



**IRISH COMMITTEE
ON HIGHER
MEDICAL TRAINING**

ROYAL COLLEGE OF
PHYSICIANS OF IRELAND

Post CSCST TRAINING IN

NEPHROLOGY

Transplant Nephrology



This curriculum of training in Transplant Nephrology was developed in 2017 and undergoes an annual review by SME's Connall O'Seaghdha/Peter Conlon, Dr Ann O'Shaughnessy, Head of Education, Innovation & Research and by the Nephrology Training Committee. The curriculum is approved by the Irish Committee on Higher Medical Training.

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Introduction

Transplant Nephrology is the speciality concerned with Kidney Transplantation. The National Kidney Transplant Service in Beaumont Hospital is a large international programme, performing approximately 150 deceased donor and 30 living donor kidney transplants per year. The RCPI-accredited transplant nephrology fellowship at Beaumont hospital is a post-CSCST fellowship, wherein the prospective fellow will receive intensive exposure to all aspects of renal transplantation over the course of 1 year. The fellowship has several key objectives:

- To build the foundations for a broad knowledge base in transplant nephrology, with a view to ultimate specialisation in transplantation.
- To develop expertise in providing compassionate and evidence-based care to patients at all stages of the transplantation process.
- To encourage the fellow to take a leadership role on the transplant service and develop teaching, leadership, and management skills with NCHDs and medical students.
- To receive the education and experience necessary to become proficient in caring for kidney transplant patients in all settings, by providing the exposure and opportunities to manage all aspects of kidney transplant patients' care.

The renal transplant fellow is part of an integrated medical and surgical hospital team consisting of transplant nephrologists and transplant surgeons, nephrology and transplant surgery registrars, and allied medical services with expertise in transplantation. The typical inpatient census for the transplant service varies between 10 and 25 patients, including recent living and deceased donor kidney recipients, recent living kidney donors and transplant recipients with acute medical and surgical complications.

The transplant fellow will gain extensive experience in post-transplant management, initiation and modification of immunosuppressive therapy, as well as the management of a wide range of transplant-related complications. The transplant fellow will evaluate patients daily and coordinate diagnostic, management and discharge plans with the inpatient and outpatient teams.

Outpatient clinics

The transplant fellow is primarily responsible for generation of diagnostic, consultative, therapeutic and follow-up plans under the direct supervision of the covering transplant nephrologist. Renal transplant fellows also evaluate many patients undergoing transplant biopsy for acute graft dysfunction. There will be regular opportunities to personally review and discuss biopsies with a consultant renal pathologist. Specific duties include:

- *Acute Kidney Transplant Outpatient Clinic:* This clinic serves recently discharged kidney transplant recipients. The clinic operates in a paperless environment with clinical documentation, laboratory results and radiological images available electronically.
- *Living Donor Evaluation Clinic:* Potential kidney donors are evaluated in this dedicated clinic. Renal transplant fellows conduct initial evaluations with the supervision of a nephrologist who has expertise in the evaluation of potential donors. Fellows participate in the weekly multidisciplinary review of candidates and in the formal selection conference meetings. Follow-up of potential living donors after initial evaluation occurs in liaison with transplant co-ordinators, patients and nephrologists.
- *National Transition clinic:* Paediatric transplant recipients moving to the adult service are reviewed and followed in this specialised clinic to facilitate the transition.
- Outpatient assessment of living donor recipient scheduled for the following week.

- Long-term kidney transplant follow-up clinics.

Audit / Research / Service Development

- **Audit.** The transplant fellow will lead rolling annual audits in collaboration with other departments.
- **Research.** The transplant fellow will be expected to participate in our active research program with clinical studies, the opportunity to develop projects and go on to gain higher degrees, and publish in peer reviewed journals. Potential research projects are discussed soon after beginning the fellowship to identify a mentor and area of interest prior to the research rotation. Research projects are facilitated by the availability of excellent database and data analysis support. Beaumont Hospital's Transplant Fellowship also actively supports the preparation of manuscripts for publication and travel to national and international meetings to present the results of research. The fellow is expected to submit original transplantation research for presentation at least one national and one international transplant meeting during the fellowship year.
- Development /update of protocols for use in the Transplant Service.
- The fellow is expected to attend at least one international transplant meeting during the fellowship year (e.g. ATC or ESOT).
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Multidisciplinary meetings

A key strength of this fellowship is that it is a national programme for Ireland, ensuring exposure to the entire population of kidney transplant recipients within a highly integrated, patient-centered clinical program in Beaumont Hospital. Throughout the year, the transplant fellow will work closely with consultants in transplant nephrology, transplant surgery, renal pathology, tissue typing and immunology and radiology. They also will interact regularly with specialists in dermatology cardiology, and psychiatry who have focused expertise in the care of transplant recipients.

Active Participation in Transplant Multidisciplinary Meetings (MDM) is a core requirement. These MDMs include a twice-monthly meeting for the evaluation of potential living kidney donors, a monthly living donor meeting and a monthly Transplant M&M and Transplant Listing meeting.

Histocompatibility and Immunogenetics (H+I) Laboratory Rotation

The fellowship includes a dedicated 4 week rotation in the Histocompatibility and Immunogenetics (H+I) laboratory. This includes observational and didactic instruction in methods of blood and tissue typing, assays for cross matching and alloantibody measurement under the supervision of consultant immunologists. The fellow will also gain experience in the use of Plasmapheresis for conditioning of patients with immunologic barriers to transplantation, in close collaboration with the consultants and technical staff of the laboratories.

Renal Transplant Histopathology

Renal transplant fellows will evaluate many patients undergoing transplant biopsy for acute or chronic graft dysfunction. The fellowship includes twice-monthly renal histopathology meetings, where recent transplant biopsies are presented and discussed. There are also regular informal opportunities to personally review and discuss biopsies with a consultant renal pathologist. There is dedicated teaching in interpretation of the transplant kidney biopsy.

Transplant and Organ Procurement Surgery

To fulfil certification requirements, the renal transplant fellow will observe kidney transplant surgeries and living donor nephrectomies.

Paediatric transplantation

As well as attending the transition clinic described above, the fellow will attend a 2 week rotation through the transplant service of Temple Street Children's Hospital, where they will gain exposure to outpatient and inpatient paediatric renal transplantation.

Evaluation

Competency-based evaluations will be completed by supervising consultant nephrologists after each clinical rotation. In addition, fellows evaluate the faculty and rotations to ensure that educational needs are being met.

Call Frequency

The call schedule does not exceed limits set out in the European Working Time Directive. Beaumont Hospital follows the recommendations of the Royal College of Physicians of Ireland (RCPI) for all training programs including the Renal Transplant Fellowship.

Teaching

There is an extensive teaching programme provided during the fellowship. This includes:

- Daily interactions with transplant nephrologists and transplant surgeons;
- Day-to-day practical teaching on consultant ward rounds and in clinic;
- Fortnightly renal biopsy conferences with presentation and discussion of transplant and native kidney biopsies by renal pathology and nephrology groups, which also includes paediatric cases;
- Weekly nephrology journal club;
- Renal transplant journal club;
- Weekly medical grand rounds;
- Weekly renal SPR teaching;
- Weekly departmental renal teaching;
- Monthly research meeting;
- Monthly morbidity and mortality conferences to discuss cases from the kidney transplant hospital service.

Entry Requirements

Applicants for the Post CSCST Fellowship in Transplant Nephrology will have successfully completed the RCPI Higher Specialist Training programme in Nephrology within two years of the start date of the Post CSCST Fellowship programme.

Prior experience in Transplant Nephrology during Nephrology training would be an advantage.

Recruitment and Selection

Post CSCST Fellowship training in Transplant Nephrology will build on broad basic and early core specialist training in Nephrology. This is in line with training models internationally. Selection of candidates for Post CSCST Fellowship training Transplant Nephrology will be via a competitive recruitment process coordinated by the relevant Training Body. Recruitment will follow similar timeline where possible to HST recruitment and post will commence in July of each year (unless otherwise specified).

Duration and Organisation of Training

The Post CSCST Fellowship in Transplant Nephrology is a one year training programme designed to dovetail with the Irish Higher Specialist Training programme in Nephrology. The curriculum is competency-based, however it is anticipated that the candidate will complete training within one year.

The curriculum takes into account the major areas of competence required by the subspecialist in Transplant Nephrology and will be supervised by the Irish Committee on Higher Medical Training of the Royal College of Physicians in Ireland. Doctors who have successfully completed the RCPI Higher Specialist Training programme in Nephrology and are within two years of completion will be deemed eligible to apply for the Post CSCST Fellowship in Transplant Nephrology. Completion of this program will ensure the knowledge and competencies in all areas of the curriculum, meeting international standards for best practice and allowing candidates to practice as a subspecialist in Transplant Nephrology.

Training Programme

The training programme offered will provide opportunities to fulfil all the requirements of the curriculum of training for Transplant Nephrology in approved training hospitals. Each post within the programme will have a named trainer/educational supervisor and the programme will be under the direction of the National Specialty Director for Nephrology

Trainee Numbers

It is expected that the Post CSCST Fellowship in Transplant Nephrology will be awarded to one candidate per year.

ePortfolio

The trainee will be required to keep their ePortfolio up to date and maintained throughout their Fellowship training. The ePortfolio will be countersigned as appropriate by the Trainer to confirm the satisfactory fulfilment of the required training experience and the acquisition of the competencies set out in the Curriculum. This will remain the property of the Trainee and must be produced at the end of year Evaluation meeting. At the end of year Evaluation, the ePortfolio will be examined. The results of any assessments and reports by the named trainer/educational supervisor, together with other material capable of confirming the trainee's achievements, will be reviewed.

Programme Management

- Coordination of the training programme will lie with the Medical Training Department.
- The training year will usually run from July to July in line with HST programmes
- Annual evaluations will usually take place between April and June each year
- Each trainee will be registered to the ePortfolio and will be expected to fulfil all requirements relating to the management of yearly training records
- Opportunities for audit and research may be available

- Each trainee will be issued with a training agreement on appointment to the training programme and will be required to adhere to all policies and procedures relating to Post CSCST Fellowships.

Specialty Section

Section 1. Evaluation of the potential kidney transplant recipient

Objective: To provide the trainee with the skills and knowledge to assess and manage the potential kidney transplant recipient at a specialist level.

KNOWLEDGE

- Describes the relative and absolute contraindications to kidney transplantation.
- Describes the medical assessment of the potential kidney transplant recipient.
- Describes the indications for additional investigations, as appropriate.
- Outlines the surgical considerations in assessing a potential kidney transplant recipient.

SKILLS

- Evaluates potential kidney transplant recipients thoroughly and appropriately, in conjunction with the transplant nephrologist.
- Explains the risks and benefits of kidney transplantation, tailored to the individual patient.
- Interprets the results of the medical assessment.
- Orders and interprets additional investigations for the medical assessment of the recipient, as appropriate.
- Effectively communicates the results of the recipient assessment with members of the multidisciplinary team (MDT).
- Involves expertise from other disciplines when appropriate e.g. cardiology, psychiatry.
- Recognises the role of the MDT in kidney transplantation.
- Works appropriately with the MDT staff to evaluate potential transplant recipients.
- Can appropriately assess and investigate a potential kidney transplant recipient.
- Can initiate suitable additional investigations involving the wider MDT as required.
- Can discuss likely outcomes and prognosis with the patient.
- Can manage complex cases in all circumstances.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), Mini-clinical evaluation exercise (mini-CEx), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 2. Evaluation of the potential living kidney donor

Objective: To provide the trainee with the skills and knowledge to evaluate the suitability of the potential living kidney donor at a specialist level.

KNOWLEDGE

- Describes the relative and absolute contraindications to kidney donation.
- Describes the medical assessment of the potential kidney transplant donor.
- Describes the indications for additional investigations, as appropriate.
- Outlines the surgical considerations in assessing a potential kidney transplant donor.

SKILLS

- Evaluates potential kidney donors thoroughly and appropriately, in conjunction with the transplant nephrologist.
- Explains the risks and benefits of kidney donation, tailored to the individual patient.
- Interprets the results of the medical donor assessment.
- Orders and interprets additional investigations, as appropriate.
- Effectively communicates the results of the assessment with members of the multidisciplinary team.
- Involves expertise from other disciplines when appropriate e.g. cardiology, psychiatry.
- Recognises the role of the MDT in the assessment of a potential kidney donor.
- Works appropriately with the MDT staff to evaluate potential donors.
- Appreciates the potential risks to the donor of unnecessary investigations and recognises the low pre-test probability of disease in apparently healthy members of the general population.
- Accurately assesses potential kidney donors and involves the wider MDT as appropriate.
- Can appropriately assess and investigate a potential kidney transplant donor.
- Can initiate suitable treatment involving the wider MDT as required.
- Can monitor response to interventions and adjust treatment accordingly.
- Can discuss surgical options and prognosis with the patient.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), Mini-clinical evaluation exercise (mini-CEx), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 3. Perioperative care of kidney transplant recipients

Objective: To provide the trainee with the skills and knowledge to assess and manage kidney transplant recipients in the perioperative period, in conjunction with transplant surgery, at a specialist level.

KNOWLEDGE

- Describes the surgical options for kidney transplantation.
- Describes the pre-operative assessment of the potential kidney transplant recipient.
- Describes the routine post-operative care of the transplant recipient.
- Outlines the early surgical complications that may occur in a potential kidney transplant recipient.

SKILLS

- Evaluates kidney transplant recipients thoroughly and appropriately in the pre-operative period, in conjunction with the transplant nephrologist.
- Evaluates potential transplant recipients for the need for pre-operative dialysis and prescribes same appropriately.
- Evaluates kidney transplant recipients in the post-operative period, in conjunction with the transplant nephrologist and surgeon.
- Interprets the results of post-operative monitoring investigations.
- Orders and interprets additional investigations, as appropriate.
- Effectively communicates the results of the assessment with members of the multidisciplinary team.
- Involves expertise from other disciplines when appropriate e.g. cardiology, psychiatry, following discussion with the transplant team.
- Manages interdisciplinary relationships with transplant unit staff, nurses, microbiologist/ radiologist/ urologist/ histopathologist and involves specialist teams appropriately.
- Recognises the medical contraindications to kidney transplantation in the pre-operative period and brings them to the attention of relevant consultant staff.
- Accurately assesses and investigates kidney transplant recipients in the peri-operative period.
- Initiates appropriate treatment involving the wider MDT as required.
- Monitors response to interventions and adjusts treatment appropriately.
- Able to manage complex cases in the post-operative setting.
- Understands the significant issues affecting service delivery and participates in audit, quality control and service development.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), Mini-clinical evaluation exercise (mini-CEx), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 4. Transplant immunosuppression

Objective: To provide the trainee with the skills and knowledge to prescribe and manage induction and maintenance immunosuppression in kidney transplant recipients.

KNOWLEDGE

- Knows the indications for various induction protocols in Beaumont Hospital.
- Describes the pharmacologic principles of immunosuppressive medications and indications for their use.
- Describes the evidence base for dosing and monitoring of immunosuppressive medications.
- Describes the prophylaxis for reducing complications from immunosuppressive medications.

SKILLS

- Assesses the immunologic risk of a patient and decides on appropriate induction and maintenance immunosuppressive therapy.
- Prescribes immunosuppression safely, adjusts prescriptions appropriately and monitors response to treatment.
- Prescribes medication safely and appropriately in patients with acute graft dysfunction.
- Adjusts prescription in complex cases e.g. sepsis, malignancy, acute liver failure, acute poisoning or drug overdose.
- Appreciates role of the renal pharmacist in the management of kidney transplant recipients.
- Knows the indications for specific immunosuppression protocols and potential complications of treatment.
- Aware of when and how to adjust immunosuppression based on available data and clinical condition.
- Aware of potential complications of treatment and acts to minimise complications, including prescription of prophylaxis.
- Can interact with the whole MDT to manage patients receiving immunosuppression.
- Can discuss management clearly with patients and their families.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), Mini-clinical evaluation exercise (mini-CEx), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 5. Surgical aspects of kidney transplantation

Objective: To provide the trainee with exposure to the surgical aspects of kidney transplantation, and the skills and knowledge to assess and diagnose surgical complications at a specialist level.

KNOWLEDGE

- Describes the preoperative evaluation, operative management, and postoperative care of patients with end-stage kidney disease.
- Describes the technical aspects of renal transplantation and laparoscopic donor nephrectomy.
- Describes the evaluation of donor organs and issues relating to the use of extended criteria organs.

SKILLS

- Discusses surgical management of transplant recipients under the care of the transplant surgeon, in liaison with the MDT.
- Appreciates the role of the MDT in the surgical management of patients and communicates well with peers and patients.
- Understands important aspects of surgical transplant procedure.
- Recognises early and late surgical complications and appreciates when to involve appropriate consultant staff.

ASSESSMENT & LEARNING METHODS

- Attendance at Attends a laparoscopic donor nephrectomy, and a deceased donor and living donor kidney transplant.

Section 6. Diagnosis and management of kidney transplant dysfunction

Objective: To provide the trainee with the skills and knowledge to assess and manage patients with kidney transplant dysfunction at a specialist level.

KNOWLEDGE

- Outlines the causes of acute graft dysfunction and describes the interpretation of investigations and treatment.
- Describes the diagnosis and management of acute graft dysfunction, depending on cause.
- Describes the indications for allograft biopsy in the assessment of acute graft dysfunction.

SKILLS

- Assesses a patient with acute graft dysfunction and appropriately investigates to identify underlying cause.
- Performs transplant biopsy, as appropriate.
- Recognises the urgency in establishing an early diagnosis in acute graft dysfunction.
- Performs routine kidney transplant follow-up in clinic and ward setting.
- Can investigate, diagnose and manage acute graft dysfunction.
- Can prescribe augmented immunosuppressive medication safely and appropriately in cases of allograft rejection.
- Arranges appropriate imaging to assess vascular causes of graft dysfunction, in collaboration with radiologist and transplant surgeon, as appropriate. Can identify when intervention for transplant renal artery disease may be indicated.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 7. Kidney transplant rejection

Objective: To provide the trainee with skills and knowledge to diagnose and treat kidney transplant rejection at a specialist level.

KNOWLEDGE

- Describes all aspects necessary to accurately diagnose and risk stratify kidney transplant rejection, including laboratory, H+I and histological features.
- Describes the Banff classification of kidney transplant rejection.
- Describes the pathophysiology of kidney transplant rejection.
- Describes the evidence for treatment of kidney transplant rejection and knows the complications of same.

SKILLS

- Prescribes appropriate immunosuppression for kidney transplant rejection and adjusts or augments prescription based on the patient's progress and monitoring.
- Prescribes plasmapheresis when necessary for the management of kidney transplant rejection.
- Recognises circumstances where the risks of increased immunosuppression outweigh the benefits, or where therapy may not be indicated.
- Understands pathogenesis of kidney transplant rejection.
- Can grade kidney transplant rejection using the Banff system.
- Understands treatment options for kidney transplant rejection in depth, and is able to prescribe, adjust and monitor treatment appropriately.
- Initiates appropriate prophylaxis to prevent complications from immunosuppression e.g. osteoporosis, peptic ulcer disease, infection.
- Has participated in audit and protocol development for management of kidney transplant rejection.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 8. Infectious complications of kidney transplantation

Objective: To provide the trainee with skills and knowledge to be able to diagnose and manage kidney transplant recipients with infectious complications at a specialist level.

KNOWLEDGE

- Recalls the principles of adaptive and innate immunity, as they relate to infectious complications in the transplant recipient.
- Understands the distinction between community-acquired and opportunistic infection in the transplant setting.
- Lists the differential diagnosis for causes of infectious complications post transplant.

SKILLS

- Assesses, diagnoses and manages the transplant recipient with infection.
- Manages the prevention and treatment of opportunistic infections.
- Integrates information on the patients immunological state in the assessment of transplant related infection, and reduces immunosuppression appropriately in cases of opportunistic or recurrent infection.
- Involves other disciplines appropriately to assist in diagnosis and management e.g. respiratory, cardiology, surgery.
- Appreciates the role of microbiology and other health care professionals and demonstrates the ability to work closely with the multidisciplinary team.
- Understands basic principles of the transplant infectious disease and can prescribe an appropriate antibiotic regimen.
- Can provide longitudinal patient management in cases of sepsis post transplant and can manage complications through to their full resolution.
- Has participated in the audit, protocol development and quality control of infectious complications.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 9. Malignancy in kidney transplantation

Objective: To provide the trainee with the skills and knowledge to diagnose and manage malignancy in the kidney transplant recipient.

KNOWLEDGE

- Describes the risk factors, monitoring and modes of presentation of malignancy post-transplantation.
- Describes the methods to identify and diagnose post-transplant malignancy.
- Recalls the observation period of remission recommended for individual cancers before re-transplantation is considered.

SKILLS

- Diagnoses malignancy post-transplant, in collaboration with other disciplines.
- Reduces immunosuppression appropriately in the management of post-transplant malignancy.
- Ensures that all patients with cancer post-transplant receive appropriate treatment.
- Thoughtfully considers the pros and cons of continued immunosuppression in the setting of malignancy, taking overall patient prognosis into account.
- Screens transplant patients appropriately for the presence of cancer.
- Can diagnose patients with post-transplant malignancy, and involves other specialties appropriately.
- Takes account of the overall prognosis of the patient in selecting treatment.
- Manages monitoring and complications of tailored immunosuppression reduction.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 10. Tissue typing and cross matching in kidney transplantation

Objective: To provide the trainee instruction in methods of blood and tissue typing, assays for cross matching and alloantibody measurement, and their clinical application in the transplant setting.

KNOWLEDGE

- Recalls the principles of blood group typing, HLA matching, and donor–recipient cross matching.
- Outlines the assessment of immunologic risk pre-transplantation.

SKILLS

- Interprets the results of HLA typing, HLA antibody assays and crossmatching in the assessment of potential transplant recipients.
- Discusses issues surrounding different HLA antibody identification techniques e.g. ELISA, Flow, Luminex.
- Has observed a CDC, flow, Luminex crossmatch and discuss the raw data (MFI etc.).
- Counsels patients and relatives on immunologic risk as it relates to kidney transplantation, including living kidney donation.
- Develops and carries out protocols for the management of the highly immunologically sensitised patient.
- Appreciates the essential role of H+I in the management of transplant patients.
- Understands the principles of donor and recipient evaluation prior to kidney transplantation including blood group typing, HLA matching, and donor-recipient cross-matching.
- Can counsel patients and relatives on immunologic risk in kidney transplantation.
- Can counsel highly sensitised patients and their relatives on the role of desensitisation, ABOi transplantation and paired kidney exchange.
- Can integrate H+I results into the assesment of acute graft dysfunction.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 11. Management of the highly sensitised transplant recipient

Objective: To provide the trainee with skills and knowledge to manage the highly sensitised potential kidney transplant recipient at a specialist level.

KNOWLEDGE

- Describes the available management strategies for highly sensitised and ABO-incompatible recipients.
- Understands the principles of the 'acceptable mismatch' programme.

SKILLS

- Can prescribe plasmapheresis, intravenous immunoglobulin and other techniques to lower or modify anti-HLA antibody in sensitized patients.
- Can interpret and discuss the results output from a CDC, flow, Luminex crossmatch (MFI etc.).
- Plans and modifies immunosuppressive therapy regimens in patients at increased immunologic risk.
- Recognises the multidisciplinary nature, including the role of colleagues overseas, in the management of highly sensitised kidney transplant patients.
- Understands the basic principles of management in the highly sensitised transplant patient, including in-depth knowledge of the immunological assessment of such patients.
- Understands the principles of blood group typing, HLA matching, and donor-recipient cross-matching.
- Can counsel highly sensitised patients and their relatives on the role of desensitisation, ABOi transplantation and paired kidney exchange.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 11b. Plasmapheresis

Objective: To provide the trainee with skills and knowledge to be able to undertake the planning, prescription and monitoring of Plasmapheresis in the transplant setting.

KNOWLEDGE

- Knows the indications for plasmapheresis.
- Understands the principles of plasmapheresis and complications of treatment.

SKILLS

- Assesses the suitability of a patient for plasmapheresis.
- Prescribes plasmapheresis safely and assesses response to treatment.
- Manages the patient with acute kidney failure requiring both plasmapheresis and acute kidney replacement therapy.
- Appreciate role of nurses in the management of plasmapheresis.
- Knows the indications for plasmapheresis and potential complications of treatment. Is aware of when and how to initiate treatment including prescription of treatment and able to adjust prescription based on available data and patients clinical condition. Is able to explain the procedure to the patients and carers.
- Aware of potential complications of treatment and acts to minimise complications. Can monitor a course of treatment and adjust prescription according to patient's investigations and progress.
- Can interact with the whole MDT to manage patients undergoing plasmapheresis, understand the psychological effects on patients and their families and discuss prognosis and management clearly with them.
- Knows when to stop plasmapheresis or when to repeat a course of treatment.

ASSESSMENT & LEARNING METHODS

- Mini-clinical evaluation exercise (mini-CEX), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 12. Paediatric kidney transplantation

Objective: To provide the trainee with skills and knowledge to manage the long term supervision and management of paediatric kidney transplant recipients at a specialist level.

KNOWLEDGE

- Describes the factors that influence long term patient and kidney transplant survival.
- Describes the long-term medical and surgical problems which can occur following paediatric kidney transplant.
- Lists the late causes of graft dysfunction after kidney transplantation.
- Describes the potential long term adverse effects of immunosuppressive agents in the paediatric setting.
- Recalls the strategies that maximise long term graft function and survival.
- Recognises increased risk of cardiovascular and malignant disease in the long term paediatric transplant patient and the treatment and preventative strategies available.

SKILLS

- Identifies declining transplant function, assesses significance of changes, investigates appropriately, and makes appropriate changes to management.
- Utilises strategies that optimise long term graft and patient outcomes in paediatric recipients.
- Identifies and manages cardiovascular, malignant and infectious problems in long-term paediatric kidney transplant recipients.
- Modifies long term immunosuppressive therapy regimens and tailors to an individual patient considering other comorbid conditions and changing circumstances.
- Minimizes and manage the medical complications of a failing kidney transplant.
- Counsels patients and relatives in all aspects of kidney transplantation, including graft failure and preparation for dialysis or re-transplantation.
- Recognises the requirement to involving relatives and carers in the management of paediatric patients.
- Has a thoughtful approach to the stresses involved for families transitioning from the paediatric to the adult setting.
- Knows the causes of paediatric kidney transplant dysfunction.
- Knows how to investigate and manage late paediatric kidney transplant dysfunction.
- Implements strategies to minimise the risk of complications late post transplant.
- Can manage the paediatric transplant recipient in manner that maximises transplant survival and minimises complications in the recipient.
- Is able to counsel patients and relatives in all aspects of paediatric kidney transplantation.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), Mini-clinical evaluation exercise (mini-CEEx), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 13. Allocation of deceased donor organs for transplantation

Objective: To provide the trainee with an understanding of the allocation process for deceased donor organs in Ireland.

KNOWLEDGE

- Outlines the allocation process for deceased donor organs in Ireland.
- Describes the circumstances when 'ABO listing' may be considered.

SKILLS

- Can counsel patients and families appropriately regarding transplant waiting lists and organ allocation in Ireland.
- Appreciates the pressures that lead to increased waiting times for organs.
- Can clearly explain the organ allocation process to patients and their families.
- Advocates appropriately for patients on the transplant waiting list that may require prioritisation.

ASSESSMENT & LEARNING METHODS

- Beaumont Hospital Study day.

Section 14. Ethical considerations in organ transplantation

Objective: To provide the trainee with training in the ethical aspects of organ transplantation.

KNOWLEDGE

- Describes unresolved ethical issues surrounding transplantation, for example regarding supply, the methods of organ allocation or the use of living donors as volunteers, including minors.
- Describes the pros and cons of financial incentives for transplantation.

SKILLS

- Can discuss the risks and benefits of organ donation from living donors.
- Can expand on the merits or otherwise on the likely impact of 'presumed consent' in Ireland.
- Adopts a considered, balanced approach to unresolved ethical dilemmas in contemporary transplantation.
- Understands the duties and responsibilities of the medical profession and society to help fellow humans.

ASSESSMENT & LEARNING METHODS

- Beaumont Hospital Study day.

Section 15. Management of the failing transplant and return to dialysis

Objective: To provide the trainee with skills and knowledge to manage patients with failing kidney transplants and their return to dialysis.

KNOWLEDGE

- Describes the predictors of allograft failure and averages time-lines for return to dialysis, depending on the underlying cause.
- Describes the role of immunosuppression withdrawal, with consideration to future retransplantation.

SKILLS

- Clinically assesses the patient with a failing transplant and recognises when further attempts to restore graft function are futile.
- Plans for renal replacement therapy in a timely manner.
- Makes appropriate decisions about urgency of treatment.
- Determines the place for continued immunosuppression, balances risks and benefits, and monitors long term use while on dialysis.
- Behaves in a proactive manner to minimise complications for the patient in the transition back to dialysis.
- Can investigate patients with a failing transplant to make a diagnosis.
- Explains clearly to patients the prognosis and available treatments, including potential risks.
- Discusses the role of retransplantation, including pre-emptive transplantation where appropriate.
- Is able to decide on whether continuation or withdrawal of immunosuppression is appropriate, depending on factors such as prospective re-transplantation and risks of infection or malignancy.

ASSESSMENT & LEARNING METHODS

- Case-based discussion (CbD), Mini-clinical evaluation exercise (mini-CEx), NephSAP continuous assessment (NCA).
- Beaumont Hospital Study day.

Section 16a. Procedures: transplant kidney biopsy

Objective: To ensure that the trainee is familiar with the skills necessary to perform transplant kidney biopsies.

KNOWLEDGE

- Lists the indications for a transplant kidney biopsy.
- Describes the anatomy of the transplant kidney.
- Lists the contraindications to performing a transplant kidney biopsy.
- Lists the potential complications of a transplant kidney biopsy.

SKILLS

- Minimises and manages complications of transplant kidney biopsy.
- Interprets the transplant kidney biopsy findings with the assistance of a Histopathologist.
- Discusses the indication, perceived benefits and potential risks of the procedure with a patient or relative in a manner that facilitates informed consent.
- Discusses the biopsy findings with a patient to enable shared decision making regarding treatment options.
- Utilises ultrasound to localize the kidney transplant and uses ultrasound guidance to assist in transplant kidney biopsy.
- Able to competently perform a transplant kidney biopsy.
- Provides appropriate information to patients and checks understanding.
- Appreciates the role of the radiologist and Histopathologist.
- Uses appropriate technique to minimise risk of infection when performing a transplant kidney biopsy.
- Has appropriate self-confidence and recognition of limitations when performing a transplant kidney biopsy.
- Audits personal technical performance when performing transplant kidney biopsy against standards.
- Knows the indications for transplant kidney biopsy, and is aware of the contraindications and potential complications of the procedure.
- Can confidently discuss the indications for transplant kidney biopsy and the risk of complications with patients and carers in order to obtain informed consent.
- Knows how to minimise the risk of complications and how to manage them.
- Can confidently discuss the results of a transplant kidney biopsy with a patient in a way that enables the patient to be involved in decisions regarding their treatment options.
- Can competently perform a transplant kidney biopsy and is aware of own performance compared to recognised standards and regularly audits performance (not mandatory).

ASSESSMENT & LEARNING METHODS

- Direct Observation of Procedural Skills (DOPS).

Section 16b. Procedures: ultrasound scanning of transplant kidneys

Objective: The trainee will be proficient at carrying out and interpreting ultrasound scanning of transplant kidneys to identify obstruction and facilitate kidney biopsy.

KNOWLEDGE

- Knowledge of the anatomy of transplant kidneys.

SKILLS

- Use ultrasound to localise transplant kidneys for the purpose of kidney biopsy.
- Can use bedside ultrasound to assess patients with allograft dysfunction e.g. to rule out obstruction and assess kidney cortical thickness.

ASSESSMENT & LEARNING METHODS

- DOPS.
- Study Day.
- Recommended: Ultrasound course to include the following:
 - neck and groin veins
 - native kidney
 - transplant kidney

Documentation of Minimum Requirements for Training

- These are the minimum number of cases you are asked to document as part of your training. It is recommended you seek opportunities to attain a higher level of exposure as part of your self-directed learning and development of expertise.
- You should expect the demands of your post to exceed the minimum required number of cases documented for training.
- If you are having difficulty meeting a particular requirement, please contact your specialty coordinator

Curriculum Requirement	Required/Desirable	Minimum Requirement	Reporting Period	Form Name
Section 1 - Training Plan				
Personal Goals Plan (Copy of agreed Training Plan for your current training year signed by both Trainee & Trainer)	Required	1	Training Post	Form 052
Personal Goals Review Form	Required	1	Training Post	Form 137
Weekly Timetable (Sample Weekly Timetable for Post/Clinical Attachment)	Required	1	Training Post	Form 045
On Call Rota	Required	1	Training Post	Form 064
Section 2 - Training Activities				
Outpatient Clinics (minimum 1 per week)				
Early post-transplant OPD (1 per week)	Required	40	Year of Training	Form 001
Chronic Transplant	Required	20	Year of Training	Form 001
Ward Rounds/Consultations				
Consultant Led (minimum 2 per week)	Required	40	Year of Training	Form 002
SpR Led (minimum 3 per week)	Required	80	Year of Training	Form 002
Consultations (At least 50 per year of training) This should include the following category of patients:				
Acute transplant care (Beaumont)	Required	20	Training Programme	Form 002
Chronic transplant	Required	20	Year of Training	Form 002
Procedures/Practical Skills/Surgical Skills				
Renal biopsy (Transplant)	Required	8	Year of Training	Form 004
Ultrasound scanning of Kidney (Native and transplant)	Desirable	10	Year of Training	Form 004
Additional/Special Experience Gained e.g. Point of Care Ultrasound Scan	Desirable	1	Training Programme	Form 005

Curriculum Requirement	Required/Desirable	Minimum Requirement	Reporting Period	Form Name
Section 3 - Educational Activities				
Mandatory Courses				
ACLS	Required	1	Training Programme	Form 006
Ethics: Foundation	Required	1	Training Programme	Form 006
Ethics for General Medicine Specialties	Required	1	Training Programme	Form 006
Health Research – An Introduction	Required	1	Training Programme	Form 006
HST Leadership in Clinical Practice (≥ Year 3)	Required	1	Training Programme	Form 006
Mastering Communications	Required	1	Training Programme	Form 006
Performing Audit (Year 1)	Required	1	Training Programme	Form 006
Wellness Matters	Required	1	Training Programme	Form 006
Non – Mandatory Courses				
Study days (organised by NSD) Nephrology	Desirable	4	Year of Training	Form 008
Participation at In-house activities minimum of 1 per month from the categories below:				Form 011
Grand Rounds (minimum of 2 per month)	Required	20	Year of Training	Form 011
Other including:				
Seminars or lectures	Required	8	Year of Training	Form 011
Radiology Conference	Required	6	Year of Training	Form 011
MDT Meetings	Required	12	Year of Training	Form 011
Pathology Conference	Required	4	Year of Training	Form 011
Journal club	Required	10	Year of Training	Form 011
Kidney club	Required	3	Year of Training	Form 011
Examinations				
ASN NephSAP online multiple choice continuous assessment questions	Required	5	Year of Training	Form 012
Delivery of Teaching (minimum 2 formal teaching session per month)				
Lecture	Required	5	Year of Training	Form 013
Tutorial	Required	5	Year of Training	Form 013
Bedside Teaching	Required	10	Year of Training	Form 013
Audit activities and Reporting (1 per year either to start or complete, Quality Improvement (QI) projects can be uploaded against audit)	Required	1	Every two years	Form 135
Publications	Desirable	1	Year of Training	Form 016

Curriculum Requirement	Required/Desirable	Minimum Requirement	Reporting Period	Form Name
Presentations (national or international meetings)	Desirable	1	Year of Training	Form 017
Attendance at national/international meetings	Required	1	Year of Training	Form 010
Research: presentation at national or international meeting	Desirable	1	Training Programme	Form 011
Research: publication	Desirable	1	Training Programme	Form 011
Additional Qualifications	Desirable	1	Year of Training	Form 065
Committee attendance	Required	1	Year of Training	Form 063
Section 4 - Assessments				
DOPS				
Transplant kidney biopsy	Desirable	1	Training Programme	Form 021
Ultrasound scanning	Desirable	2	Training Programme	Form 021
CBD	Required	4	Year of Training	Form 020
Mini-CEX	Required	4	Year of Training	Form 023
Quarterly Assessments	Required	3	Year of Training	Form 092