GHANA COLLEGE OF PHYSICIANS AND SURGEONS

CURRICULUM FOR SUB-SPECIALTY TRAINING IN

RENAL MEDICINE

1. Entry Requirements

Applicants for Sub-Specialty Training (SST) in Renal Medicine should have completed three two years residency in approved posts in medicine and obtained membership of the Ghana College of Physicians and Surgeons Membership or Part 1 of the Fellowship of the West African College of Physicians or equivalent.

Residency is defined as follows:

• A minimum of 3 years in approved posts with direct involvement in patient care and offering a wide range of experience in a variety of medical specialties

2. Aims

To provide trainees with the necessary knowledge and understanding of renal conditions and diseases as well as related basic medical science

To enable trainees to assess, diagnose, manage and monitor treatment of various renal disorders and related multisystem disorders in acute and chronic settings

To enable trainees to manage acute & chronic renal replacement therapy

The trainee must acquire expertise and experience in all aspects of Renal Medicine. The trainee must also become competent in the investigation and management of acute renal failure. They must become competent in practical procedures, including renal biopsy and

temporary and permanent vascular access for dialysis.

To develop the attitudes and behaviours expected in good practice of nephrology and integrate these in trainees' practice

3. Duration and Organisation of Training

The <u>minimum</u> duration of SST in Renal Medicine is three years. Two years of the training must be in <u>clinical practice</u> in Renal Medicine in a Ghana College of Physicians and Surgeons approved posts. The other year may be in a related specialty or research, depending on future aspirations.

4. Flexible training

Trainees who are unable to work full-time are entitled to opt for flexible training programmes.

- Part-time training shall meet the same requirements as full-time training, from which it will differ only in the possibility of limiting participation in medical activities to a period of at least half of that provided for full-time trainees;
- The competent authorities shall ensure that the total duration and quality of part-time training of specialists are not less than those of full-time trainees

The above provisions must be adhered to. Flexible trainees should undertake a pro rata share of the out of hours duties (including on-call and other out of hours commitments) required of their full-time colleagues in the same programme and at the equivalent stage.

5. Research

A period of supervised research of high quality is considered a required part of SST in Renal Medicine. A relevant research period may contribute up to 12 months towards the total duration of SST and the dissertation from the research will be examined as part of the requirements for graduation from the sub-specialty training.

A Senior Resident in sub-specialty training will be awarded a National Training Number by the Ghana College of Physicians and Surgeons. The training programme will be organised by a training committee which will oversee training of individual Senior Specialists.

6. Summary of Training Centre requirements

A minimum of two years must be spent in Training Centres fulfilling the following requirements:

- a) At least one consultant practising renal medicine
- b) Facilities for treatment of acute renal failure by haemodialysis and offering experience of the management of patients with multi-organ failure in Intensive Care Units
- c) Provision of renal replacement therapy including haemodialysis. If the Centre does not offer renal transplantation, arrangements must be made for the trainee to be seconded to a Transplant Unit.
- d) Weekly Renal Clinics for non-dialysis patients
- e) An on-going research programme in renal medicine is highly desirable
- f) Full diagnostic facilities including ultrasound and renal biopsy
- g) Full laboratory service for diagnosis and management of renal patients including medical biochemistry, haematology, microbiology and histology
- h) Regular meetings e.g. with radiology, pathology and urology departments

- i) Regular audit. Provision of multidisciplinary clinical meetings
- j) Full library facilities

The content and learning objectives of the curriculum is set out in the attached papers (See Appendix).

Each training objective will be defined in terms of knowledge, skills and attitudes, with the methods of assessment and learning for each objective.

Assessment will therefore take several forms. A formal assessment should take place at the end of a period of training and may take place more frequently. The assessment should be placed in the training record and also the trainees' portfolio. The assessment will be reviewed at an annual meeting held by the Specialist Training Committee with the trainee present and also at the Penultimate Year Assessment and finally at the exit interview when the STC will provide the trainee with a signed form indicating completion of training which will allow the trainee to apply, through the Specialist Training Committee, for a Certificate of training in renal medicine in Renal Medicine.

In addition the progress of a Senior Resident will be monitored during the training period by means of appraisal. This will allow both trainee and trainer to identify any problems or difficulties as they arise. These can then be addressed during the training period.

Appraisal is a confidential process. It consists of the exchange of views between the trainee and designated trainer (educational supervisor). The trainer will meet the trainee at the start of an attachment to review prior experience and achievement and set goals for the period of training ahead. It will also provide the opportunity for trainees and trainers to discuss any concerns which have been identified in previous appraisal or assessment. It may highlight areas of the curriculum which have not been covered. The process should be repeated at least once during an attachment and towards the end of the attachment. A record that appraisal has taken place should be filed in the training manual and the trainees portfolio of achievements.

A copy of the appraisal, which remains confidential, should be retained by both trainee and trainer. Appraisal may be used to inform assessment.

7. The Learning Process

This section describes how learning can be achieved to accomplish the outcomes of the curriculum.

The Model of Learning

Duration of Training

Although this curriculum is competency-based, the duration of training must be for 3 years.

This section describes the model of learning appropriate to Renal Medicine.

Trainees will achieve the competences described in the curriculum through a variety of learning methods. There will be a balance of different modes of learning from formal teaching programmes to experiential learning 'on the job'. The proportion of time allocated to different learning methods may vary depending on the nature of the placement within a rotation.

There must be robust arrangements for quality assurance in place to ensure consistent implementation of the curriculum.

Work-Based Experiential Learning - The content of work-based experiential learning includes active participation in:

Out patient clinics, including general nephrology clinics, renal transplant clinics, haemodialysis clinics, low clearance (predialysis) clinics and sub-specialty clinics such as obstetric renal clinics. Trainees will assess 'new' and 'follow-up' patients and present their findings to their clinical supervisor. The degree of responsibility taken by the trainee will increase as competency in renal medicine increases.

Personal ward rounds and provision of ongoing clinical care. Every patient seen, on the ward or in out-patients, provides a learning opportunity, which will be enhanced by

management. Patients seen should provide the basis for critical reading and reflection of clinical problems. Consultant-led ward rounds. Every time a trainee observes another doctor, consultant or fellow trainee, seeing a patient or their relatives there is an opportunity for learning. Ward rounds should be led by a consultant and include feedback on clinical and decision-making skills. Haemodialysis Unit ward rounds. Personal and consultant-led ward rounds in hospital dialysis units provide important additional learning opportunities. **Renal referrals.** Assessment of patients referred to the renal medicine team from other specialties, including from the acute medical take, provides invaluable learning opportunities. **Procedural teaching.** As competence in specific procedural skills is gained, the level of supervision will decrease until independent practice is achieved. Assessment of progress will involve workplace-based assessment (DOPS, direct observation of procedural skills). Trainees would be expected to teach and supervise procedural skills in which they themselves are competent. Multi-disciplinary team meetings. There are many situations where clinical problems are discussed with clinicians in other disciplines. These provide excellent opportunities for observation of clinical reasoning. **Specialist provision of clinical care** for patients with acute renal failure or renal disease in Intensive Care Units and High Dependency Units. Each local faculty for education will define the programme of learning activities. Trainees have supervised responsibility for the care of in-patients. This includes day-to-day review of clinical conditions, note keeping, and the initial management of the acutely ill patient with referral to and liaison with clinical colleagues as necessary.

following the patient through the course of their illness: the experience of the evolution of

patients' problems over time is a critical part both of the diagnostic process as well as

The degree of responsibility taken by the trainee will increase as competency in Renal Medicine increases. There should be appropriate levels of clinical supervision throughout training with increasing clinical independence and responsibility as learning outcomes are achieved.

Formal Postgraduate Teaching – The content of these sessions are determined by the local faculty of medical education and will be based on the curriculum. There are many opportunities throughout the year for formal teaching in the local postgraduate teaching sessions and at regional, national and international meetings.

Suggested activities include:
A programme of formal regular teaching sessions in Renal Medicine
Case presentations
Research and audit projects
Journal clubs
Lectures and small group teaching
Grand rounds
Clinical skills demonstrations and teaching
Critical appraisal and evidence based medicine and journal clubs
Joint specialty meetings e.g, radiology, pathology, rheumatology, diabetology, cardiology
Bedside teaching,
Attendance at training programmes organised on a local, regional or national basis, which
are designed to cover aspects of the training programme outlined in this curriculum.
Attendance at regional, national and international meetings in Renal Medicine, such as
the Ghana College of Physicians CME meetings.
Independent Self-Directed Learning -Trainees will use this time in a variety of ways
depending upon their stage of learning. Suggested activities include:
Preparation for assessment and examinations
Reading journals
Reading, including web-based material
Maintenance of personal portfolio (self-assessment, reflective learning, personal
development plan)

Research
Achieving personal learning goals beyond the essential, core curriculum
Audit and research projects

Trainees who wish to acquire extensive research competencies, in addition to those specified in the generic element of the curriculum, may undertake a research project.

Learning Experiences

This section identifies the types of situations in which a trainee will learn.

Learning from Practice - Trainees will spend a large proportion of work-based experiential learning involved in supervised clinical practice in hospital settings. Learning will involve closely supervised clinical practice until competences are achieved. The learning environment will be in renal wards, haemodialysis units, A/E and critical care environments and outpatient clinics. Opportunities for informal and formal feedback on performance should occur during and at the end of clinical sessions as part of a structured appraisal process defined in the accompanying portfolio.

Work based experiential learning.

Learning with Peers - There are many opportunities for trainees to learn with their peers.

Local postgraduate teaching opportunities allow trainees of varied levels of experience to come together for small group learning. Examination preparation encourages the formation of self-help groups and learning sets.

Learning in Formal Situations - There are many opportunities throughout the year for formal teaching in the local postgraduate teaching sessions and at regional, national and international meetings.

Personal Study - Time will be provided during training for personal study. It may be possible for longer periods of private study to be offered as part of study leave.

Specific Teacher inputs - Individual units within a teaching programme will identify specific teacher inputs. These will vary from programme to programme.

Recommendations for good practice are identified in the learning portfolio.

Examples are:

Each trainee must have a clinical supervisor for each attachment for work-based experiential teaching.

Specialty teaching in a clinical environment from a recognised specialist Procedural skills teaching delivered by a skilled specialist in both work-based setting and on formal courses

8. Log Book

Practical procedures.

It is important that the training in practical procedures is appropriately supervised. This will require regular interaction between trainee and trainer, who in this instance may not be the educational supervisor. It is possible that a more experienced registrar may be involved in training which may involve professionals, such as radiologists, from other departments. The trainee should record each practical procedure performed in the log book with a comment on outcome including complications. This record can be used in the assessment process.

The logbook can also be used to record any particular cases in which the trainee has been involved.

9. Portfolio of Achievement

This will be the property of the trainee and will compliment the training record. It should include records of audit, case presentations, case reports, abstracts and original articles. It should record courses attended including training days. Trainees may wish to record special experience. The document can be scrutinised for assessment purposes throughout training but in particular at the PYA and final interview.

10. Assessment

The domains of Good Medical Practice will be assessed using an integrated package of workplace-based assessments and examination of knowledge and clinical skills, which will sample across the domains of the curriculum (e.g. knowledge, skills and attitudes). The assessments will be supported by structured feedback for trainees within the training programme of Renal Medicine. Assessment tools will be both formative and summative and will be selected on the basis of their fitness for purpose.

The workplace-based assessment tools will include mini-CEX (mini-Clinical Examination Exercise), DOPS (Direct Observation of Procedural Skills) and MSF (multi-source feedback). There will be a specialty-specific knowledge examination in Renal Medicine.

GHANA COLLEGE OF PHYSICIANS AND SURGEONS CURRICULUM FOR SUB-SPECIALTY TRAINING IN RENAL MEDICINE

ASYMPTOMATIC PROTEINURIA

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with the asymptomatic proteinuria

KNOWLEDGE	SKILLS	ATTITUDES
To define the pathophysiology of proteinuria and to correlate with the causes of	To take a relevant history and to perform a thorough examination	To appreciate the role of primary care in the initial screening for proteinuria and
asymptomatic proteinuria To differentiate between physiological and pathological causes of asymptomatic proteinuria	To undertake the appropriate investigation of asymptomatic proteinuria and as a consequence differentiate between pathological and physiological causes	involvement in future management
To describe the methods of investigation of the patient with asymptomatic proteinuria	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	

ASMPTOMATIC HAEMATIURIA

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with the microscopic haematuria

treatment of patients with the microscopic haematuria		
KNOWLEDGE	SKILLS	ATTITUDES
To define the pathophysiology of haematuria both macroscopic and microscopic	To take a relevant history and perform a thorough examination	To appreciate the role of the urologist
	To demonstrate the cause of microscopic haematuria by laboratory means including use	To appreciate the role of primary care in the initial
To describe the methods of investigation of the patient with	of phase contrast microscopy	screening for microscopic
microscopic haematuria	need urological assessment and	haematuria and
	imaging techniques	involvement in future
	To explain the indications for renal biopsy	management
	To demonstrate the likely outcome of the condition, its prognosis and requirement for long term review	

GLOMERULAR FILTRATION RATE

To provide the trainee with the knowledge to use the different methods of assessing kidney function		
KNOWLEDGE	SKILLS	ATTITUDES
To define what is understood by	To plan and interpret estimates	To recognise the role of
the glomerular filtration rate	of GFR	biochemists
(GFR)		
	To explain the limitations of	
To describe isotopic and non	estimated GFR	
isotopic methods of measuring		
GFR		
To define the strengths and		
limitation of current equations		
for estimating GFR (MDRD,		
CKD EPI, Cockroft-Gault etc)		

${\bf CLINICAL\ EPIDEMIOLOGY, PREVENTION\ AND\ POPULATION\ HEALTH}$

The principles of Evidence-Based Medicine: evaluation and application of findings from the clinical research literature		
KNOWLEDGE	SKILLS	ATTITUDES
Epidemiology of disease in		
populations: outbreaks and		
trends		
Research-based interventions in		
populations with kidney disease		
Clinical trial design and		
implementation		
Basic research methodology,		
including biostatistics		

HYPERTENSION

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with hypertension with particular respect to renal disease		
KNOWLEDGE	SKILLS	ATTITUDES

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

cribe the mechanisms of action and potential side effects of antihypertensive agents with particular reference to renal disease To describe the role of angiotensin blockers in slowing progression of proteinuric and

non proteinuric renal disease

To take a relevant history and perform a thorough examination to diagnose 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 recognise its limitations

To manage anti-hypertensive drug therapy

To recognise the role of primary care in the management of hypertension

To recognise the role of patient education in the management of hypertension

URINARY TRACT INFECTION

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with urinary tract infection

KNOWLEDGE	SKILLS	ATTITUDES

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

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with urinary tract obstruction To provide the trainee with the necessary skill to work closely with urologists, radiologists and paediatricians in the medical management of urinary tract obstruction and neurogenic bladder KNOWLEDGE SKILLS ATTITUDES To describe the anatomy of the To take a relevant history and To recognise the role of urinary tract and the sites and perform an appropriate urologists, radiologists, causes of urinary obstruction examination of the patient with paediatricians, microbiologists possible urinary tract and primary care. To describe the acute obstruction presentation and long term To recognise the role of consequences of urinary tract To manage the patient with specialist nurses and community appropriate investigation and obstruction, its investigation and nurses management treatment including the involvement of radiologists and To define the fluid and urologist electrolyte disturbances occurring after the relief of To explain the measures to obstruction and their be taken in patients with management urinary tract obstruction To define the role of prostatic cancer in obstructive uropathy and bladder dysfunction To describe the type of (including neurogenic reconstructive procedures undertaken in children and bladder) to avoid infection adults and the relevance to and prevent progressive future management including transplantation

renal damage

term review

To recognise the need for long

RENAL STONE DISEASE

Provide the trainee with the skills to assess and investigate the patient with renal stone disease (with cross reference to urinary tract obstruction)

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

NEPHROTIC SYNDROME

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with the nephrotic syndrome

KNOWLEDGE	SKILLS	ATTITUDES
To define the pathophysiology of the nephrotic syndrome and	To take a relevant history, including family history, and	To discuss familial disorders
its causes and relationship to tropical and to systemic diseases	perform an appropriate examination	To recognise the role of nurses and dietitians in the long term management
To describe how to investigate the nephrotic syndrome to establish its severity and likely cause	To use the appropriate investigations including renal biopsy	
To describe management of the nephrotic syndrome, including the indications for ACE inhibitors,	To manage the patient with nephrotic syndrome and demonstrate the indications for different methods of treatment	
lipid lowering agents and anti- coagulants; and specific use of corticosteroids and other immunosuppressive agents	To manage long term review	

HIV INFECTION

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with HIV associated renal disease

treatment of patients with HIV associated renal disease		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the types of renal disease developing in patients with HIV infection To list the histological classification of HIV associated nephropathy and its clinical consequences To describe the nephrotoxicity of drugs used to treat HIV infection To describe the different treatment options for HIV associated nephropathy	To take a relevant history and perform an appropriate examination to diagnose and assess renal disease in the patient with HIV infection To plan and interpret the investigations of such a patient To interpret renal histological findings for the diagnosis and management of HIV associated nephropathy To manage acute renal failure in a patient with HIV infection To undertake long term management of the patient with HIV	To discuss the relevant treatment options and the results in the context of clinical studies To discuss the problems with renal transplantation To appreciate the multidisciplinary approach to investigation and treatment

HEPATITIS B INFECTION

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with hepatitis B associated renal disease

treatment of patients with hepatitis B associated renal disease		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the types of renal	To take a relevant history and	To discuss the relevant
disease developing in patients	perform an appropriate	treatment options and the results
with hepatitis B infection	examination to diagnose and	in the context of clinical studies
	assess renal disease in the	
To list the histological	patient with hepatitis B infection	To discuss the problems with
classification of hepatitis B		renal transplantation
associated nephropathy and its	To plan and interpret the	
clinical consequences	investigations of such a patient	To appreciate the
		multidisciplinary approach to
	To interpret renal histological	investigation and treatment
To describe the different	findings for the diagnosis and	
traatment entions for	management of hepatitis	
treatment options for	associated nephropathy	
hepatitis B associated		
	To undertake long term	
nephropathy	management of the patient with	
	hepatitis associated renal disease	
	inepatris associated renar disease	

SCHISTOSOMA INFECTION

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with schistosoma associated renal disease

KNOWLEDGE	SKILLS	ATTITUDES
To describe the types of renal disease developing in patients with schistosoma mansoni and Schistosoma haematobium infection To list the urological consequences of Schistosoma haematobium infection To list the histological classification of schistosomal associated nephropathy and its	To take a relevant history and perform an appropriate examination to diagnose and assess renal disease in the patient with schistosomal infection To plan and interpret the investigations of such a patient To interpret urological findings for the diagnosis and management of schistosomal	To discuss the relevant treatment options and the results in the context of clinical studies To discuss the problems with renal transplantation To appreciate the multidisciplinary approach to investigation and treatment
associated nephropathy and its clinical consequences To describe the different treatment options for Schistosomal associated nephropathy	management of schistosomal associated urological disease To undertake long term management of the patient with schistosomal associated renal disease	

ACUTE KIDNEY INJURY

To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with acute kidney injury		
KNOWLEDGE	SKILLS	ATTITUDES
treatment of patients with acute ki KNOWLEDGE To list the causes of acute renal failure in the tropics To describe the role of malaria, G6PD deficiency, snake bite and typhoid in the development of acute renal failure To describe the RIFLE criteria for the classification of acute kidney injury To describe the methods to correct fluid and biochemical	SKILLS To take an accurate clinical history in the assessment of acute renal failure including drug history, surgical history, family, social and environmental history To perform a reliable and accurate clinical examination of the patient To interpret the appropriate use of the following investigations	_
abnormatilites and strategies to treat reversible causes of acute renal failure	Biochemistry Haematology Microbiology Ultrasound scanning Immunology Renal biopsy To instigate conservative management of acute kidney injury To instigate correct management (including renal rerplacement therapy) and measures to treat the underlying cause	

CHRONIC KIDNEY DISEASE CLASSIFICATION

To provide the trainee with skills and knowledge to classify chronic kidney disease		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the KDOQI criteria	To utilise the KDOQI criteria to	To explain to individuals with
for classifying chronic kidney	screen for patients with chronic	chronic kidney disease the
disease	kidney disease	implications of their condition
		and methods to slow progression
To understand the limitations of		
the KDOQI criteria for chronic		
kidney disease		
To describe the importance of		
proteinuria(albuminuria) in the		
progression of chronic kidney		
disease		

CHRONIC KIDNEY DISEASE PROGRESSION

To provide the trainee with skills and knowledge to slow down progression of chronic kidney disease		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the role of angiotensin converting enzyme inhibitors, angiotensin receptor blockade and rennin inhibitors in slowing progression of chronic kidney disease To contrast the effect of angiotensin blockers with other anti hypertensive agents in chronic kidney disease To describe the effects of angiotensin blockers in proteinuric and non-proteinuric renal disease	To use anti hypertensive drugs appropriately in patients with chronic kidney disease	To explain to individuals with chronic kidney disease the implications of their condition and methods to slow progression
<u> </u>		

CHRONIC KIDNEY DISEASE CLINICAL

To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with chronic kidney disease.		
KNOWLEDGE	SKILLS	ATTITUDES
To list the causes of chronic kidney disease 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 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	To appreciate the role of the multi-professional team in the management of chronic kidney disease

RENAL DISORDERS IN PREGNANCY

To provide trainees with the skills and knowledge to be able to carry out specialist assessment of patients who develop renal disorders during pregnancy. To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with renal disorders who become pregnant

KNOWLEDGE	SKILLS	ATTITUDES
To describe how pregnancy may	To manage hypertension in	To recognise the role of
affect renal function in normal	pregnancy and the safe use of	obstetricians and midwives in
patients and in those with pre-	anti-hypertensive drugs	the management of patients both
existing renal disease including		preconception, during
those on renal replacement	To manage the renal	pregnancy and postpartum and
therapy	consequences of pre-eclampsia	work
	and acute renal failure in	closely with obstetricians and
To list the adverse effects of	pregnancy and the pueperium	and intensivists in the
drug treatment on both patient	To manage the renal	management of acute renal failure in pregnancy and the
and fetus	consequences of the HELLP	puerperium
and retus	syndrome in pregnancy and the	puerperium
	pueperium	
	F	
	To manage acute kidney injury	
	developing in patients during	
	pregnancy and the puerperium	
	To demonstrate how to prepare	
	the patient with a pre-existing	
	renal disorder (including renal	
	transplant) for pregnancy with	
	particular emphasis on	
	minimising the risk to patient and fetus	
	and ictus	

DIABETIC NEPHROPATHY

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with diabetic nephropathy

To provide trainees with skills and knowledge prevent the development of diabetic nephropathy and delay progressive renal impairment

	T	
KNOWLEDGE	SKILLS	ATTITUDES
To define the pathophysiology	To take a relevant history and	To involve patients and carers
of diabetic nephropathy, its	perform an appropriate	together with dietitians and
predisposing factors and	examination to diagnose and	specialist nurses in the long term
screening methods	assess the patient who may have	care
	diabetic nephropathy	
		To discuss the role of smoking
To describe the importance of	To diagnose non-diabetic renal	in the development of vascular
 hypertension 	disease in the diabetic patient	disease in the diabetic patient
glycaemic control		
hyperlipidaemia	To implement and monitor	To work closely with
ACE inhibitor and A11	treatment of hypertension,	diabetologists to draw up
receptor antagonist	hyperlipidaemia and use of ACE	protocols for referral and
therapy	inhibitors and AII receptor	management of diabetics with
in slowing progression of	antagonists	renal disease
diabetic renal disease		
	To plan the long term	
	management of the patient with	
	diabetic nephropathy who	
	requires renal replacement	
	therapy	

RENAL ANAEMIA

To provide the trainee with skills and knowledge to be able to supervise and manage patients with chronic renal failure who develop anaemia

KNOWLEDGE	SKILLS	ATTITUDES
To describe the pathophysiology of renal anaemia and the haematological and biochemical methods to diagnose, assess and	To diagnose and treat renal anaemia, to monitor the effects of treatment and manage failure of treatment	To ensure that all patients pre- dialysis and on dialysis who will benefit from erythropoietin receive therapy
monitor treatment in renal anaemia To define the indications for and the use of human recombinant erythropoietin and its	To prescribe and monitor iron replacement therapy To audit the use of erythropoietin and iron therapy	To appreciate role of nurses in the initial counselling of patients, initiation and the long term management of renal anaemia
To define the indications for and use of oral and parenteral iron therapy and its complications		To involve management and purchasers in the development of protocols for the use of erythropoietin
To list the causes erythropoietin resistance and its investigation		

RENAL BONE DISEASE

To provide the trainee with skills and knowledge to be able to supervise and manage patients chronic renal failure at risk of developing renal bone disease

KNOWLEDGE	SKILLS	ATTITUDES
KNOWLEDGE To describe the pathophysiology of renal bone disease and to contrast the differences between osteomalacia, hyperparathyoid associated disease, adynamic bone disease To describe the use of biochemical tests, imaging techniques and histological methods in the diagnosis and management of renal bone disease	SKILLS 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, haemodialysis and with a renal transplant To decide which patients need parathyroidectomy and how to manage them	ATTITUDES To appreciate the role of dietitians and dialysis staff in the prevention and management of renal bone disease with education and involvement of the patients To appreciate the multidisciplinary nature of management of renal bone disease
To describe the indications for and the use of phosphate binders, vitamin D preparations calcimimetics and parathyroidectomy and means to monitor treatment and adverse effects		

ACUTE RENAL REPLACEMENT THERAPY

To provide the trainee with skills and knowledge to be able to supervise and manage patients acute renal replacement therapy

Tenar repracement therapy		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the principles of	To assess the suitability of a	To appreciate role of nurses in
haemodialysis, peritoneal	patient for haemodialysis,	the management of acute renal
dialysis and haemofiltration and	peritoneal dialysis or	replacement therapy
indications for their use	haemofiltration	
To compare and contrast each method To describe the methods of	To adjust the prescription of haemodialysis, peritoneal dialysis or haemofiltration	To appreciate the role of anaesthetists and intensivists in the management of patients with multisystem disease of multiorgan failure requiring
creating vascular access for acute renal replacement therapy	To manage drug prescribing	acute renal replacement therapy
	To manage nutrition	
	To manage the patient with multiorgan failure or systemic disease requiring acute renal replacement therapy	

PERITONEAL DIALYSIS GENERAL PRINCIPLES

To provide the trainee with skills and knowledge to be able to supervise and manage patients on chronic peritoneal dialysis

KNOWLEDGE	SKILLS	ATTITUDES
To describe the principles of peritoneal dialysis	To assess the suitability of a patient for peritoneal dialysis in	To discuss the relevant
	the context of other methods of	treatment options and the
To describe the different methods of insertion of	renal replacement therapy	comparisons of
peritoneal dialysis catheters and their advantages and	To adjust the prescription of peritoneal dialysis and monitor	haemodialysis, chronic
disadvantages	change	ambulatory peritoneal
To describe the methods to assess adequacy of peritoneal	To manage the nutrition of peritoneal dialysis patients	dialysis and automated
dialysis		peritoneal dialysis in a
	To appreciate the cost implications of different	manner that will allow
	catheters, fluids and systems in peritoneal dialysis	clear understanding of
		choice
		To discuss the implications of failure of peritoneal dialysis and the complementary nature of renal replacement therapy
		Appreciate role of nurses in the initial counselling of patients, initiation and the long term management of peritoneal dialysis

PERITONEAL DIALYSIS COMPLICATIONS

To provide the trainee with skills and knowledge to be able to identify and manage the complications of chronic peritoneal dialysis

KNOWLEDGE	SKILLS	ATTITUDES
To describe the diagnosis and	To adjust the prescription of	To appreciate the
management of peritoneal	peritoneal dialysis and monitor	
dialysis peritonitis including non	change following complications	multidisciplinary approach
– bacterial infections		to the management of
To describe the diagnosis and	To manage the treatment of	to the management of
To describe the diagnosis and management of catheter and exit	peritoneal dialysis peritonitis and its complications; and	complications of peritoneal
site associated infection	catheter associated problems	dialysis
	1	dialysis
To describe the diagnosis of	To manage peritoneal dialysis	
mechanical problems associated	failure	
with peritoneal dialysis		
(including herniae, leaks, catheter malfunction)		
To describe the methods to		
assess failure to ultrafiltrate and		
adequacy of dialysis		

HAEMODIALYSIS GENERAL PRINCIPLES

To provide the trainee with skills and knowledge to be able to supervise and manage patients on chronic haemodialysis

haemodialysis		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the principles of haemodialysis and compare and contrast haemodialysis with other treatment modalities	To assess the suitability of a patient for haemodialysis and to plan (when possible) the initiation of haemodialysis	To develop a framework to discuss problems with haemodialysis including the withdrawal of dialysis
To describe the methods of creating vascular access for haemodialysis To define the methods to assess	To prepare the patient both physically and psychologically for haemodialysis To anticipate and overcome	To appreciate role of nurses in the initial counselling of patients, initiation and the long term management of haemodialysis
adequacy of haemodialysis	difficulties with vascular access To adjust the prescription of haemodialysis and monitor change	To appreciate the multidisciplinary nature of management of haemodialysis

HAEMODIALYSIS CLINICAL MANAGEMENT

To provide the trainee with skills and knowledge to be able to undertake the planning of haemodialysis,		
its prescription and measurement of		A MINISTER VID VID
KNOWLEDGE	SKILLS	ATTITUDES
To describe the means to deliver	To adjust the prescription	To appreciate role of nurses and
purified water, the necessary	-£ 11:-1:1	other health care professionals
standards and methods of	of haemodialysis and	in the day to day management of
assessing these	monitor change	haemodialysis and changes in prescription
To describe different dialysis		
membranes and dialysate fluids		To work closely with
To describe the theory of	To advise on	management and purchasers to ensure cost effective treatment
sodium profiling and ultrafiltration	ultrafiltration, sodium	
	profiling and use of	
To define the methods to assess adequacy of haemodialysis	different dialysate	
	solutions	
	To assess the suitability of different methods of vascular access	
	To organise the day to day management of a dialysis unit	

HAEMODIALYSIS COMPLICATIONS

To provide the trainee with skills and knowledge to be able to manage the complications of		
haemodialysis		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the complications of	To identify and manage the	To appreciate role of nurses and
arterio-venous fistulae and	complications of vascular access	other health care professionals
artificial grafts including	involving, when necessary,	in the day to day management of
thrombosis, haemorrhage,	surgeons and radiologists	haemodialysis and its
infection, stenoses and poor		complications
flow	To manage dialysis related	
	sepsis and develop protocols	To appreciate the
To define the methods of	with microbiologists	multidisciplinary nature of
dealing with dialysis line sepsis,		management of haemodialysis
poor flow and line blockage	To develop protocols to deal	complications with development
	with acute dialysis emergencies	of close working relationships
To describe the management of		with surgeons and radiologists
hard water syndrome, air		in the management of vascular
embolism and EtOH reactions.		access complications
To define the principles behind		
To define the principles behind the causation and management		
of intradialytic hypotension		
of intradiarytic hypotension		
To describe the pathophysiology		
and management of dialysis		
associated amyloid		
associated unity fold		

RENAL TRANSPLANTATION PRETRANSPLANT

KNOWLEDGE	SKILLS	ATTITUDES
To describe the principles of renal transplantation, its medical and surgical, social and ethical contraindications To compare and contrast renal transplantation with other treatment modalities To describe the recommendations for live related 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 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

To provide the trainee with skills and knowledge to manage patients in the early stages of renal transplantation		
KNOWLEDGE	SKILLS	ATTITUDES
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

knowledge to be able to supervise and manage patients on renal replacement therapy who have had a renal transplant		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the medical and surgical problems which occur in the first three months following renal transplantation	To assess renal transplant function, to investigate deteriorating renal function and adjust immunosuppressive	To encourage patients, relatives and carers to participate the in joint care
To define the mode of action of immunosuppressive agents and their adverse effects	therapy accordingly To interpret investigations to identify non-immunological	To appreciate role of nurses in the care of patients with a renal transplant
To describe strategies in the acute and chronic phases of renal transplantation which will influence long term graft function	To manage the medical complications of a failing renal transplant	To appreciate the multidisciplinary nature of management of renal transplantation
To describe the strategies to prevent the development of cardiovascular disease	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 and discuss future management on renal replacement therapy	

ETHICAL ISSUES IN MANAGEMENT OF PATIENTS WITH ESRD

To provide the trainee with skills and knowledge to counsel patients to select the appropriate treatment		
for end stage renal failure.		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the facilities available for the treatment of chronic kidney disease	Advocacy for cost effective care of patients with kidney disease Public education focused on	To discuss the relevant treatment options with the patient and their relatives
To know the costs of treatment for chronic kidney disease	prevention of kidney disease	

RENAL BIOPSY

To provide the trainee with the necessary skills and training to be proficient at performing native renal		
biopsy		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the anatomy of both	To perform renal biopsy on	To appreciate the role of
native and transplant kidneys	native kidneys	radiologist or radiographer (if appropriate)
To define the indications for	To use ultrasound to localize	
renal biopsy of native and transplant kidneys	kidneys and use ultrasound guidance to assist in renal biopsies	To have appropriate self- confidence and recognition of limitations
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 interpret renal biopsy with the assistance of a renal histopathologist	
	To manage the complications of renal biopsy	

ULTRASOUND SCANNING

The trainee will be proficient at carrying out and interpreting ultrasound scanning of renal and			
transplant kidneys to facilitate ren	transplant kidneys to facilitate renal biopsy		
The trainee will be able to use ultr	asound techniques to identify anato	my and patency of central veins to	
facilitate central venous catheter p	lacement		
KNOWLEDGE	SKILLS	ATTITUDES	
To describe the anatomy of both	To use ultrasound to localize	To appreciate the role of	
native and transplant kidneys	native and transplant kidneys for	radiologist or radiographer (if	
	the purpose of renal biopsy	appropriate)	
To describe the anatomy of the			
central veins	To use ultrasound guidance for	Have appropriate self-	
	biopsies (where appropriate)	confidence and recognition of	
		limitations	
	To localise central veins and		
	assess their suitability for		
	percutaneous venous access		
	r		

INSERTION OF TEMPORARY HAEMODIALYSIS CATHETERS

The trainee will be proficient at carrying out the insertion of temporary haemodialysis catheters		
KNOWLEDGE	SKILLS	ATTITUDES
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 haemodialysis catheters, the complications and means to minimize these	To perform insertion of temporary haemodialysis catheters using the Seldinger technique using both internal jugular and femoral veins To use ultrasound guidance (where appropriate) for localising and cannulation of jugular and femoral veins	To appreciate role of nurses to manage a catheter after its insertion and to ensure education of patients and carers To demonstrate self-confidence and recognition of limitations
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 explain the use of the catheter and its management to the patient, relatives and carers	

INSERTION OF PERMANENT HAEMODIALYSIS CATHETERS

The trainee will be proficient at carrying out the insertion of permanent dialysis catheters (permacaths and/or tesio lines)		
,	SKILLS	ATTITUDES
To describe the anatomy of the central venous system in the upper thorax and neck To define the indications for insertion of permanent haemodialysis catheters, the complications and means to minimize these To describe the treatment of catheter sepsis and blocked catheters	To perform insertion of permanent haemodialysis catheters using the Seldinger technique and subcutaneous tunnelling To use ultrasound guidance for localising and cannulation of jugular and femoral veins 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 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 education of patients and carers in its use To demonstrate appropriate self-confidence and recognition of limitations

INSERTION OF PERITONEAL DIALYSIS CATHETERS

The trainee will understand the different methods of inserting peritoneal dialysis catheters			
The trainee will be proficient at carrying out the insertion of peritoneal dialysis catheters by the percutaneous method			
KNOWLEDGE SKILLS ATTITUDES			

To describe the anatomy of the anterior abdominal wall, abdominal cavity and peritoneum, the different types of catheters and their use

To define the indications for insertion of peritoneal dialysis catheters

To describe the different medical and surgical techniques for insertion of peritoneal dialysis catheters; their complications and means to minimize these

To define the management of catheter sepsis, of blocked catheters and of poorly functioning catheters To assess a patient's suitability for insertion of a peritoneal dialysis catheter by different techniques

To select a patient as suitable for insertion of a peritoneal dialysis catheter by medical means

To perform insertion of peritoneal dialysis catheters using the percutaneous approach

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 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

To demonstrate appropriate selfconfidence and recognition of limitations

DRUG PRESCRIBING IN RENAL DISEASE

To provide the trainee with the knowledge to prescribe to patients with acute and chronic renal impairment including those on renal replacement therapy To provide the trainee with the knowledge to prescribe to patients with renal transplants KNOWLEDGE SKILLS ATTITUDES To define the principles of To prescribe safely and To inform other health care pharmacokinetics and the professionals of the implications efficiently to patients with renal handling of drugs in the disease of prescribing in renal disease presence of renal impairment To educate patients with renal To appreciate role of To list the effect of disease on the importance of pharmacists and other health haemodialysis, haemofiltration, compliance and reporting of care professionals in safe problems haemodiafiltration and prescribing peritoneal dialysis upon drug prescribing To devise methods to reduce complications of prescribing in To describe the principles of patients with renal disease drug interactions with particular reference to immunosuppressive To devise methods to improve compliance drugs To define how drugs may affect renal function

POPULATION-BASED COMPETENCIES

Source and interpret the best available epidemiological evidence to guide the management of a patient			
presenting with kidney disease			
KNOWLEDGE	SKILLS	ATTITUDES	
To define the principles of	Promote the support by health	To inform health care authorities	
designing a research protocol to	systems of programs for treating	of the implications of kidney	
ascertain the burden of kidney	patients with renal disease, and	disease	
disease in a national or regional	contribute to the cost-effective	To understand the budgetary	
population	implementation of such	issues in developing kidney	
To describe the principles of	programs	services	
developing a strategy for the			
prevention of kidney disease in	Participate in the management		
a defined patient population	of health services so as to		
	achieve optimal allocation of		
	resources for the care of patients		
	with kidney disease		

END OF LIFE CARE

To identify patients with chronic kidney disease who require end of life palliative care and to supervise and manage their care as part of a multi-disciplinary team		
KNOWLEDGE	SKILLS	ATTITUDES

Knowledge of the symptoms of Assess patients who require To discuss the relevant end of life management and chronic kidney disease treatment options with the Knowledge of the principles of palliative care patient and their relatives Provide appropriate pain relief and use of counselling to patients and analgesia in end stage kidney carers concerning disease Knowledge of factors affecting conservative (Nondialysis, survival in patients with end non-transplant) management stage kidney disease of end stage kidney disease Knowledge of the principles of Manage the symptoms of end bereavement management stage kidney disease Knowledge of ethical and legal Discuss the withdrawal of issues relating to end of life dialysis with patients, carers and other health care Knowledge of integrated care professionals pathways for dying patients Appropriate and timely referral Knowledge of the complex to palliative care services needs of patients and families when facing death

INTERSTITIAL NEPHRITIS

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with interstitial nephritis and tubulo-interstitial disease

KNOWLEDGE	SKILLS	ATTITUDES
To define the pathophysiology	To take a relevant history,	To discuss the relevant
of interstitial nephritis and	including drug history and	
tubulo-interstitial disease, its	exposure to other substances,	treatment options and the
causes and relationship to other systemic conditions	and perform an appropriate examination	results in the context of
To describe the methods	To plan investigations, including	clinical studies and to
investigations and management of the condition	renal biopsy	involve other specialists if
	To decide on the treatment and appropriate use of	indicated
	corticosteroids	

ADULT POLYCYSTIC KIDNEY DISEASE

To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with adult polycystic disease

To provide the trainee with the skills and knowledge to assess family members of patients with adult polycystic disease

porjegatie disease		
KNOWLEDGE	SKILLS	ATTITUDES
To define the pathophysiology	To take an accurate clinical	To appreciate the stress and
of adult polycystic kidney	history, including family history,	concerns of patients and
disease including its extrarenal	in the assessment of adult	relatives in the assessment of a
manifestations	polycystic kidney disease	family member with adult
		polycystic kidney disease and
To describe the mode of	To perform a reliable and	the importance of genetic
inheritance and genetic defects	accurate clinical examination of	counselling.
and methods of screening	the patient	
To describe the long term	To interpret screening tests and	
management including	appreciate their limitations	
preservation of renal function		
and use of renal replacement	To plan the long term	
therapy	management of a patient with	
	polycystic kidney disease	

OTHER RENAL CONDITIONS

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with less common renal disease

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with multisystem disease which effects the kidney

deathent of patients with indusystem disease which effects the kidney		
KNOWLEDGE	SKILLS	ATTITUDES
To describe the pathogenesis of	To take a relevant history and	To appreciate the
renal disease in amyloidosis,	perform an appropriate	multidisciplinary approach to
scleroderma, vasculitis(as	examination to diagnose and	investigation and treatment of
examples)	assess the patient who may have	these diseases
	multisystem disease effecting	
	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	

SYSTEMIC LUPUS ERYTHEMATOSUS

To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with systemic lupus erythematosus

KNOWLEDGE

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

SKILLS

To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have systemic lupus erythematosus

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 plasmapharesis

To undertake long term management of the patient with SLE

ATTITUDES

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