan, MRO, Ultrasound and Ultrasound with Doppler and radioisotope studies of the kidneys. The appropriateness as well as the indications, contraindications and limitations and economics of the imaging studies should be appreciated.	

Clinical Presentation of Renal Disease Trainees should acquire a general understanding of the various manifestations of renal diseases including asymptomatic urinary abnormalities, acute nephritic syndrome, nephritic syndrome, Rapidly progressive glomerulonephritis, acute renal failure, chronic renal failure, end stage renal failure, obstructive uropathy, acid base disorders and electrolyte disorders. They should appreciate that a single aetiology may present in different ways in different individuals, just as a clinical presentation can be due to differing aetiologies.	
Glomerular diseases Trainees should acquire a good understanding of the structure and function relationship of the glomerulus and the mechanisms of proteinuria and reduced GFR following glomerular injury. They should be familiar with the classification, aetiology and immunopathogenesis of the various primary and secondary glomerular diseases. The immunologic mechanisms causing glomerular injury should be clearly appreciated. Trainees must have a clear under standing of the clinical presentation and treatment of the various primary and secondary glomerular diseases including current evidence based guidelines on management. They should have an indepth knowledge of the following primary glomerular diseases: Minimal change nephropathy. Membranoproliferative GN type I,II,III. Focal glomerulosclerosis (FGS). Membranous nephropathy. IgA Nephropathy Post infectious GN Secondary glomerular diseases due to Systemic Lupus Erythematosus, drugs and Infections such as Hepatitis C and B are	**Patient Care Experience** Proper history taking and examination of the patient with glomerular diseases. Diagnosis and management of glomerular diseases including the use of specific immunosuppressive agents. The appropriate use of various serological and immunological tests including understanding their diagnostic value and limitations. Indications for renal biopsy. Complications of renal biopsy and their management. Interpretation of the various histological and immunoflourescence studies of glomerular diseases. Management of the nephritic and nephritic state. **Practical Skills** • Renal Biopsy - Ultra sound guided • Preparation of renal biopsy specimen for histopathology and immuno-flourescent examination

important causes of renal diseases. Trainees are especially required to fully understand the complexities of SLE and their management as patients do not only present with nephritis but also manifestations of other organ involvement. Necrotising and crescentic GN including Anti GBM disease and pauci-immune nephritis is uncommon. But trainees need to appreciate their clinical presentation, pathogenesis and treatment. Other uncommon causes of secondary GN include Rheumatoid arthritis, MCTD, systemic sclerosis, Jorgen's syndrome and Bechet's syndrome. Renal manifestations of Multiple myeloma, dysproteinaemias, cryglobulinaemias and other uncommon conditions have also to be recognised.	

Diabetes, Hypertension and Cardiovascular Diseases **Diabetes** Trainees must be very familiar with all aspects of Diabetes Mellitus including : • Epidemiology of Diabetes Mellitus (DM) especially type 11 DM and Diabetic Nephropathy (DN). • Natural history of DM and DN. The definition, detection and diagnostic and prognostic value of microalbuminuria. • Pathophysiology and histological features of DN including factors promoting progression of DN. • Other organ involvement in DM Type II particularly Cardiovascular, Cerebrovascular, Eyes. • Management of DM in general including use of the newer oral	**Patient Care Experience** Evaluation of a diabetic nephropathy patient including assessment of various organ complications and functional capacities of the patient including rehabilitation potential of the patient. Management of the patient with DN including control of glycaemia, blood pressure and proteinuria. The role of non pharmacological treatment. Evaluation and management of cardiovascular complications. Assessment of the Diabetic patient for RRT including evaluation of potential vascular or peritoneal access sites and timing of initiation of dialysis. Evaluation of the Diabetic ESRD patient for transplantation. Care of the diabetic Haemodialysis, PD and Transplant patient.

hypoglycaemic agents as well as Insulin. • Management of DN including measures to prevent progression of the disease. • The management of Diabetic ESRD including Haemodialysis, PD and Kidney or combined Kidney – Pancreas Transplantation. The merits and demerits of each treatment modality. • The rationale behind the use of Angiotensin Converting Enzyme Inhibitors and Angiotensin Receptor Blockers in Diabetic Nephropathy and the various clinical trials in this area. Trainees must also be familiar with the roles of other agents particularly CCBs in the treatment of hypertension of DN.	**Practical Skills** ▪ Intermittent Peritoneal Dialysis ▪ PD using a PD cycler
Hypertension Hypertension is an important aspect of Nephrology practice. Trainees are expected to acquire wide knowledge and understanding in Hypertension. Epidemiology of Hypertension Pathogenesis and natural history of essential hypertension – role of genetic and environmental factors. Hypertension and cardiovascular risks. Secondary causes of hypertension and their pathogenesis. Renovascular hypertension – prevalence, aetiology, pathogenesis, various screening and diagnostic tests and the merits of medical and interventional treatment as well as the different types of interventional treatment Management of Hypertension Evaluation of the hypertensive patient Non pharmacological treatment Drug treatment of Hypertension Hypertension in the dialysis patient Hypertension in Renal Transplantation	**Patient Care Experience** Evaluation of the Hypertensive patient including assessment of target organ damage, presence of CVD risk factors and investigation for secondary causes Management of the hypertensive patient by both non pharmacological and drug treatment. The goals of treatment including target blood pressures in specific groups of patients. The side effects of antihypertensive drugs, the use of combination treatment. The role and limitations of ambulatory blood pressure measurements

aetiology and management Hypertension emergencies and urgencies Hypertension in special groups Diabetics Elderly Pregnancy Patients with CVD Current National and International Guidelines on the treatment of hypertension Pharmacoeconomics of Hypertension	

ACUTE RENAL FAILURE AND CRITICAL CARE NEPHROLOGY	
Single organ ARF ▪ Differential Diagnosis of Single organ ARF prerenal ARF intrinsic renal failure obstructive renal failure The role and utility of investigation tools such as urinary osmolality and electrolyte indices, urine microscopy, imaging studies especially ultrasonography and renal biopsy. ▪ Pathophysiology of prerenal azotaemia intrinsic renal failure Acute tubular necrosis Ischaemic Toxins Acute GN Acute interstitial Nephritis obstructive renal failure ▪ Drugs and the kidney ▪ Drug causing acute renal failure ▪ Management of single organ ARF fluid and electrolyte balance drug dosing in renal failure nutrition prevention and management of infections timing and initiation of dialysis – PD/Haemodialysis/CRRT management of the recovery phase	**Patient Care Experience** Evaluation and management of ARF Use of various imaging techniques to evaluate acute renal dysfunction especially ultrasonography Examination of the urine and evaluation of urinary electrolytes Role of renal biopsy in ARF **Practical Skills** ▪ Insertion of temporary vascular access catheter ▪ Insertion of temporary PD catheters ▪ Renal biopsy ▪ Ultrasonography of the kidneys and outflow tracts

acute renal failure and Jaundice differential diagnosis infective causes toxins Hepatorenal Syndrome	
Acute Renal Failure In The Critically Ill Multi organ failure (MOF) – causes and pathophysiology Sepsis and the Systemic Inflammatory Response Syndrom (SIRS) in MOF Haemodynamic support and monitoring in the critically ill Coagulopathy in MOF Fluid and electrolyte management Acid base disorders in the critically ill Nutritional support in patients with MOF Role of RRT in the treatment of the critically ill Haemodialysis/SLED Peritoneal Dialysis Continuous Dialysis techniques ▪ Extracorporeal therapy in the management of poisoning	**Patient Care Experience** ▪ Assessment of intravascular volume status of patient ▪ Use of fluids and vasoactive agents to maintain haemodynamic stability ▪ Assessment of renal function and the status of other organs ▪ Management of sepsis and prevention of nosocomial infection ▪ Management of acid base and electrolyte disorders ▪ Management of coagulation disorders including the use of blood products ▪ The use of CRRT techniques, their advantages and limitations **Practical Skills** ▪ Insertion of temporary vascular access catheter ▪ Insertion of central venous pressure monitoring catheters CRRT techniques

CHRONIC RENAL FAILURE	
The management of CRF is an important aspect of nephrology training as it consumes considerable time and resources of the institution. Trainees must have a thorough understanding of all aspects of CRF ▪ Aetiology of CRF ▪ Pathophysiology of the various manisfestations of CRF anaemia bone disease	**Patient Care Experience** ▪ Evaluation of the patient with CRF including search for treatable causes, assessment of complications of CRF ▪ Outpatient management of CRF strict control of BP control of blood sugar (in DM) control of proteinuria management of bone disease

CVS complications Lipid disorders Hypertension Endocrine disorders ▪ Factors that affect progression of renal failure hypertension proteinuria dietary protein lipids, uric acid drugs divalent cations ▪ Measures to prevent progression of renal failure ▪ Management of anaemia, bone disease and CVD risk factors in CRF ▪ Drug dosing in CRF ▪ Laboratory and imaging investigations in patients with CRF ▪ Predialysis management of CRF patients ▪ Preparation of patients for RRT Counseling patient and family Merits and disadvantages of the various treatment modalities in RRT. Psychosocial reactions of patients with ESRD ▪ Preparation of access for dialysis	prevention of CVD management of anaemia ▪ interpretation of various laboratory and imaging studies **Practical Skills** ▪ ultrasonography ▪ renal biopsy ▪ creation of arterio venous fistulae (radial and brachial) (observe) ▪ insertion of Tenchkoff catheter (observe)

DIALYSIS	
Haemodialysis ▪ organisation and management of a Haemodialysis unit including purchasing policies and procedures ▪ principles of dialysis ▪ water treatment and monitoring water quality including bacterial and endotoxin studies ▪ structure and function of Haemodialysis and reprocessing machines ▪ cross infection control policies and procedures	**Patient Care Experience** Trainees must have experience in managing Haemodialysis patients both during and off HD ▪ Multidisciplinary approach to the counseling and assessment of patients for suitability of RRT and modality selection ▪ Care or temporary and permanent vascular access ▪ Monitoring of vascular access investigating and managing

▪ dialyses – membrane types, properties of dialyses ▪ dialyser reprocessing – procedures, issues relating to biocompatibility, infection and economics ▪ biocompatibility issues ▪ composition of Dialysate ▪ Dialysis prescriptions and monitoring the adequacy of dialysis ▪ Vascular access – monitoring and management of impending access failure ▪ Intradialytic complications and their management ▪ Long term complications of Haemodialysis treatment ▪ Management of the HD patient CVD Anaemia Control of Calcium and phosphate balance Bone diseases Aluminium bone disease Hyperparathyroid bone disease Mixed bone disease Nutrition Parathyroidectomy Indications preparation of patients for surgery care of the post operative patient techniques including reimplantation	failing access ▪ Experience in managing intradialytic complications including familiarity with measures to detect and prevent hypotension ▪ Familiarity with HD machines and features such as Sodium and UF profiling ▪ Able to prescribe and monitor adequacy of dialysis ▪ Outpatient management of HD patients including management of anaemia, bone disease, CVD complications ▪ Proper use of Erythropoietin. Measures of iron adequacy and iron therapy in patients receiving EPO **Practical Skills** ▪ Insertion of temporary vascular access and permanent catheter for Haemodialysis ▪ Doppler ultrasound of vascular access ▪ Transonic technique for assessment of vascular access flow and recirculation

Aluminium toxicity Source of Aluminium Manifestations of AL toxicity DFO test DFO treatment Amyloidosis Acquired cystic disease Malignancy ▪ Drug use in HD patients	

Peritoneal Dialysis	**Patient Care Experience**
▪ Types of PD IPD CAPD CCPD ▪ Principles of PD including physiology of peritoneal transport ▪ PD solutions, connectology ▪ Principles and utility of PET ▪ Dialysis prescription and monitoring of adequacy ▪ Management of complications of PD including peritonitis, nutrition, metabolic and mechanical problems **General** ▪ Economics of Dialysis treatment ▪ National Renal Registry and Malaysian Organ Sharing System ▪ Ethical issues in Dialysis treatment ethics of resource allocation patient selection withdrawal of treatment	▪ In general as for Haemodialysis ▪ Management of peritonitis Indications for removal of Tenchkoff catheter **Practical Skills** ▪ Insertion of temporary PD catheters

TRANSPLANTATION	
Immunology of transplantation ▪ Normal immune response ▪ Immunology of transplantation including mechanisms and pathology of rejection ▪ Tolerance ▪ Role of blood transfusion ▪ Immunogenetics and tissue typing ▪ Cross matching ▪ Panel reactive antibodies **Live donor kidney transplantation** ▪ The counseling and assessment of a potential live related donor – role of donor advocate. Evaluation of renal function test and imaging studies of the kidneys **Organ sharing and allocation** ▪ Principles of organ sharing and allocation ▪ Logistics of organ procurement and distribution ▪ MOSS and other larger organisations such as UNOS **The transplant recipient** ▪ Evaluation of the potential recipient medical fitness urinary tract infectious screen comorbid conditions hepatitis preformed antibodies ▪ Preoperative preparation of the recipient **Transplant pharmacology** Pharmacology of immunosuppressive agents including poly and	**Patient Care Experience** ▪ Evaluation of the donor and recipient including preoperative care ▪ Management of the early post transplant course ▪ Outpatient management of the stable transplant patient ▪ Evaluation of graft dysfunction-role of graft biopsy ▪ Evaluation of hypertension in the transplanted patient ▪ Evaluation of the obstructed graft ▪ Complications of immunosuppressive drugs ▪ Complications of long term immunosuppressants hypertension and dyslipidaemia malignancy glucose intolerance polycythaemia avascular necrosis hepatitis ▪ Recurrent primary disease and de novo nephritis ▪ Management of severe infections in the transplanted patient **Practical Skills** ▪ Ultrasonography of the graft ▪ Graft biopsy

monoclonal antibodies Drug interactions **Clinical transplantation** ▪ Surgical techniques ▪ Early post transplant course fluid management induction immunosuppression prophylactic antibiotics management of early complications evaluation of graft dysfunction in the early post transplant period monitoring of graft function ▪ Evaluation of graft dysfunction role of graft biopsy ▪ Management of infections in the transplanted patient role of prophylactic anti-infective agents CMV infections ▪ Management of cardiovascular risk factors in transplant patients ▪ Hypertension – cause and treatment ▪ Obstruction – investigations and management ▪ Management of long term complications including PTLD and cancers ▪ Evaluation of hepatitis in the transplanted patient ▪ Pregnancy and transplantation **General** ▪ Ethical issues in organ transplantation ▪ Economics of organ transplantation	

PREGNANCY AND THE KIDNEY	
Trainees are expected to be familiar with physiological changes in the kidney and urinary tract occur during pregnancy as well as disorder that occur during pregnancy ▪ Changes in the anatomy and function of the kidneys in normal pregnancy ▪ Changes in acid base metabolism and volume homeostasis in pregnancy ▪ Changes to blood pressure and renal function in normal pregnancy ▪ Clinical presentation, aetiology and management of renal and urinary tract disorders in pregnancy UTI Spectrum of acute renal failure in pregnancy Glomerular diseases that appear during pregnancy Pregnancy in the transplanted patient Lupus nephritis and pregnancy ▪ Foetal outcome in patients with glomerular/renal diseases/transplanted kidneys intending to get pregnant ▪ Hypertension in pregnancy including Preeclampsia and eclampsia	**Patient Care Experience** Trainees must manage women whose pregnancies are complicated by acute or chronic renal or urinary tract disorders. They should also be involved in the management of severe hypertension in pregnancy

ACID BASE DISORDERS	
Trainees must have a clear understanding of acid base balance, their disorders and management ▪ Acid base chemistry and buffering ▪ Determinants of arterial carbon dioxide tension and balance ▪ Determinants of plasma bicarbonate concentration and hydrogen ion balance ▪ Clinical evaluation of acid base	**Patient Care Experience** ▪ Able to assess acid base data including the anion gap ▪ Diagnose patient's acid base disorder from history and laboratory data and manage appropriately (Experience in the management of all types of acid base disorders)

balance ▪ Renal tubular acidosis ▪ Uraemic acidosis ▪ Other types of metabolic acidosis aetiology, pathogenesis, clinical features and management ▪ Metabolic alkalosis aetiology, pathogenesis, clinical features and management ▪ Respiratory acidosis aetiology, pathogenesis, clinical features and management ▪ Respiratory alkalosis aetiology, pathogenesis, clinical features and management ▪ Mixed acid base disturbances **Fluid and Electrolyte Disorders** Trainees must acquire knowledge and understanding of all aspects of fluid and electrolyte disorders ▪ Physiology of water balance ▪ Physiology of sodium balance ▪ The pathophsiology, causes, clinical features, diagnosis and management of hypovolaemia ▪ The pathophsiology, causes, clinical features, diagnosis and management of oedematous states ▪ Diuretics and its complications ▪ The pathophysiology, causes, clinical features, diagnosis and management of hyponatraemia ▪ The pathophysiology, causes, clinical features, diagnosis and management of hypernatraemia ▪ Evaluation and management of polyuric patient ▪ Physiology of potassium balance ▪ The pathophysiology, causes, clinical features, diagnosis and management of hypokalaemia ▪ The pathophysiology, causes, clinical features, diagnosis and management of hyperkalaemia ▪ Disorder of water, sodium and potassium balance in ESRD	

CYSTIC AND INHERITED DISEASES OF THE KIDNEY	
Trainees should acquire knowledge in inherited and cystic diseases of the kidneys ▪ Genetics of inherited diseases ▪ Understanding of gene linkage analysis ▪ Chromosomal localisation and characteristics of the gene responsible for the most common inherited renal disorders ▪ Clinical, diagnostic and epidemiologic differences between simple, acquired and inherited cystic diseases ▪ Diagnosis and management of various cystic diseases of the kidneys especially ADPKD ▪ Natural history and extra renal manifestations of ADPKD ▪ Diagnosis and management of Alport's syndrome	**Patient Care Experience** ▪ Diagnosis and management of patients with ADPKD ▪ Long term follow up of patients with ADPKD including management of infection of cysts, haematuria and other complications ▪ Evaluation of ADPKD patients for renal transplantation ▪ Principles of genetic counseling

UTI, OBSTRUCTION AND TUBULOINTERSTITIAL DISEASE	
Trainees should have knowledge in the following ▪ Bacterial urinary tract infection pathogenesis, routes and clinical course of infection investigations in Urinary tract infection management of Acute and Chronic pyelonephritis, lower tract infections ▪ Vesico ureteric reflux – investigation and management ▪ Causes, Pathophysiology, diagnosis and clinical features of obstruction ▪ Metabolic and other causes of renal stones ▪ Medical management of renal stone disease ▪ Aetiology, Pathophysiology, diagnosis, clinical features and	**Patient Care Experience** ▪ Diagnosis and management of Acute pyelonephritis ▪ Management of asymptomatic bacteriuria ▪ Investigation and management of Recurrent UT1 ▪ Investigation and management of Reflux nephropathy ▪ Diagnosis and management of Acute interstitial nephritis ▪ Pathology of acute and chronic interstitial nephritides ▪ Unusual syndromes – xanthogranulomatous pyelonephritis ▪ Assessment of renal tubular function

management of interstitial disease immune mediated disease infective/toxin causes drug related ▪ Pathology of Interstitial disease and its effect on glomerular function	

APPENDIX 4

NEPHROLOGY TRAINING PROGRAMME

Training Log Book

Trainee's Name: …..……

NRIC number: ……..……

Date of starting training: ……/……/ 20……

Training centre(s): 1…..……..

2……

Supervisors: 1……

2……

3……

4……

5……

6……

Contents **Page**

Contents **Page**

1. Record of clinical rotations / module

No	Clinical rotation/ module	Starting date	Date of completion	Supervisor
1.1	General Nephrology			
1.2	Haemodialysis			
1.3	Peritoneal Dialysis			
1.4	Renal Transplantation			
1.5	Critical Care Nephrology			
1.6	Consult			
1.7	Elective			

2. General Nephrology Module

2.1 Attachment data

2.1.1 Name of supervisor: ……..
2.1.2 Centre of attachment: Hospital ……
2.1.3 Start date : ……..
2.1.4 End date : …….

2.2 Patient care experience

Management of hypertensive emergencies/urgencies

No	Date	Patient Name	RN	Age/Sex	Cause	Course	Final Diagnosis	Supervisor
1								
2								
3								
4								
5								

2.2.2 Management of acute renal failure in various settings/pregnancy

No	Date	Patient Name	RN	Age/Sex	Cause	Course	Final Diagnosis	Supervisor
1								
2								
3								
4								
5								

2.2.3 Management of acute poisoning

No	Date	Patient Name	RN	Age/Sex	Cause	Course	Outcome	Supervisor
1								
2								
3								

2.2.4 Management of nephrotic syndrome

No	Date	Patient Name	RN	Age/Sex	Complication, if any	Course	Diagnosis/HPE	Supervisor
1								
2								
3								
4								
5								

5 Management of rapidly progressive glomerulonephritis

No	Date	Patient Name	RN	Age/Sex	Therapy	Course	Diagnosis/HPE	Supervisor
1								
2								
3								
4								
5								

Management of severe SLE/lupus nephritis

No	Date	Patient Name	RN	Age/Sex	Organ involved	Therapy	Outcome	Supervisor
1								
2								
3								
4								
5								

2.3 Procedures

Urine phase contrast microscopy

No	Date	Patient Name	RN	Age/Sex	Indication	Results	Final Diagnosis	Supervisor
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Insertion of stiff peritoneal catheter (stab PD)

No	Date	Patient Name	RN	Age/Sex	Indication	Complications, if any	Outcome	Supervisor
1								
2								
3								
4								
5								

Ultrasonography of the kidney and urinary tract

No	Date	Patient Name	RN	Age/Sex	Indication	Diagnosis	Supervisor
1							
2							
3							
4							
5							

Insertion of acute vascular access catheters (minimum required = 10)

No	Date	Patient Name	RN	Age/Sex	Site	Indication	Complications, if any	Supervisor
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Renal biopsy (minimum required = 30 successful biopsies)

No	Date	Patient Name	RN	Age/Sex	Indication	HPE Diagnosis	Treatment	Supervisor
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

Interpretation of ambulatory blood pressure monitoring

No	Date	Patient Name	RN	Age/Sex	Indication	Results	Action	Supervisor
1								
2								
3								
4								
5								

2.3.7 Care of arteriovenous fistulae

No	Date	Patient Name	RN	Age/Sex	Type of AVF	Date fashioned	Date first used	Supervisor
1								
2								
3								
4								
5								

3. Haemodialysis module

3.1 Attachment data

3.1.1 Name of supervisor :
3.1.2 Centre
3.1.3 Start date :
3.1.4 End date :

3.2 Patient care experience

3.2.1 Perioperative care of patient for parathyroidectomy

No	Date	Patient Name	RN	Indication	Complications, if any	Treatment	Outcome	Supervisor
1								
2								
3								
4								
5								

3.2.2 Management of permanent vascular access complications

No	Date	Patient Name	RN	Access Type	Complication	Treatment	Outcome	Supervisor
1								
2								
3								
4								
5								

3.2.3 Management of patients with vascular access problems

No	Date	Patient Name	RN	Problem/s	Management	Outcome	Supervisor
1							
2							
3							

3.2.4 Management of intradialytic complications – intermittent HD/HDF

No	Date	Patient Name	RN	Problem/s	Management	Outcome	Supervisor
1							
2							
3							
4							
5							

3.3 Procedures

3.3.1 Haemodialysis set up (observe)

No	Date	Patient Name	Age/Sex	RN	Indication	Complications, if any	Outcome	Supervisor
1								
2								
3								

3.3.2 Dialyser reprocessing (observe)

No	Date	Patient Name	Age/Sex	RN	Dialyser type	Surface area	Patency test	Supervisor
1								
2								
3								

3.3.3 Plasmapheresis/immunoadsorption/haemoperfusion/other (observe)

No	Date	Patient Name	RN	Age/Sex	Therapy type	Indication	Outcome	Supervisor
1								
2								
3								
4								
5								

3.3.4 Ultrasonography of permanent vascular access

No	Date	Patient Name	RN	Age/Sex	Indication	Result/s	Outcome	Supervisor
1								
2								
3								
4								
5								

4 Chronic peritoneal dialysis module

4.1 Attachment date

4.1.1 Supervisor :
4.1.2 Centre :
4.1.3 Start date :
4.1.4 End date :

4.2 Patient care experience

4.2.1 Management of CAPD peritonitis

No	Date	Patient Name	RN	Age/Sex	Microbe/s	Treatment	Outcome	Supervisor
1								
2								
3								

4.2.2 Management of recurrent exit site infection

No	Date	Patient Name	RN	Age/Sex	Duration	Microbe/s	Treatment	Outcome	Supervisor
1									
2									
3									

4.2.3 Management of peritoneal membrane failure

No	Date	Patient Name	RN	Age/Sex	Diagnosis/es	Failure type	Action	Supervisor
1								
2								
3								

4.3 Procedures

4.3.1 Surgical insertion of Tenckhoff PD cathether (observe)

No	Date	Patient Name	RN	Age/Sex	Diagnosis/es	Indication	Catheter type	Supervisor
1								
2								
3								

4.3.2 Measurement of PET and peritoneal dialysis adequacy (observe)

No	Date	Patient Name	RN	Age/Sex	Indication	Results	Outcome	Supervisor
1								
2								
3								
4								
5								

5. Renal Transplantation module

5.1 Attachment data

5.1.1 Name of Supervisor:
5.1.2 Centre :
5.1.3 Start date:
5.1.4 End date:

5.2 Patient care experience

5.2.1 Pre-transplant evaluation of living-related transplant

No	Date	Patient Name	Age/Sex	RN	Donor	Age/Sex	RN	Relation	Supervisor
1									
2									
3									
4									
5									

5.2.2 Immediate post-transplant management

No	Date	Patient Name	Age/Sex	RN	Tx Type	Complications, if any	Treatment	Outcome	Supervisor
1									
2									
3									
4									
5									

5.2.3 Coordination of cadaveric renal transplantion

No	Date	Patient Name	Age/Sex	RN	Donor	Age/Sex	RN	Complications, if any	Supervisor
1									
2									
3									

5.2.4 Management of acute rejection episode

No	Date	Patient Name	Age/Sex	RN	Time post - Tx	biopsy	Treatment	Outcome	Supervisor
1									
2									
3									

5.2.5 Management of severe infection in transplant recipient

No	Date	Patient Name	Age/Sex	RN	Time post - Tx	Infection type	Treatment	Outcome	Supervisor
1									
2									
3									
4									
5									

5.3 Procedures

5.3.1 Renal transplant operation (observe)

No	Date	Patient Name	Age/Sex	RN	Tx type	Complications, if any	Outcome	Supervisor
1								
2								

5.3.2 Ultrasonography of renal allograft

No	Date	Patient Name	Age/Sex	RN	Indication	Findings	Outcome	Supervisor
1								
2								
3								
4								
5								

5.3.3 Renal allograft biopsy

No	Date	Patient Name	Age/Sex	RN	Indication	Complications, if any	HPE diagnosis	Supervisor
1								
2								
3								
4								
5								

6. Critical Care Nephrology module

6.1 Attachment data

6.1.1 Name of Supervisor :
6.1.2 Centre :
6.1.3 Start Date :
6.1.4 End date :

6.2 Patient care experience

6.2.1 Management of patients with multiorgan failure (MOF)

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	Organ No.	RRT Type	Outcome	Supervisor
1									
2									
3									
4									
5									

6.2.2 Management of patients on CRRT (minimum = 10)

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	RRT Type	Outcome	Supervisor
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

6.3 Procedures

6.3.1 Set up of CRRT machine (observe)

No	Date	Patient Name	Sex/Age	RN	Machine type	Paremedic	Supervisor
1							
2							

7. Consult module

7.1 Attachment data

7.1.1 Name of Supervisor :
7.1.2 Centre :
7.1.3 Start Date :
7.1.4 End date :

7.2 **Patient care experience**

7.2.1 Management of post-operative patients with renal disease

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	Type of renal dis	Action/s	Outcome	Supervisor
1									
2									
3									
4									
5									

7.2.2 Management of cardiac patients with renal disease

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	Type of renal dis	Action/s	Outcome	Supervisor
1									
2									
3									
4									
5									

Management of patients with liver and renal disease

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	Type of renal dis	Action/s	Outcome	Supervisor
1									
2									
3									

Management of haematology/oncology patients with renal disease

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	Type of renal dis	Action/s	Outcome	Supervisor
1									
2									
3									

Management of patients with HIV and renal disease

No	Date	Patient Name	Age/Sex	RN	Diagnosis/es	Type of renal dis	Action/s	Outcome	Supervisor
1									
2									

8. Miscellaneous procedures (optional)

Name of procedures eg. Insertion of cuffed vascular access, PD catheter

No	Date	Patient name	RN	Indication	Complication, if any	Treatment	Outcome	Supervisor
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

9. Research and publication (please attach appendix if insufficient space)

Research Projects

No	Title	Co-workers	Centre	Start	End	Output	Supervisor

Research output & publications

No	Title of abstract/article/lecture	Co-authors if any	Meeting/Seminar/ Conference	Journal citation	Supervisor

Invited speaker

No	Date	Title of talks/lecture	Meeting/Seminar/Conference	Supervisor
1				
2				
3				
4				

10. Educational Courses/Seminars/Workshops/Conferences attended

No	Date	Course/Meeting/Seminar, etc	Venue	Supervisor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

11. Membership of Societies including NGOs relevant to Nephrology

No	Year	Society/NGO	Position held	Supervisor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

APPENDIX 5

Post Module Assessment Summary

(To be completed after each module & send a copy to Credentialing Board)

Name of trainee: ……..

Module: General Nephrology/HD/PD/ Transplant/Critical Care Nephrology /Referrals/ Elective

Duration of Training: From …../…../……. till …../…../……

Assessment Summary

		1 Poor	2 Borderline Fail	3 Satisfactory	4 Good	5 Excellent
1	**Clinical competence**					
a)	Inquiry skills					
b)	Diagnostic ability					
c)	Patient management					
d)	Technical skills					
2	**Knowledge**					
3	**Professional characteristics**					
4	**Personal learning & assignments**					
5	**Conduct & communication skills**					
6	**Record keeping**					
7	**Participation in Teaching-learning activities**					
a)	Ward round					
b)	Clinic					
c)	Case presentation					
d)	Tutorial					
e)	X'ray/CPC/Audit, Mortality conference etc					
f)	Journal club					
g)	Teaching ability					

8. Research and publication

8.1: Title of project:……

Initiated ☐
In progress ☐
Presented ☐
Published ☐

8.2 Title of project:……

Initiated ☐
In progress ☐
Presented ☐
Published ☐

8.3: Title of project:……

Initiated ☐
In progress ☐
Presented ☐
Published ☐

9. Comments

……

……

……

……

……

……

……

10. Overall assessment

Fail /Borderline/ Satisfactory / Good / Excellent

Supervisor`s signature: _____

Supervisor`s Name: _____

Date: _____

DEFINITIONS OF CORE COMPETENCY ASSESSMENT

Please mark the box in the post-module assessment summary which corresponds with your observations in each category. Please judge according to the criteria outlined below and not according to your experience with other trainees under your supervision.

The category "excellent" is the "gold standard" by which the student should be judged.

---

1. Clinical Competence

Inquiry skills (obtaining data/information from history, physical examination and investigations)

Excellent:	Consistently elicits problem-related data from patient and other relevant sources, stresses important points, well organized approach. Consistently elicits and interprets correctly all signs, technical and organizational approach consistently good. Consistently plans and interprets investigations appropriate to the problem with attention to specificity, reliability, patient safety and comfort, cost and explains reasons for and nature of investigations to patient.
Good:	As above but less consistently.
Satisfactory:	As above, but sometimes concentrate on data not related to the problem, sometimes omits to consult other sources, occasionally misses important signs. Occasionally request investigations not appropriate to the problem and / or without attention to specificity, reliability, etc, sometimes miss important data.
Borderline:	Approach not well organized, not always problem related, frequently misses important data. Approach technically imperfect and not very systematic, frequently misses important physical signs. Frequently request investigations not appropriate to the problem and/ or without attention to specificity, reliability, patient safety, misses important data.
Poor:	Approach not organized, frequently problem related, important data missed on most occasions.

	Approach technically unacceptable and not systematic, important signs missed on most occasions.
	Consistently makes inappropriate decisions in ordering investigations, consistently misinterprets and/ or misses important data.

Problem solving and decision- making skills

Diagnostic ability

Excellent:	Consistently makes careful reasoned deductions from available data (history, physical examination, investigations) to arrive at the appropriate decision.
Good:	As above, but less consistently.
Satisfactory:	As above, but occasionally makes incorrect deductions. Most times able to give correct provisional diagnosis but not all relevant differential diagnoses.
Borderline:	Frequently does not follow a logical approach to deduction from the available data, frequently gives incorrect provisional diagnosis.
Poor:	Illogical reasoning and deductions. Frequently makes incorrect diagnosis.

Patient Management

Excellent:	Consistently suggests appropriate management, exhibits awareness of the role and possible complications of the proposed intervention (e.g adverse drug reaction, treatment morbidity), self-reliant and conscientious in approach, involves patient and family in management decisions.
Good:	As above, but less consistently.
Satisfactory:	As above, but occasionally suggests inappropriate management.
Borderline:	Shows some lack of awareness of role of proposed interventions and their possible complications, is unsure/not conscientious in implementing management.

Poor:	Frequently makes inappropriate management decisions.

Technical skills

Excellent:	Consistently carries out procedures and operative tasks with an appropriate level of technical skill and with due consideration for the patient.
Good:	As above, but less consistently
Satisfactory:	As above, but is not equally skilled in all procedures
Borderline:	Not skilled in most procedures, occasionally exhibits lack of consideration and/or care and attention to detail.
Poor:	Serious lack of skill in a number of procedures, frequently exhibits lack of care and attention to detail, not considerate to patients.

2. Knowledge

Excellent:	Consistently applies appropriate knowledge of basic and clinical sciences to the solution of patient problems. Demonstrates maturity and initiative for self-directed learning in problem solving.
Good:	As above, but less consistently
Satisfactory:	As above, but occasional gaps in knowledge and/or difficulty in application to patient problems. However makes effort to seek information.
Borderline:	Inadequate knowledge and/or difficulty in application to patient problems. Sometimes make effort to seek information.
Poor:	As in borderline but lacks initiative in seeking information.

3. Professional Characteristics

Excellent:	Shows evidence of professional qualities: accepting responsibility, being caring, thorough, reliable, available, punctual, trustworthy and respecting confidentiality
Good:	As above, but less consistently or as effectively.
Satisfactory:	As above, but with occasional deficiencies in professional qualities as defined above.
Borderline:	Frequently deficient in areas defined above.
Weak:	Consistently deficient in areas defined above.

4. Personal Learning and Assignments.

Excellent:	Consistently manages own learning by asking questions and searching for the answer in journals, books and consultation, improves progress as a learner and as a future physician by seeking feedback and acting on the latter, willing to teach others, conscientious in completing assignments : case write ups, audits, log book, dissertation.
Good:	As above, but less consistently or as effectively
Satisfactory:	As above, but with occasional deficiencies in self directed learning, self monitoring
Borderline:	Frequently deficient in areas defined above.
Poor:	Consistently deficient in areas defined above.

5. Conduct and communication skills

Excellent:	Consistently in communication with patients, listens and is sensitive to the needs of the patient; comforts the patients; gives equal priority to the person and the illness; establishes and maintains an open but objective relationship with the patient; recognizes that the patient's attitude to the doctor affects patient's reactions/behaviour; provides clearly understood information. Consistently communicating/working with other professionals, is courteous, sensitive to needs of others; fulfils role in the team appropriately by

	collaborating readily with others; provides clear information, instruction/advice to others; readily accepts reasonable advice/criticism from others.
Good:	As above, but less consistently or as effectively
Satisfactory:	As above, but with occasional deficiencies in communicating skills outlined above.
Borderline:	Frequently deficient in communicating skills outlined above.
Poor:	Consistently deficient in communicating skills outlined above.

6. Record Keeping

Excellent:	Consistently records legibly, updates accurately patient's problems and management progress, with emphasis on own observations, and provides regular informative summary of progress.
Good:	As above, but less consistently.
Satisfactory:	As above, but occasionally one or more aspects of record keeping inadequate.
Borderline:	Records are frequently illegible, not up-to-date, inaccurate, and poorly organized.
Poor:	Records are consistently inadequate according to above criteria.

Members of the Nephrology Board of Subspeciality:

1) Dr Hooi Lai Seong – Chairperson
2) Dr Lim Yam Ngo
3) Dr Rozina Ghazalli
4) Professor Datin Dr Norella Kong
5) Professor Tan Si Yen
6) Dr Ghazali Ahmad
7) Dr Fan Kin Sing