



## **Preamble**

Organ transplantation has, in the past twenty years, evolved from rare and exceptional therapy, to standard of care for the treatment of end stage organ failure. The Transplant Surgical Service (Green Service) is responsible for the inpatient perioperative care of abdominal organ transplant recipients, including kidney, liver, pancreas, islet cell and combined multi-organ recipients. The care of these patients focuses on commonalities such as clinical immunosuppression, diagnosis and treatment of rejection, and treatment of opportunistic infections and other complications. At the same time, trainees will also develop key competencies specific to each organ transplant, including surgical aspects, post-operative complications etc. The trainees will develop key competencies in the assessment and management of surgical candidates with end-stage renal and liver disease and diabetes mellitus (both type 1 and type 2). The care of transplant recipients is complex and multiple medical comorbidities are the norm. The trainees will work effectively on a multidisciplinary team, which involves transplant nephrology, hepatology and other medical services. Additionally, the trainee team will be involved with multi-organ recoveries from deceased donors, joining the transplant staff wherever they may be performing these procedures, at MUHC hospitals, at other institutions throughout the province, and occasionally across the country.

## **MEDICAL EXPERT**

### **CLINICAL/KNOWLEDGE BASE – JUNIOR RESIDENT**

Through clinic and inpatient ward experience the junior resident must develop an approach to the kidney, liver and pancreas/islet transplant recipient, including indications and pre-transplant management, peri-operative management and identification of complications. The resident will have an understanding of the basic principles of immunosuppression, and be able to identify the classes of medication, their side effects and toxicities. The resident will also be able to identify the potential for organ donation both following neurological determination of death as well as donation after cardiac death. The resident will understand the risks and benefits of living organ donation.

For each of kidney, liver, and pancreas/islet:

- Indications, candidacy, pre-transplant management
- Perioperative management
- Outcomes, complications

For immunosuppression:

- Basics of histocompatibility and assessment of immunologic risk
- Mechanisms of acute rejection
- Diagnosis and grading of acute/chronic processes
- Treatment of rejection
- Classes of medication/mechanisms, toxicities/side effects, monitoring, basic drug interactions

For organ donation:

- Identification of organ donation potential after neurological death



Identification of organ donation potential after cardiac death (DCD)  
Basic aspects of DCD, legal, ethical and medical  
Basic aspects of living donation

### **TECHNICAL SKILLS – JUNIOR RESIDENT**

Junior residents will demonstrate understanding of the main aspects of kidney, liver and pancreas/islet transplantation. They will also demonstrate understanding of the surgical principles of donation/organ recovery, and will be able to participate in these procedures as their experience dictates.

*Function as an assistant: A*

*Perform independently as first assistant or primary surgeon: I*

#### Kidney transplant

- Incision and retroperitoneal exposure/closure (I)
- Vessel mobilization (A)
- Venous anastomosis (A)
- Arterial anastomosis (A)
- Ureterovesical anastomosis (I/A)

#### Liver transplant

- Incision and RUQ exposure/closure (A)
- Hepatic mobilization (A)
- Porta hepatis dissection (A)
- Vena caval dissection/mobilization (A)
- Suprahepatic vena caval/hepatic vein anastomosis (A)
- Portal venous anastomosis (A)
- Hepatic arterial anastomosis (A)
- Biliary anastomosis or choledochojejunostomy (A)

#### Pancreas transplant

- Incision/abdominal exposure/closure (A)
- Back-table reconstruction (A)
- Venous anastomosis (A)
- Arterial anastomosis (A)
- Enteroenterostomy (I/A)

#### Multi-organ recovery

- Incision/exposure/closure (I)
- Aortic exposure (A)
- Hepatic mobilization/arterial dissection (A)
- Vascular isolation and cannulation (A)
- Flushing/preservation/cooling (A)
- Organ recovery (A)
- Iliac vessel recovery (I/A)

#### Other



Dialysis catheter removal (I)  
Incisional hernia repair (I)

### **CLINICAL/KNOWLEDGE BASE – SENIOR RESIDENT**

Through clinic and inpatient ward experience the senior resident must develop an approach kidney, liver and pancreas/islet transplant recipient, including indications and pre-transplant management, peri-operative management and identification of complications. The resident will have an understanding of the basic principles of immunosuppression, and be able to identify the classes of medication, their side effects and toxicities. The resident will also be able to identify the potential for organ donation both following neurological determination of death as well as donation after cardiac death. The resident will understand the risks and benefits of living organ donation.

For each of kidney, liver, and pancreas/islet:

Indications, candidacy, pre-transplant management  
Perioperative management  
Outcomes, complications

For immunosuppression:

Basics of histocompatibility and assessment of immunologic risk  
Mechanisms of acute rejection  
Diagnosis and grading of acute/chronic processes  
Treatment of rejection  
Classes of medication/mechanisms, toxicities/side effects, monitoring, basic drug interactions

For organ donation:

Identification of organ donation potential after neurological death  
Identification of organ donation potential after cardiac death (DCD)  
Basic aspects of DCD, legal, ethical and medical  
Basic aspects of living donation

### **TECHNICAL SKILLS – SENIOR RESIDENT**

Through intra-operative experience the senior resident must develop technical proficiency in various portions of advanced HPB resections. Depending on the complexity of the procedure the senior must be able to function either as a first assistant or independent surgeon.

*I – perform independently A – function as assistant*

Kidney transplant

Incision and retroperitoneal exposure/closure (I)  
Vessel mobilization (I)  
Venous anastomosis (I)  
Arterial anastomosis (I/A)  
Ureterovesical anastomosis (I/A)

Liver transplant



Incision and RUQ exposure/closure (A)  
Hepatic mobilization (A)  
Porta hepatis dissection (A)  
Vena caval dissection/mobilization (A)  
Suprahepatic vena caval/hepatic vein anastomosis (A)  
Portal venous anastomosis (A)  
Hepatic arterial anastomosis (A)  
Biliary anastomosis or choledochojejunostomy (I/A)

#### Pancreas transplant

Incision/abdominal exposure/closure (I/A)  
Back-table reconstruction (A)  
Venous anastomosis (A)  
Arterial anastomosis (A)  
Enteroenterostomy (I/A)

#### Multi-organ recovery

Incision/exposure/closure (I)  
Aortic exposure (A)  
Hepatic mobilization/arterial dissection (A)  
Vascular isolation and cannulation (A)  
Flushing/preservation/cooling (A)  
Organ recovery (A)  
Iliac vessel recovery (I/A)

#### Other

Dialysis catheter removal (I)  
Incisional hernia repair (I)

### **Both Senior and Junior**

#### **COMMUNICATOR**

1. Demonstrate effective communication with patients and families characterized by understanding, trust, respect, empathy and confidentiality;
2. Demonstrate ability to communicate "bad news" to patients regarding pre-transplant status, organ disposition or complications following transplantation
3. Demonstrate ability to communicate effectively in regards to treatment options for transplant patients at either the pre or post transplant phase
4. Gather information not only about disease but the patient's belief, concerns and expectations about his/her illness;
5. Be aware of the influential factors such as age, gender, ethnic, cultural and socio economic background and spiritual values that may affect the illness;
6. Ensures that consistent messages are delivered to the patient and the family by various members of the health care team;
7. Establish good relationship with peers and other health professionals;
8. Effectively provide and receive information;
9. Prepares documents, summaries, operative reports that are accurate and timely;



10. Demonstrates the ability to handle conflict situations.

### **COLLABORATOR**

1. Demonstrate effective interaction with health professionals recognizing their roles within the care of the patient, specifically with transplant nephrology and hepatology services as well as other consulting physicians;
2. Consult effectively with other physicians and health care professionals;
3. Contribute effectively to the inter-disciplinary team activity and meetings. This relates to multidisciplinary transplant management meetings for kidney and liver programs;
4. Develop care plan for the patient including investigation, treatment, and continued care in collaboration with other member of inter-disciplinary team.

### **MANAGER**

1. Understand the concept of resource utilization and the need for prioritization of health care delivery.
2. Allocate such resources wisely.
3. Utilize various technologies such as OACIS and PACS, I-PAD systems to optimize patient care and using such information to assist in decision-making.
4. Demonstrate effective leadership with appropriate delegation of responsibilities to other members of the house staff.
5. Plan for the weekly service rounds with the assignment of responsibility for presentation of subject matter and cases.
6. Select cases for the weekly morbidity and mortality rounds with specific emphasis on identification of systemic issues.

### **HEALTH ADVOCATE**

1. Understand the specialist role to intervene on behalf of patients on issues that may impact on their health;
2. Identify the important determinants of health affecting the patient as they relate to both candidacy and post-transplant outcomes
3. Utilize such information in the prioritization of cases for urgent, emergent or elective access to the operating room;
4. Understand the social demographic issues which affect patient hospital stay and evaluate the patient's ability to access various support services within the health and social systems;
5. Understand the issues related to disease prevention and identification of risk factors which may be modified through lifestyle change.

### **SCHOLAR**

1. Commitment as a specialist to engage in lifelong learning in the pursuit of mastery;
2. Recognize and identify gaps in one's own knowledge and develop a personal learning project to correct such deficiency;
3. Participate actively in the Transplant Journal Club;
4. Critically appraise medical information and successfully integrate this information into the discussion at M&M rounds, Grand rounds and service rounds;



5. Contribute to the development of new knowledge through involvement in a research project while on the service;
6. Utilize an evidence-based approach to the resolution of clinical problems.

**PROFESSIONAL**

1. Recognize the responsibility for the overall care of the surgical patient;
2. Deliver the highest quality of care with integrity, understanding and compassion. Practice of surgery must be ethically consistent
3. Have knowledge of and understanding of the professional legal and ethical codes to which surgeons are bound;
4. Develop ability to recognize, analyze and deal with unprofessional behaviors in clinical practice through knowledge of local and provincial regulations;
5. Demonstrate appropriate personal and inter-personal behavior.