TRAINING

IN

RENAL

TRANSPLANTATION

Renal transplantation

After satisfactory completion of the core urological training, trainees would undergo training in renal transplantation over a period of eighteen months to two years. It is likely that the urologist with an interest in renal transplantation will be part of a multi-disciplinary renal/other intra-abdominal transplant unit, sharing rotas for on-call with general surgeons or vascular surgeons with a renal transplant interest.

Training posts will be available to those specialist registrars who have successfully completed three years of basic urological training. The programme must include theoretical instruction (including the relevant basic sciences), intensive clinical experience in renal transplantation, peritoneal and haemodialysis and ideally a research component. The trainee will undergo an objective assessment of operative skills including assessment of their logbook of operative procedures performed both under supervision and independently.

Training in renal transplantation

1 To provide a service for the referral and transfer of patients who would benefit facilities, expertise and experience.
2 To establish close collaborations with related disciplines to provide a high degree of teamwork and concentration of resources for the intensive investigation and management of such patients. This would include nephrologists, immunologists, endocrine and vascular surgeons.
3 To establish close collaboration with other urologists within and without the centre in continuing postgraduate education and training, research advice, co-ordination and audit.
4 Have an adequate workload providing a full range of experience in renal transplantation, peritoneal and haemodialysis.
5 Have a programme director who will co-ordinate the training programme, accept the main responsibility of supervision and be actively involved in it.
6 Have adequate medical staffing to enable to trainee to be engaged in renal transplantation on a full time basis and provide suitable experience of emergency and on-call renal transplantation.
7 Have adequate library, laboratory and other resources to support the work.
8 Provide the resources for a research programme related to renal transplantation.
9 Must provide sufficient clinical work, staffing, facilities and other support.
10 The unit should be staffed with four consultant surgeons, sub-specialising in renal transplantation.
11 Should have an adequate clinical workload of patients with a full range of nephrological, vascular and urological problems resulting in renal failure requiring treatment by either dialysis and/or renal transplantation.
12 Have appropriate clinical facilities for the investigation of the above problem.
13 Have access to appropriate laboratory and radiological imaging.
14 Provide training in donor nephrectomy, renal transplantation, renal biopsy, transplant nephrectomy, primary and secondary vascular access, peritoneal access, parathryoidectomy, drainage of lymphoceles, live donor transplantation, uretero-neo-cystotomy, uretero-ureterostomy, psoas hitch, Boari flap, ureteropyelostomy, work bench preparation of the kidney, ileal and colonic conduits, renal artery reconstruction, renal vein reconstruction, arterial thrombectomy.
15 Collaborate closely with consultant nephrologists and their staff and participate in multi-disciplinary clinics.
16 Have an immunology laboratory.
17 Have a research programme in the field of renal transplantation with access for the trainee to support his or her own training programme.

The Training Programme

Trainees by the end of training should be expected to have knowledge of the following topics and relevant basic science:

a) An advanced understanding of:
   (i) Endocrine physiology, pharmacology of substances that regulate renal function.
   (ii) The physiology of the kidney in relation to electrolyte homeostasis, endocrine functions and control of blood pressure.
   (iii) Genetics related to renal disease and the methods of inheritance.
   (iv) Immunology in relation to renal disease and organ transplantation.
   (v) Clinical pharmacology of drugs used for the treatment of hypertension immuno-suppression, viral, bacteriological and protozoal infections.
b) Gross and microscopic pathology of the kidney and the transplanted kidney.
c) The ability to interpret and supervise laboratory diagnostic procedures.
d) The ability to interpret and perform closed renal biopsies.
e) Clinical competence in the management of renal transplant problems including:
   (i) the diagnosis and treatment of rejection
   (ii) the diagnosis and treatment of hypertension
   (iii) the diagnosis and treatment of diabetes mellitus
   (iv) the diagnosis and treatment of viral infections
   (v) the diagnosis and treatment of bacterial infections
   (vi) treatment of protozoal infections.
f) Clinical competence in the management of long term complications of transplantation:
   (i) hypertension
   (ii) lipid disorders
   (iii) bone disorders
   (iv) malignancy
   (v) chronic rejection
g) Clinical competence in the management of:
   (i) lymphocoeles
   (ii) ureteric stenosis
   (iii) ureteric fistulae
   (iv) bladder fistulae
   (v) renal artery stenosis
h) Clinical competence in the creation of vascular access for haemodialysis by:
   (i) arteriovenous fistula
   (ii) vascular prostheses
   (iii) vascular shunts
i) Clinical competence in the management of vascular access:
   (i) thrombosis
   (ii) aneurysm formation
   (iii) infections
j) Clinical competence in the insertion and removal of peritoneal dialysis catheters.
k) Clinical competence in the management of peritoneal dialysis catheter:
   (i) blockage
   (ii) misplacement
   (iii) peritonitis
l) Clinical competence in the management of rejection including:
   (i) the diagnosis
   (ii) differential diagnosis

(iii) renal biopsy
(iv) interpretation of renal biopsies
(v) knowledge of the drugs used, their pharmacology and complications of treatment of rejection
(vi) knowledge of the HLA system and tissue typing and its relevance to the short and long term outcome of transplantation

m) Clinical competence in the surgery of renal failure

n) Clinical competence in the management of:
(i) bladder dysfunction, its diagnosis and management

o) Clinical competence in
(i) in vivo and in vitro preservation of organs
(ii) bench preservation and repair of kidneys prior to transplantation

GUIDES TO LEARNING

1 Clinical Pharmacology of Drugs and Hormones

Objectives

The trainee should understand and be able to understand and be able to discuss:

a) absorption, excretion, distribution of drug and hormones, metabolism, enzyme systems, renal, hepatic and faecal excretion
b) discuss general mechanisms of drug and hormone action including structure activity relationships, receptors and sites of action
c) characterise drug and hormone effects including dose responses, biological variation, spectrum of effects and factors of modified effects (eg age, sex, body weight, route of administration, tolerance, drug or hormone interactions, agonists and antagonists)
d) Government and pharmaceutical regulations pertaining to drugs and hormones and their development
e) understand the design analysis and organisation of participation in clinical trials
f) understand the toxicity of drugs commonly used for immunosuppression, treatment of hypertension, treatment of bacterial, viral and protozoal infections, the treatment of hypercholesterolaemia

2 Pathology

Objectives

The trainee should understand and be able to discuss:

1 The kidney
a) the histological appearance and relevance of abnormalities commonly found in donor kidneys
b) acute tubular necrosis
c) cortical necrosis
d) acute vascular rejection
e) paranchymal rejection
f) transplant glomerulopathy
g) chronic rejection
h) renal and venous infarction
i) IGA nephropathy
j) diabetic nephropathy

k) mesangiocapillary glomerular nephritis
l) Goodpasture's disease
m) antibody techniques for staining the kidney

3 Immunology

Objectives

The trainee should understand and be able to discuss:

a) the essentials of basic immunology
b) immunology related to transplantation
c) the HLA system
d) the usefulness and limitations of immunological tests in transplantation
e) the direct cross match

4 Embryology

Objectives

The trainee should understand and be able to discuss:

a) the embryonic development of the urinary tract
b) how patients with developmental abnormalities of the urinary tract should be diagnosed and managed

5 Genetics

Objectives

The trainee should understand and be able to discuss:

a) normal genetics eg Mendelian inheritance, a struction identification of chromosome
b) abnormal genetics including chromosome abnormalities in geneticaly transmitted renal disorders eg polycystic renal disease
c) inherited disorders referable to the genito-urinary system
d) inherited disorders referable to the immune system
e) genetic studies including pedigree, carrier type analysis, ante natal diagnosis of genetic disease including use of gene probes and associated techniques
f) indications and arrangements for specialist genetic diagnosis and counselling

6 Anatomy, physiology

Objectives

The trainee should understand and be able to discuss:

a) the normal anatomy of the kidney and urinary tract
b) anatomical variations, their relevance and management eg horseshoe kidney, multiple renal arteries, multiple renal veins, duplex ureters, pelviureteric obstruction
c) the physiology of the kidney and its relationship with pituitary and adrenal glands
d) the control of blood pressure

7 Chronic renal failure

Objectives

The trainees should be able to take an appropriate history and examine the patient and arrange/perform appropriate investigations and treatment. The trainee should be able to understand and able to discuss:

a) tests for the measurement of renal failure
b) electrolyte balance and its abnormalities
c) urine production and its control
d) interpretation of urine electolyte concentrations
e) the principles of peritoneal dialysis
f) the principles of haemodialysis

8 Psychological aspects of renal transplantation

Objectives

The trainee should understand and be able to discuss:

a) the psychological changes associated with chronic renal failure
b) the psychological changes associated with successful and unsuccessful organ transplantation, the effects of chronic renal failure upon the family, the effect of chronic renal failure upon relationships
c) the effect of drugs used in the treatment of chronic renal failure and renal transplantation on the patients psychology
d) the awareness of local facilities for counselling and psychotherapy

9 Live related organ donation

Objectives

The trainee should be able to:

a) take an appropriate history and counsel potential live related donors with emphasis on the risks of surgery rather than the benefits of transplantation
b) arrange appropriate haematological, biochemical, viral, bacteriological, radiological and immunological investigations of a potential donor and be able to interpret the results
c) have a broad understanding of the ethics relating to live related transplantation
d) have full understanding of the working of ULTRA (Unrelated Live Transplant Regulatory Authority) and the requirements of the ULTRA committee

10 Cadaveric organ retrieval

Objectives

The trainee should be:

a) aware of the national and local arrangements for cadaveric organ retrieval
b) the functions of transplant coordinators
c) the obtaining of consent for organ donation

d) the contraindications to organ donation including malignancy in the donor, HIV infection, uncontrolled bacterial infection
e) the role of UKTSSA (United Kingdom Transplant Support Services Authority)
f) organ sharing
g) beneficial matching
h) paediatric donors and recipients
i) in vivo and in vitro organ preservation

11 Clinical diagnostic techniques and imaging

Objectives

The trainee should be

a) competent in renal and bladder ultrasound scanning
b) able to understand and interpret doppler studies, ultrasound scans, arteriography and isotop renography
c) able to understand biochemical measurements of renal function, of lipid abnormalities and of bone disorders
d) able to perform and interpret renal biopsies
e) understand the risks and limitations of procedures, diagnosis and evaluation of diagnostic procedures
f) understand the validity of diagnostic test variability and reliability criteria
g) understand the need for clinical record keeping and data storage including the use of photography.

12 Surgical techniques

Objectives

The trainee should be competent of independent practice in

a) vascular access including the use of shunts and grafts
b) peritoneal dialysis access including closed and open insertion techniques
c) cadaveric organ retrieval
d) organ preservation live donor assessment and nephrectomy
e) cadaveric organ transplantation
f) transplant nephrectomy ureteric reimplantation
g) transureteroureterostomy
h) Boari flap.

13 Laboratory based training

Objectives

The trainee should understand and be able to discuss

a) tissue and cell structure
b) immunological methodology
c) basic molecular biology techniques including oliogonucleotide probes, in situ hybridisation, southern, western and northern blotting, restriction fragement length, polymorphism, preliminase chain reaction
d) national and local regulations related to laboratory safety, animal and human experimentation, radiation hazards etc.

Trainee ……. Year of Training ……..

	Completed by Trainee						Completed by Trainer							
	On appointment			At Completion			Competence level at 6 months				Competence level at 12 months			
	Seen	Assisted	Solo	Seen	Assisted	Solo	1	2	3	4	1	2	3	4
Transplantation														
Vascular access surgery														
CAPD														
Kidney retrieval														
Kidney transplantation														
Transplant nephrectomy														

Date: Signed Trainee: Signed Trainer:

LEVELS OF COMPETENCE

Level 1 Needs training to perform the task
Level 2 Needs supervision in performing the task
Level 3 Competent to perform the task unsupervised
Level 4 Competent to train others to perform the task