

HIGHER MEDICAL TRAINING

CURRICULUM

FOR

RENAL MEDICINE

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INTRODUCTION

Entry Requirements

Applicants for Higher Medical Training (HMT) should have completed a minimum of two years General Professional Training (GPT) in approved posts and obtained the MRCP (UK) or (I). A period of experience in nephrology at SHO grade is considered desirable, although not essential, before entry to HMT.

GPT is defined as follows:

- a minimum of 2 years in approved posts with direct involvement in patient care and offering a wide range of experience in a variety of specialties
- 18 months of the 2 years must be spent in posts providing experience in the admission and early follow-up of acute emergencies
- at least 6 of these 18 months must be spent on a service or services on which the emergency take is 'unselected'
- 'unselected take' is defined as acute medical intake encompassing the broad generality of medicine i.e. not restricted to any single or small group of specialties. If any major component of acute medicine (e.g. cerebrovascular accidents, myocardial infarctions) is excluded from the take, this experience must be obtained in other posts. During the period on 'unselected take' trainees should have an on-call commitment which averages no less than 4 takes per month

Non-UK graduates without the MRCP who compete for HMT posts must provide evidence of appropriate knowledge, training and experience, particularly in the care of acute medical conditions.

Duration and Organisation of Training

The minimum duration of HMT in Renal Medicine is four years. Three years of the training must be in clinical practice in Renal Medicine in JCHMT approved posts. The other year may be in Renal Medicine, General (Internal) Medicine, a related specialty or research, depending on future aspirations. This year may be taken at any stage of, or may be spaced out over, the period of Higher Medical Training.

Those who wish to obtain additional certification in General (Internal) Medicine, (GIM), require a minimum of 5 clinical years in training, to include the 3 years in clinical posts in Renal Medicine and 2 years G(I)M (see the GIM curriculum document for details). Research will not count towards the 5 years needed for dual certification. However a regular, and appropriate clinical commitment during research may count towards a maximum of six months of clinical trainee. The programme to which the trainee is appointed will have a named Programme Director who will be responsible for the development of a co-ordinated and complete training programme. The SAC in Renal Medicine will be responsible for deciding which part of each trainee's experience will count towards a CCST for this specialty alone and jointly with the SAC in GIM when CCSTs in both specialties are sought.

Flexible training

Trainees who are unable to work full-time are entitled to opt for flexible training programmes. EC Directive 93/16/EEC requires that:

- i 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;
- ii 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.

For details of appointment and funding arrangements for flexible trainees, please see the revised 'Guide to Specialist Registrar Training' (February 1998).

Research

A period of supervised research of high quality is considered a desirable part of HMT in Renal Medicine. A relevant research period may contribute up to 12 months towards the total duration of HMT, the balance to be devoted to clinical training. Trainees may wish to spend two or three years in research, either before obtaining an HMT post or by stepping aside from clinical training for a year or more while in post. It will remain essential to acquire the full balance of three years of clinical training. If while doing research a trainee also regularly takes part in clinical work this latter activity may count pro rata (to a maximum of six months) towards the 3 clinical years required for renal medicine. This will be solely at the discretion of the SAC in Renal Medicine. For those trainees who wish to have dual accreditation with GIM, five clinical years are essential. Research experience, though desirable, cannot be counted towards this requirement. Trainees are advised to read the GIM curriculum document.

Non-UK experience

Approval of training outside the United Kingdom and Ireland will only be considered if evidence of the nature of training has been submitted in advance to the SAC. This will normally require a written statement from the department concerned and written support from the trainee's own Programme Director. Overseas training may be clinical or in research; if the latter, only one year can be counted towards higher training.

A Specialist Registrar will be awarded a National Training Number by a Deanery. This will allow a Specialist Registrar to enter a training programme based on that region (Deanery). The training programme will be organised by a training committee which will oversee training of individual Specialist Registrars. The STC and Regional Specialty Adviser will submit details of each post and the programme as a whole to the SAC in Renal Medicine who will approve the training content. Regular visits will be undertaken by the SAC to assess the content and delivery of training following which recommendations may be made to the Deanery.

Summary of Training Centre requirements

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

- a) At least three consultants, each practising renal medicine for at least five sessions a week

- b) Facilities for treatment of acute renal failure by haemodialysis and continuous haemofiltration or allied continuous technique and offering experience of the management of patients with multi-organ failure in Intensive Care Units
- c) Provision of renal replacement therapy including haemodialysis and CAPD. If the Centre does not offer renal transplantation, arrangements must be made for the trainee to be seconded to a Transplant Unit. Trainees will complete a minimum six month requirement for transplant training. A minimum of three months must be spent in the care of patients in the peri-operative period (acute transplantation) and the remaining three months can be spent in a unit undertaking long term transplant care.
- 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, CT scan, MRI scan, angiography, radionuclide investigation and renal biopsy
- g) Full laboratory service for diagnosis and management of renal patients including medical biochemistry, haematology, microbiology and histology
- h) Regular meetings with radiology, pathology and urology departments
- i) Regular audit. Provision of multidisciplinary clinical meetings
- j) Full library facilities

The balance of the training in clinical Renal Medicine may be in units where these facilities may not all be available. However such a centre must have a minimum of two consultants each practising at least five sessions in renal medicine per week.

The trainee must acquire expertise and experience in all aspects of Renal Medicine with special experience in renal replacement therapy including haemodialysis, continuous ambulatory peritoneal dialysis and renal transplantation. The trainee must also become competent in the investigation and management of acute renal failure. They must become competent in practical procedures, some of which will be essential (renal biopsy and temporary vascular access for dialysis) and others which will be non-essential (placement of peritoneal dialysis catheters and permanent tunnelled lines for haemodialysis).

The content and learning objectives of the curriculum is set out in the attached papers.

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 (RITA) and also at the Penultimate Year Assessment when a member of the SAC will also be present 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 SAC, for a CCST in Renal Medicine.

In addition the progress of a specialist registrar 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.

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 final assessment of competence will involve a trainer other than the educational supervisor perhaps from another hospital from within the training scheme or even from another region. 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. Experience in particular areas (plasmapheresis, haemofiltration, SLE etc) relevant to the curriculum can be recorded.

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.

ASSESSMENT AND LEARNING METHODS

1. Multiple choice questions
2. Objective commentary on 'Grey cases'
3. Self directed learning (journals, textbook and internet)
4. Knowledge of current literature including clinical trials (evidence based practice)
5. Observation by a consultant trainer (possibly other than immediate trainer and supervisor)
6. Anonymised records of patients cared for by trainee
7. Discussion by educational supervisor with surgical and non-medical trained staff
8. Observation of practical and technical skills by a consultant (other than immediate trainer or educational supervisor)
9. Log book (to include procedures)

The SAC has not made a final decision about the use of MCQs nor the method to utilise 'Grey Cases'.

In addition to the **training record and formal documentation of assessment and appraisal**, each trainee will produce a **Portfolio of Achievements** (to include courses attended, audit, case presentations, research) which will be used in the assessment process.

In addition to the **annual review of assessment (RITA)**, the SAC envisage that the **Penultimate Year Assessment** undertaken by a SAC member plus a local RITA panel and **Final Exit Assessment** (equivalent of Form G) by a RITA panel (to include assessors from another region) will include very careful review of the data presented. This will enable the PYA panel to identify any areas of concern or deficiency to be dealt with before the exit interview.

ASYMPTOMATIC PROTEINURIA			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with the asymptomatic proteinuria	<p>To define the pathophysiology of proteinuria and to correlate with the causes of asymptomatic proteinuria</p> <p>To differentiate between physiological and pathological causes of asymptomatic proteinuria</p> <p>To describe the methods of investigation of the patient with asymptomatic proteinuria</p> <p>1,2,3,4</p>	<p>To take a relevant history and to perform a thorough examination</p> <p>To undertake the appropriate investigation of asymptomatic proteinuria and as a consequence differentiate between pathological and physiological causes</p> <p>To explain the indications for renal biopsy</p> <p>To demonstrate the likely outcome of the condition, its long term prognosis and requirement for long term review</p> <p>4,5,6,7</p>	<p>To appreciate the role of primary care in the initial screening for proteinuria and involvement in future management</p> <p>5,6,7</p>

MICROSCOPIC HAEMATURIA			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with the microscopic haematuria	<p>To define the pathophysiology of haematuria both macroscopic and microscopic</p> <p>To describe the methods of investigation of the patient with microscopic haematuria</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform a thorough examination</p> <p>To demonstrate the cause of microscopic haematuria by laboratory means including use of phase contrast microscopy</p> <p>To recognise which patients need urological assessment and imaging techniques</p> <p>To explain the indications for renal biopsy</p> <p>To demonstrate the likely outcome of the condition, its prognosis and requirement for long term review</p> <p>4,5,6,7</p>	<p>To appreciate the role of the urologist</p> <p>To appreciate the role of primary care in the initial screening for microscopic haematuria and involvement in future management</p> <p>5,6,7</p>

HYPERTENSION

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
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	<p>To define what is understood by hypertension</p> <p>To describe the possible mechanisms causing primary (essential) hypertension</p> <p>To list the causes of secondary hypertension, the methods of investigation and treatment and their limitations</p> <p>To list the British Hypertension Guidelines for the treatment of hypertension and their particular relevance to renal disease and diabetes mellitus</p> <p>To describe the mechanisms of action and potential side effects of anti-hypertensive agents with particular reference to renal disease</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform a thorough examination to diagnose and assess the patient who may have hypertension</p> <p>To assess the likelihood of a secondary cause and to manage the investigation of such a patient</p> <p>To demonstrate which patient, with secondary hypertension, is suitable for definitive treatment and to recognise its limitations</p> <p>To manage anti-hypertensive drug therapy</p> <p>4,5,6,7</p>	<p>To recognise the role of primary care in the management of hypertension</p> <p>6,7</p>

URINARY TRACT INFECTION

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with urinary tract infection</p>	<p>To describe the acute presentation and long term consequences of urinary tract infection</p> <p>To list the bacteriological causes of urinary tract infection</p> <p>To define underlying anatomical causes of urinary tract infection and the familial nature of some abnormalities</p> <p>To demonstrate the management of recurrent urinary tract infection including methods of investigation</p> <p>To define the mechanisms of action of antimicrobials and their limitations and adverse effects</p> <p>To describe the type of reconstructive procedures undertaken in children and the relevance to future management including transplantation</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination</p> <p>To recognise which patients require investigation and the extent</p> <p>To demonstrate the significance of past history of urinary tract infection and its relevance to the development of chronic renal impairment</p> <p>To define when to prescribe antibiotics</p> <p>4,5,6,7</p>	<p>To discuss familial disorders</p> <p>To recognise the role of microbiologists, urologists and specialist nurses</p> <p>6,7</p>

URINARY TRACT OBSTRUCTION AND NEUROGENIC BLADDER			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with urinary tract obstruction</p> <p>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</p>	<p>To describe the anatomy of the urinary tract and the sites and causes of urinary obstruction</p> <p>To describe the acute presentation and long term consequences of urinary tract obstruction, its investigation and management</p> <p>To define the fluid and electrolyte disturbances occurring after the relief of obstruction and their management</p> <p>To describe the type of reconstructive procedures undertaken in children and adults and the relevance to future management including transplantation</p>	<p>To take a relevant history and perform an appropriate examination of the patient with possible urinary tract obstruction</p> <p>To manage the patient with appropriate investigation and treatment including the involvement of radiologists and urologist</p> <p>To explain the measures to be taken in patients with urinary tract obstruction and bladder dysfunction (including neurogenic bladder) to avoid infection and prevent progressive renal damage</p> <p>To recognise the need for long term review</p>	<p>To recognise the role of urologists, radiologists, paediatricians, microbiologists and primary care.</p> <p>To recognise the role of specialist nurses and community nurses</p> <p>6,7</p>
	1,2,3,4	4,5,6,7	

RENAL STONE DISEASE

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>Provide the trainee with the skills to assess and investigate the patient with renal stone disease (with cross reference to urinary tract obstruction)</p>	<p>To define the causes of renal stones and the circumstances under which they may be manifest with particular reference to their effect on renal function</p> <p>To describe the biochemical investigation and imaging techniques available</p> <p>To define the underlying tubular abnormalities and their genetic basis which predispose to renal stone disease</p> <p>To describe the indications for treatment to prevent the development of renal stones</p> <p>1,2,3,4</p>	<p>To take a history (including family history) and examination of the patient with renal stone disease</p> <p>To manage the appropriate investigation (biochemical and imaging) and treatment of the patient with a renal stone(s)</p> <p>To recognise the limitations of medical treatment to prevent stones.</p> <p>To involve urologists and radiologists when indicated</p> <p>4,5,6,7</p>	<p>To explain the significance of the family history</p> <p>To encourage the use of simple methods to reduce the risk of stone development</p> <p>To recognise the role of the radiologist, biochemist and urologist</p> <p>6,7</p>

DISORDERS OF FLUID AND ELECTROLYTE AND ACID BASE REGULATION			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with disorders of fluid, electrolyte and acid base regulation	<p>To define the pathophysiology of sodium, potassium and hydrogen ion imbalance; calcium, phosphate and bone mineral metabolism; and the pathophysiology of water imbalance</p> <p>To describe the methods used to investigate fluid, electrolyte and acid base regulation; and bone mineral metabolism and calcium metabolism in renal patients</p> <p>To describe the management of fluid, electrolyte and acid base disorders and abnormalities of bone mineral metabolism</p> <p>1,2,3,4</p>	<p>To take an accurate clinical history, including family history, in the assessment of patients</p> <p>To perform reliable and accurate clinical examination of the patient including assessment of fluid balance</p> <p>To interpret biochemical investigations</p> <p>To interpret radiological and histological investigation of bone mineral disorders</p> <p>To manage these disorders in an effectively</p> <p>4,5,6,7</p>	<p>To explain the implications of familial disorders</p> <p>To recognise the role of nurses and dietitians in the long term management</p> <p>6,7</p>

INFECTION IN THE RENAL PATIENT			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to supervise and manage patients with renal disease who develop infection</p> <p>To provide the trainee with skills and knowledge to manage the particular problems of infection in immunocompromised patients</p> <p>To provide the skills and knowledge necessary to prevent and manage viral infection in patients on renal replacement therapy</p>	<p>To define the strategies to prevent blood borne viral infections in patients on renal replacement therapy</p> <p>To describe the Renal Association Guidelines to deal with blood borne viral infections</p> <p>To list the particular infections problems to which immunocompromised are prone</p> <p>To list the particular infections which may occur in patients on dialysis</p> <p>To describe the mode of action, adverse effects and indications for the use of antimicrobial agents in renal patients</p> <p>1,2,3,4</p>	<p>To diagnose, investigate and treat infection in renal patients</p> <p>To develop protocols for the diagnosis, investigation and management of infection in renal patients</p> <p>To manage preventative measures to minimise risk of blood borne viral infection</p> <p>4,5,6,7</p>	<p>To counsel patients about blood borne infection including HIV infection and the screening for blood borne viruses with relatives and carers where appropriate</p> <p>To recognise role of nurses in prevention and management of infection in renal patients and to work closely with microbiologists</p> <p>6,7</p>

NEPHROTIC SYNDROME			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with the nephrotic syndrome	<p>To define the pathophysiology of the nephrotic syndrome and its causes and relationship to systemic diseases</p> <p>To describe how to investigate the nephrotic syndrome to establish its severity and likely cause</p> <p>To describe management of the nephrotic syndrome, including the indications for ACE inhibitors, lipid lowering agents and anti-coagulants; and specific use of corticosteroids and other immunosuppressive agents</p> <p>1,2,3,4</p>	<p>To take a relevant history, including family history, and perform an appropriate examination</p> <p>To use the appropriate investigations including renal biopsy</p> <p>To manage the patient with nephrotic syndrome and demonstrate the indications for different methods of treatment</p> <p>To manage long term review</p> <p>4,5,6,7</p>	<p>To discuss familial disorders</p> <p>To recognise the role of nurses and dietitians in the long term management</p> <p>6,7</p>

RENAL DISORDERS IN PREGNANCY			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>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</p> <p>To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with renal transplants who become pregnant</p> <p>To provide trainees with the skills and knowledge to be able to carry out specialist assessment of patients who develop renal disorders during pregnancy</p>	<p>To describe how pregnancy may affect renal function in normal patients and in those with pre-existing renal disease including those on renal replacement therapy</p> <p>To list the adverse effects of drug treatment on both patient and fetus</p> <p>To list which renal disorders may be inherited</p> <p>1,2,3,4</p>	<p>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</p> <p>To manage hypertension in pregnancy and the safe use of anti-hypertensive drugs</p> <p>To manage the renal consequences of pre-eclampsia and acute renal failure in pregnancy and the puerperium</p> <p>To explain the inheritance of some renal disorders</p> <p>4,5,6,7</p>	<p>To recognise the role of obstetricians and midwives in the management of patients both preconception, during pregnancy and postpartum and work closely with obstetricians and intensivists in the management of acute renal failure in pregnancy and the puerperium</p> <p>To recognise the need for genetic counselling in inherited kidney disorders</p> <p>6,7</p>

ACUTE RENAL FAILURE			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with acute renal failure	<p>To list the causes of acute renal failure</p> <p>To describe different methods of investigating the severity and causes of acute renal failure</p> <p>To describe the methods to correct fluid and biochemical abnormalities and strategies to treat reversible causes of acute renal failure</p> <p>1,2,3,4</p>	<p>To take an accurate clinical history in the assessment of acute renal failure including drug history, surgical history, family, social and environmental history</p> <p>To perform a reliable and accurate clinical examination of the patient</p> <p>To interpret the appropriate use of the following investigations</p> <ul style="list-style-type: none"> • Biochemistry • Haematology • Microbiology • Ultrasound scanning • CT scanning • Immunology • Renal biopsy <p>To instigate correct management (including renal replacement therapy) and measures to treat the underlying cause</p> <p>4,5,6,7</p>	<p>To recognise the role of renal unit staff, ward and critical care nurses.</p> <p>To recognise the role of microbiologist, radiologist, urologist and surgeon</p> <p>To recognise the role of the histopathologist</p> <p>6,7,9</p>

CHRONIC RENAL FAILURE			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with chronic renal failure</p>	<p>To list the causes of chronic renal failure</p> <p>To describe the investigations used in to assess the degree of renal impairment and its causes with particular emphasis on reversibility of the condition</p> <p>To define the natural history and prognosis of chronic renal failure from different causes and to describe the treatment strategies both general and specific to ameliorate the condition</p> <p>1,2,3,4</p>	<p>To take an accurate clinical history in the assessment of chronic renal failure including drug history, family , social and environmental history</p> <p>To perform reliable and accurate clinical examination of the patient</p> <p>To undertake appropriate use of investigations</p> <ul style="list-style-type: none"> • Biochemistry • Haematology • Microbiology • Ultrasound scanning • CT scanning • Immunology • Renal biopsy <p>To manage the patient with chronic renal failure to ensure that reversible causes are identified and treated; and that appropriate preparation for renal replacement therapy is planned where necessary</p> <p>4,5,6,7</p>	<p>To appreciate the role of the multi-professional team in the management of chronic renal failure</p> <p>6,7,9</p>

NUTRITION IN RENAL PATIENTS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide trainee with the skills and knowledge to be able to identify the nutritional needs of renal patients	<p>To define the causes of malnutrition in patients with acute and chronic renal disease and the methods of assessment</p> <p>To describe the relationship between nutritional needs and adequacy of renal replacement therapy</p> <p>To describe the investigation and treatment of hyperlipidaemias</p> <p>To demonstrate the rationale for the use of protein restriction in the conservative management of chronic renal impairment</p> <p>1,2,3,4</p>	<p>To make an accurate clinical assessment of nutritional status</p> <p>To use appropriate dietary advice with the assistance of dietitians</p> <p>To prescribe and monitor drug treatment for hyperlipidaemia</p> <p>To manage the nutritional needs of patients with acute renal failure and patients with multisystem failure</p> <p>4,5,6,7</p>	<p>To appreciate the role of dietitians and develop close working relationships to reinforce advice and education to patients</p> <p>Appreciate the role of nurses and other health care professionals in the management of nutritional needs</p> <p>6,7</p>

CHRONIC GLOMERULONEPHRITIS

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with chronic glomerulonephritis</p>	<p>To list the causes of chronic glomerulonephritis</p> <p>To describe the methods of investigation</p> <p>To define the natural history and prognosis for chronic glomerulonephritis of different causes</p> <p>To describe the management strategies, both general and specific, to treat different causes of chronic glomerulonephritis</p> <p>1,2,3,4</p>	<p>To take an accurate clinical history in the assessment of chronic glomerulonephritis including drug history, family, social and environmental history</p> <p>To perform a reliable and accurate clinical examination of the patient</p> <p>To make appropriate use of investigations</p> <ul style="list-style-type: none"> • Biochemistry • Haematology • Microbiology • Ultrasound scanning • CT scanning • Immunology • Renal biopsy <p>To demonstrate the use of general and specific measures to treat glomerulonephritis</p> <p>4,5,6,7</p>	<p>To use all available evidence to inform decisions on management</p> <p>6,7</p>

ADULT POLYCYSTIC KIDNEY DISEASE

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide trainee with the skills and knowledge to be able to carry out specialist assessment and treatment of patients with adult polycystic disease</p> <p>To provide the trainee with the skills and knowledge to assess family members of patients with adult polycystic disease</p>	<p>To define the pathophysiology of adult polycystic kidney disease including its extrarenal manifestations</p> <p>To describe the mode of inheritance and genetic defects and methods of screening</p> <p>To describe the long term management including preservation of renal function and use of renal replacement therapy</p> <p>1,2,3,4</p>	<p>To take an accurate clinical history, including family history, in the assessment of adult polycystic kidney disease</p> <p>To perform a reliable and accurate clinical examination of the patient</p> <p>To interpret screening tests and appreciate their limitations</p> <p>To plan the long term management of a patient with polycystic kidney disease</p> <p>4,5,6,7</p>	<p>To appreciate the stress and concerns of patients and relatives in the assessment of a family member with adult polycystic kidney disease and the importance of genetic counselling</p> <p>.</p> <p>6,7</p>

RENAL VASCULITIS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with renal vasculitis	<p>To define the pathophysiology of renal vasculitis, the spectrum of disease and its relation to systemic vasculitis</p> <p>To describe the clinical and laboratory methods to investigate and monitor the patient</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination both to diagnose and categorise the patient</p> <p>To plan the appropriate investigation, including renal biopsy, and treatment.</p> <p>To balance the use of immunosuppression and plasmapheresis against the adverse effects of treatment</p> <p>To monitor and manage the patient in the short and long term</p> <p>4,5,6,7</p>	<p>To discuss the relevant treatment options and the results in the context of clinical studies</p> <p>To appreciate the role of other specialists and their cooperation in management</p> <p>6,7</p>

INTERSTITIAL NEPHRITIS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with interstitial nephritis and tubulointerstitial disease	<p>To define the pathophysiology of interstitial nephritis and tubulointerstitial disease, its causes and relationship to other systemic conditions</p> <p>To describe the methods investigations and management of the condition</p> <p>1,2,3,4</p>	<p>To take a relevant history, including drug history and exposure to other substances, and perform an appropriate examination</p> <p>To plan investigations, including renal biopsy</p> <p>To decide on the treatment and appropriate use of corticosteroids</p> <p>4,5,6,7</p>	<p>To discuss the relevant treatment options and the results in the context of clinical studies and to involve other specialists if indicated</p> <p>6,7</p>

DIABETIC NEPHROPATHY

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with diabetic nephropathy</p> <p>To provide trainees with skills and knowledge prevent the development of diabetic nephropathy and delay progressive renal impairment</p>	<p>To define the pathophysiology of diabetic nephropathy, its predisposing factors and screening methods</p> <p>To describe the importance of</p> <ul style="list-style-type: none"> • hypertension • glycaemic control • hyperlipidaemia • ACE inhibitor and A11 receptor antagonist therapy <p>To demonstrate the role of pancreatic and combined renal pancreatic transplantation</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have diabetic nephropathy</p> <p>To diagnose non-diabetic renal disease in the diabetic patient</p> <p>To implement and monitor treatment of hypertension, hyperlipidaemia and use of ACE inhibitors and AII receptor antagonists</p> <p>To plan the long term management of the patient with diabetic nephropathy who requires renal replacement therapy</p> <p>4,5,6,7</p>	<p>To involve patients and carers together with dietitians and specialist nurses in the long term care</p> <p>To discuss the role of smoking in the development of vascular disease in the diabetic patient</p> <p>To work closely with diabetologists to draw up protocols for referral and management of diabetics with renal disease</p> <p>6,7</p>

SYSTEMIC LUPUS ERYTHEMATOSUS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with systemic lupus erythematosus	<p>To describe the pathogenesis of SLE and underlying immunological mechanisms</p> <p>To list the histological classification of renal SLE and its clinical consequences</p> <p>To describe the different treatment options for SLE</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have systemic lupus erythematosus</p> <p>To plan and interpret the investigations of such a patient</p> <p>To interpret renal histological findings and immunological markers for the diagnosis and management of SLE</p> <p>To manage acute renal failure in a patient with SLE including the appropriate use of plasmapheresis</p> <p>To undertake long term management of the patient with SLE</p> <p>4,5,6,7</p>	<p>To discuss the relevant treatment options and the results in the context of clinical studies</p> <p>To discuss the impact on reproductive potential</p> <p>To discuss the problems with renal transplantation</p> <p>To appreciate the multidisciplinary approach to investigation and treatment</p> <p>6,7</p>

CARDIOVASCULAR DISEASE IN RENAL PATIENTS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out assessment and treatment of patients with cardiovascular disease	<p>To describe the impact of cardiovascular disease on the morbidity and mortality of patients with renal disease and those on renal replacement therapy</p> <p>To list the risk factors and means to modify them</p> <p>To describe the management of acute coronary syndromes and associated problems in the renal patient</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have cardiovascular disease</p> <p>To assess the risk factors for cardiovascular disease</p> <p>To recognise which patients need a cardiology opinion or specialist investigations</p> <p>To manage acute coronary syndrome in a renal patient</p> <p>4,5,6,7</p>	<p>To involve patients and carers in the management of risk factors and acknowledge the role of other health care professionals</p> <p>To work closely with cardiologists and develop protocols for care</p> <p>6,7</p>

RENOVASCULAR DISEASE

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with hypertension which may have an underlying renovascular cause</p> <p>To provide trainees with skills and knowledge to be able to carry out specialist assessment and treatment of patients with renal impairment secondary to renovascular disease</p>	<p>To list the causes of renovascular disease and its pathophysiology</p> <p>To describe the methods to investigate renovascular disease</p> <p>To define the indications for and methods of intervention</p> <p>To define the general management of the vascular problems of patients with atherosclerotic renovascular disease</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have renovascular disease</p> <p>To plan and interpret the investigations</p> <p>To recommend medical management or intervention based on clinical assessment and investigations</p> <p>To outline the likely outcome of the condition and its long term prognosis</p> <p>4,5,6,7</p>	<p>To discuss the relevant treatment options and the results in the context of clinical studies</p> <p>To appreciate the multidisciplinary approach to investigation and treatment</p> <p>6,7</p>

HYPERLIPIDAEMIAS

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out assessment and treatment of patients with hyperlipidaemia with particular respect to renal disease	<p>To define hyperlipidaemia and dyslipidaemia and to describe their relevance as risk factors to patients with renal disease</p> <p>To describe the dietary and drug treatment of hyperlipidaemia</p> <p>To define the use of statins</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have hyperhyperlipidaemia</p> <p>To investigate the patient for lipid disorders</p> <p>To monitor drug therapy</p> <p>To interpret the guidelines for treatment of hyperlipidaemia in the context of cardiovascular disease and hypertension</p> <p>5,6,7</p>	<p>To involve dietitians and other health care professionals in the management of hyperlipidaemias</p> <p>6,7</p>

HEREDITARY NEPHRITIS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to carry out specialist assessment and treatment of patients with hereditary nephritis	<p>To describe the pathological features of hereditary nephritis and its clinical manifestations</p> <p>To define the spectrum of disease including thin basement membrane disease and Alport's syndrome</p> <p>To describe the molecular and genetic abnormalities in Alport's syndrome</p> <p>1,2,3,4</p>	<p>To take a history, including family history, and perform an examination of patients who may have hereditary nephritis</p> <p>To plan and undertake appropriate investigations including renal biopsy</p> <p>To manage the progressive nature of renal disease in Alport's syndrome</p> <p>4,5,6,7</p>	<p>To explain the mode of inheritance of hereditary nephritis and deal with anxieties in the wider family</p> <p>6,7</p>

LESS COMMON RENAL CONDITIONS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>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</p> <p>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</p>	<p>To describe the pathogenesis of renal disease in amyloidosis, scleroderma, mixed essential cryoglobulinaemia, Fabry's disease (<i>as examples</i>)</p> <p>1,2,3,4</p>	<p>To take a relevant history and perform an appropriate examination to diagnose and assess the patient who may have multisystem disease effecting the kidney</p> <p>To plan and interpret the investigations of such a patient</p> <p>To work closely with other specialists involved in the care of such patients</p> <p>4,5,6,7</p>	<p>To appreciate the multidisciplinary approach to investigation and treatment of these diseases</p> <p>6,7</p>

DRUG PRESCRIBING IN RENAL DISEASE			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with the knowledge to prescribe to patients with acute and chronic renal impairment including those on renal replacement therapy</p> <p>To provide the trainee with the knowledge to prescribe to patients with renal transplants</p>	<p>To define the principles of pharmacokinetics and the handling of drugs in the presence of renal impairment</p> <p>To list the effect of haemodialysis, haemofiltration, haemodiafiltration and peritoneal dialysis upon drug prescribing</p> <p>To describe the principles of drug interactions with particular reference to immunosuppressive drugs</p> <p>To define how drugs may affect renal function</p> <p>1,2,3,4</p>	<p>To prescribe safely and efficiently to patients with renal disease</p> <p>To educate patients with renal disease on the importance of compliance and reporting of problems</p> <p>To devise methods to reduce complications of prescribing in patients with renal disease</p> <p>To devise methods to improve compliance</p> <p>4,5,6,7</p>	<p>To inform other health care professionals of the implications of prescribing in renal disease</p> <p>To appreciate role of pharmacists and other health care professionals in safe prescribing</p> <p>6,7</p>

RENAL BONE DISEASE			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
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	<p>To describe the pathophysiology of renal bone disease and to contrast the differences between osteomalacia, hyperparathyroid associated disease, adynamic bone disease</p> <p>To describe the use of biochemical tests, imaging techniques and histological methods in the diagnosis and management of renal bone disease</p> <p>To describe the indications for and the use of phosphate binders, vitamin D preparations and parathyroidectomy and means to monitor treatment and adverse effects</p> <p>1,2,3,4</p>	<p>To prevent, diagnose and manage renal bone disease in patients with chronic renal failure before initiation of renal replacement therapy</p> <p>To manage the bone disease in patients on peritoneal dialysis, haemodialysis and with a renal transplant</p> <p>To decide which patients need parathyroidectomy and how to manage them</p> <p>4,5,6,7</p>	<p>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</p> <p>To appreciate the multidisciplinary nature of management of renal bone disease</p> <p>6,7</p>

RENAL ANAEMIA			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to supervise and manage patients with chronic renal failure who develop anaemia	<p>To describe the pathophysiology of renal anaemia and the haematological and biochemical methods to diagnose, assess and monitor treatment in renal anaemia</p> <p>To define the indications for and the use of human recombinant erythropoietin and its complications</p> <p>To define the indications for and use of oral and parenteral iron therapy and its complications</p> <p>To list the causes erythropoietin resistance and its investigation</p> <p>1,2,3,4</p>	<p>To diagnose and treat renal anaemia, to monitor the effects of treatment and manage failure of treatment</p> <p>To prescribe and monitor iron replacement therapy</p> <p>To audit the use of erythropoietin and iron therapy</p> <p>4,5,6,7</p>	<p>To ensure that all patients pre-dialysis and on dialysis who will benefit from erythropoietin receive therapy</p> <p>To appreciate role of nurses in the initial counselling of patients, initiation and the long term management of renal anaemia</p> <p>To involve management and purchasers in the development of protocols for the use of erythropoietin</p> <p>6,7</p>

ACUTE RENAL REPLACEMENT THERAPY

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to supervise and manage patients acute renal replacement therapy</p>	<p>To describe the principles of haemodialysis, haemofiltration and haemodiafiltration and indications for their use</p> <p>To compare and contrast each method</p> <p>To describe the methods of creating vascular access for acute renal replacement therapy</p> <p>1,2,3,4</p>	<p>To assess the suitability of a patient for haemodialysis, haemofiltration or haemodiafiltration</p> <p>To adjust the prescription of haemodialysis, haemofiltration and haemodiafiltration and monitor change</p> <p>To manage drug prescribing</p> <p>To manage nutrition</p> <p>To manage the patient with multiorgan failure or systemic disease requiring acute renal replacement therapy</p> <p>4,5,6,7</p>	<p>To appreciate role of nurses in the management of acute renal replacement therapy</p> <p>To appreciate the role of anaesthetists and intensivists in the management of patients with multisystem disease of multiorgan failure requiring acute renal replacement therapy</p> <p>6,7,9</p>

PLASMAPHERESIS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to supervise and manage patients requiring plasmapheresis	<p>To describe the principles of plasmapheresis, its indications and complications</p> <p>To describe its use in the context of other treatment modalities and for non-renal conditions</p> <p>1,2,3,4</p>	<p>To assess the suitability of a patient for plasmapheresis</p> <p>To manage the patient with acute renal failure requiring both plasmapheresis and acute renal replacement therapy</p> <p>To assess response to treatment and monitor change</p> <p>4,5,6,7</p>	<p>To appreciate role of nurses in the management of plasmapheresis</p> <p>To appreciate the multidisciplinary approach to the patient with multisystem disease</p> <p>6,7,9</p>

PERITONEAL DIALYSIS GENERAL PRINCIPLES			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to supervise and manage patients on chronic peritoneal dialysis	<p>To describe the principles of peritoneal dialysis and to compare and contrast chronic ambulatory peritoneal dialysis and automated peritoneal dialysis</p> <p>To describe the different methods of insertion of peritoneal dialysis catheters and their advantages and disadvantages</p> <p>To describe the methods to assess adequacy of peritoneal dialysis</p> <p>1,2,3,4</p>	<p>To assess the suitability of a patient for peritoneal dialysis in the context of other methods of renal replacement therapy</p> <p>To adjust the prescription of peritoneal dialysis and monitor change</p> <p>To manage the nutrition of peritoneal dialysis patients</p> <p>To appreciate the cost implications of different catheters, fluids and systems in peritoneal dialysis</p> <p>To work closely with management and purchasers to ensure cost effective peritoneal dialysis treatment</p> <p>4,5,6,7</p>	<p>To discuss the relevant treatment options and the comparisons of haemodialysis, chronic ambulatory peritoneal dialysis and automated peritoneal dialysis in a manner that will allow clear understanding of choice</p> <p>To discuss the implications of failure of peritoneal dialysis and the complementary nature of renal replacement therapy</p> <p>To discuss the withdrawal of dialysis with patients, carers and other health care professionals</p> <p>Appreciate role of nurses in the initial counselling of patients, initiation and the long term management of peritoneal dialysis</p> <p>6,7,9</p>

PERITONEAL DIALYSIS COMPLICATIONS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to identify and manage the complications of chronic peritoneal dialysis	<p>To describe the diagnosis and management of peritoneal dialysis peritonitis including non - bacterial infections</p> <p>To describe the diagnosis and management of catheter and exit site associated infection</p> <p>To describe the diagnosis of mechanical problems associated with peritoneal dialysis (including herniae, leaks, catheter malfunction)</p> <p>To describe the methods to assess failure to ultrafiltrate and adequacy of dialysis</p> <p>1,2,3,4</p>	<p>To adjust the prescription of peritoneal dialysis and monitor change following complications</p> <p>To manage the treatment of peritoneal dialysis peritonitis and its complications; and catheter associated problems</p> <p>To manage peritoneal dialysis failure</p> <p>4,5,6,7</p>	<p>To appreciate the multidisciplinary approach to the management of complications of peritoneal dialysis</p> <p>6,7,9</p>

HAEMODIALYSIS GENERAL PRINCIPLES			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to supervise and manage patients on chronic haemodialysis	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 prepare the patient both physically and psychologically for haemodialysis	To appreciate role of nurses in the initial counselling of patients, initiation and the long term management of haemodialysis
	To define the methods to assess adequacy of haemodialysis	To anticipate and overcome difficulties with vascular access	To appreciate the multidisciplinary nature of management of haemodialysis
	1,2,3,4	To adjust the prescription of haemodialysis and monitor change 4,5,6,7	6,7,9

HAEMODIALYSIS CLINICAL MANAGEMENT			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to undertake the planning of haemodialysis, its prescription and measurement of its adequacy.	<p>To describe the means to deliver purified water, the necessary standards and methods of assessing these</p> <p>To describe different dialysis membranes and dialysate fluids</p> <p>To describe the theory of sodium profiling and ultrafiltration</p> <p>To define the methods to assess adequacy of haemodialysis</p> <p>1,2,3,4</p>	<p>To adjust the prescription of haemodialysis and monitor change</p> <p>To advise on ultrafiltration, sodium profiling and use of different dialysate solutions</p> <p>To assess the suitability of different methods of vascular access</p> <p>To organise the day to day management of a dialysis unit</p> <p>4,5,6,7</p>	<p>To appreciate role of nurses and other health care professionals in the day to day management of haemodialysis and changes in prescription</p> <p>To work closely with management and purchasers to ensure cost effective treatment</p> <p>6,7,9</p>

HAEMODIALYSIS COMPLICATIONS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to be able to manage the complications of haemodialysis	<p>To describe the complications of arterio-venous fistulae and artificial grafts including thrombosis, haemorrhage, infection, stenoses and poor flow</p> <p>To define the methods of dealing with dialysis line sepsis, poor flow and line blockage</p> <p>To describe the management of hard water syndrome, air embolism and EtOH reactions.</p> <p>To define the principles behind the causation and management of intradialytic hypotension</p> <p>To describe the pathophysiology and management of dialysis associated amyloid</p> <p>1,2,3,4</p>	<p>To identify and manage the complications of vascular access involving, when necessary, surgeons and radiologists</p> <p>To manage dialysis related sepsis and develop protocols with microbiologists</p> <p>To develop protocols to deal with acute dialysis emergencies</p> <p>4,5,6,7</p>	<p>To appreciate role of nurses and other health care professionals in the day to day management of haemodialysis and its complications</p> <p>To appreciate the multidisciplinary nature of management of haemodialysis complications with development of close working relationships with surgeons and radiologists in the management of vascular access complications</p> <p>6,7,9</p>

RENAL TRANSPLANTATION - PRETRANSPLANT

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to supervise and manage patients who are suitable for renal transplantation</p>	<p>To describe the principles of renal transplantation, its medical and surgical, social and ethical contraindications</p> <p>To compare and contrast renal transplantation with other treatment modalities</p> <p>To describe the recommendations for live related and live unrelated renal transplantation</p> <p>To describe the advantages and disadvantages of pre-dialysis transplantation</p> <p>To describe the theoretical and practical application of blood grouping, HLA matching and donor - recipient cross matching</p> <p>To describe the mode of action of immunosuppressive agents and their adverse effects</p> <p>1,2,3,4</p>	<p>To assess the suitability of a patient for a renal transplant</p> <p>To discuss the pros and cons of renal transplantation</p> <p>To discuss the issues of live related and live unrelated renal transplantation and transplantation pre-dialysis</p> <p>To counsel patients and relatives in all aspects of renal transplantation</p> <p>To plan and carry out protocols for pre transplant assessment</p> <p>4,5,6,7</p>	<p>To appreciate role of nurses in the initial counselling of patients</p> <p>To appreciate the multidisciplinary nature of management of renal transplantation</p> <p>6,7,9</p>

RENAL TRANSPLANTATION - ACUTE STAGE			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with skills and knowledge to manage patients in the early stages of renal transplantation	<p>To describe the medical and surgical problems which occur in the first three months following renal transplantation</p> <p>To describe the indications for ultrasound scanning, isotope scanning and radiological investigations in the acute stage following renal transplantation</p> <p>To define methods used to diagnose acute rejection including biopsy techniques</p> <p>To define the mode of action of immunosuppressive agents and their adverse effects and to describe methods used to treat and overcome acute rejection</p> <p>To describe strategies in the acute stage of renal transplantation which will influence long term graft function</p> <p>1,2,3,4</p>	<p>To assess renal transplant function</p> <p>To interpret the methods used to diagnose acute rejection, surgical complications and medical complications of renal transplantation</p> <p>To plan and modify immunosuppressive therapy</p> <p>To counsel patients and relatives in all aspects of renal transplantation</p> <p>4,5,6,7</p>	<p>To appreciate role of nurses in the care of patients undergoing renal transplantation</p> <p>To appreciate the multidisciplinary nature of management of renal transplantation</p> <p>6,7,9</p>

RENAL TRANSPLANTATION - CHRONIC STAGE

OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>To provide the trainee with skills and knowledge to be able to supervise and manage patients on renal replacement therapy who have had a renal transplant</p>	<p>To describe the medical and surgical problems which occur in the first three months following renal transplantation</p> <p>To define the mode of action of immunosuppressive agents and their adverse effects</p> <p>To describe strategies in the acute and chronic phases of renal transplantation which will influence long term graft function</p> <p>To describe the strategies to prevent the development of cardiovascular disease</p> <p>1,2,3,4</p>	<p>To assess renal transplant function, to investigate deteriorating renal function and adjust immunosuppressive therapy accordingly</p> <p>To interpret investigations to identify non-immunological problems and manage them</p> <p>To manage the medical complications of a failing renal transplant</p> <p>To manage cardiovascular disease in a renal transplant patient</p> <p>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</p> <p>4,5,6,7</p>	<p>To encourage patients, relatives and carers to participate the in joint care</p> <p>To appreciate role of nurses in the care of patients with a renal transplant</p> <p>To appreciate the multidisciplinary nature of management of renal transplantation</p> <p>6,7,9</p>

RENAL BIOPSY			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
To provide the trainee with the necessary skills and training to be proficient at performing native and transplant renal biopsy	<p>To describe the anatomy of both native and transplant kidneys</p> <p>To define the indications for renal biopsy of native and transplant kidneys</p> <p>To describe the complications and methods to minimize these</p> <p>1,3</p>	<p>To perform renal biopsy on native and transplant kidneys</p> <p>To use ultrasound to localize kidneys and use ultrasound guidance to assist in renal biopsies</p> <p>To decide when a renal biopsy is indicated</p> <p>To discuss the indications, benefits and adverse events of the procedure to patients, relatives and carers in a manner that will allow informed consent</p> <p>To interpret renal biopsy with the assistance of a renal histopathologist</p> <p>Manage the complications of renal biopsy</p> <p>5,8,9</p>	<p>To appreciate the role of radiologist or radiographer (if appropriate)</p> <p>To have appropriate self-confidence and recognition of limitations</p> <p>5,7,8,9</p>

ULTRASOUND SCANNING			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>The trainee will be proficient at carrying out and interpreting ultrasound scanning of renal and transplant kidneys to facilitate renal biopsy</p> <p>The trainee will be able to use ultrasound techniques to identify anatomy and patency of central veins to facilitate central venous catheter placement</p>	<p>To describe the anatomy of both native and transplant kidneys</p> <p>To describe the anatomy of the central veins</p> <p>3</p>	<p>To use ultrasound to localize native and transplant kidneys for the purpose of renal biopsy</p> <p>To use ultrasound guidance for biopsies (where appropriate)</p> <p>To localise central veins and assess their suitability for percutaneous venous access</p> <p>5,7,8,9</p>	<p>To appreciate the role of radiologist or radiographer (if appropriate)</p> <p>Have appropriate self-confidence and recognition of limitations</p> <p>5,7,8,9</p>

INSERTION OF TEMPORARY HAEMODIALYSIS CATHETERS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
The trainee will be proficient at carrying out the insertion of temporary haemodialysis catheters	<p>To describe the anatomy of the central venous system in the upper thorax and neck and of the femoral veins</p> <p>To define the indications for insertion of temporary haemodialysis catheters, the complications and means to minimize these</p> <p>To describe the treatment of catheter sepsis and blocked catheters</p> <p>1,2,3,4</p>	<p>To perform insertion of temporary haemodialysis catheters using the Seldinger technique using both internal jugular and femoral veins</p> <p>To use ultrasound guidance (where appropriate) for localising and cannulation of jugular and femoral veins</p> <p>To discuss the indications, benefits and adverse events of the procedure to patients, relatives and carers in a manner that will allow informed consent</p> <p>To explain the use of the catheter and its management to the patient, relatives and carers</p> <p>4,5,6,7,8,9</p>	<p>To appreciate role of nurses to manage a catheter after its insertion and to ensure education of patients and carers</p> <p>To demonstrate self-confidence and recognition of limitations</p> <p>6,7,8,9</p>

INSERTION OF PERMANENT HAEMODIALYSIS CATHETERS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>The trainee will be proficient at carrying out the insertion of permanent dialysis catheters (permacaths and/or tesio lines)</p> <p>NB THIS TECHNIQUE IS NOT AN ESSENTIAL REQUIREMENT</p>	<p>To describe the anatomy of the central venous system in the upper thorax and neck</p> <p>To define the indications for insertion of permanent haemodialysis catheters, the complications and means to minimize these</p> <p>To describe the treatment of catheter sepsis and blocked catheters</p> <p>1,2,3,4</p>	<p>To perform insertion of permanent haemodialysis catheters using the Seldinger technique and subcutaneous tunnelling</p> <p>To use ultrasound guidance for localising and cannulation of jugular and femoral veins</p> <p>To use X-ray screening to facilitate catheter placement</p> <p>To discuss the indications, benefits and adverse events of the procedure to patients, relatives and carers in a manner that will allow informed consent</p> <p>To explain the use of the catheter and its management to the patient, relatives and carers</p> <p>4,5,6,7,8,9</p>	<p>To appreciate the role of the radiographer in X-ray screening for catheter placement</p> <p>To appreciate role of nurses in the management of a catheter after its insertion and education of patients and carers in its use</p> <p>To demonstrate appropriate self-confidence and recognition of limitations</p> <p>6,7,8,9</p>

INSERTION OF PERITONEAL DIALYSIS CATHETERS			
OBJECTIVES	KNOWLEDGE	SKILLS	ATTITUDES
<p>The trainee will understand the different methods of inserting peritoneal dialysis catheters</p> <p>The trainee will be proficient at carrying out the insertion of peritoneal dialysis catheters by the percutaneous method</p> <p>NB THIS TECHNIQUE IS NOT AN ESSENTIAL REQUIREMENT</p>	<p>To describe the anatomy of the anterior abdominal wall, abdominal cavity and peritoneum, the different types of catheters and their use</p> <p>To define the indications for insertion of peritoneal dialysis catheters</p> <p>To describe the different medical and surgical techniques for insertion of peritoneal dialysis catheters; their complications and means to minimize these</p> <p>To define the management of catheter sepsis, of blocked catheters and of poorly functioning catheters</p> <p>1,2,3,4</p>	<p>To assess a patient's suitability for insertion of a peritoneal dialysis catheter by different techniques</p> <p>To select a patient as suitable for insertion of a peritoneal dialysis catheter by medical means</p> <p>To perform insertion of peritoneal dialysis catheters using the percutaneous approach</p> <p>To discuss the indications, benefits and adverse events of the procedure to patients, relatives and carers in a manner that will allow informed consent</p> <p>To explain the use of the catheter and its management to the patient, relatives and carers</p> <p>4,5,6,7,8,9</p>	<p>To appreciate role of nurses in the management of a catheter after its insertion</p> <p>To demonstrate appropriate self-confidence and recognition of limitations</p> <p>6,7,8,9</p>