MODULE TITLE:	**TRANSPLANTATION**	**7-Nov-2016**
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Module Rationale and Objectives

A general surgeon is expected to have an understanding of the anatomy, physiology, pathophysiology, investigations and differential diagnosis of organ failure. The surgeon should maintain a current understanding of indications for the provision of and the procedures of organ transplantation to overcome organ failure (in particular, liver, kidney, pancreas and small bowel). The general surgeon should be aware of the implications for management of patients with organ failure presenting with general surgical conditions. The general surgeon should be capable of participating in multi-organ donation. The general surgeon should also be prepared for and capable of caring for the characteristic complications of organ transplantation that includes serious sepsis and malignancy.

The graduating trainee will be able to:

- describe the causes, risk factors for, and effects of organ failure
- identify and recognise the symptoms and signs of the diseases that lead to organ failure and of the development of organ failure
- describe and select appropriate investigations, diagnostic strategies and describe the diagnostic tests that may be required
- identify appropriate treatment options, and their indications and contraindications
- diagnose and manage pathological conditions that lead to liver failure, renal failure, diabetes and intestinal failure and be able to provide management, advice and referral for transplantation where indicated
- advise on the appropriate investigative procedures
- remain current with respect to the care of the patient with incipient or established organ failure
- refer patient for consultation with appropriate other professions

Anatomy, Physiology, Pathology

Trainees should have thorough knowledge of the normal embryology, anatomy, physiology of the kidney liver, small bowel and pancreas.

Trainees should know the pathological processes that lead to:

- liver failure
- renal failure
- intestinal failure
- diabetes mellitus

Suggested Reading

Trainees who are preparing to sit the Generic and Clinical Examinations need to refer to the recommended reading list on the RACS website at www.surgeons.org

For the Fellowship examination, the following text is recommended:

(1) Transplantation Surgery: Companion to Specialist Surgical Practice (ISBN 9780702021466), 7th edition, by J.L. Forsythe.

Trainees are expected to keep abreast of the current literature, including textbooks, journal articles, consensus guidelines and other on-line resources.

Learning Opportunities and Methods

If state-based and/or local hospital courses/meetings are available, trainees are strongly advised to avail themselves of these opportunities. This also includes practising procedures on simulation equipment where applicable.

Trainees are encouraged to present their research at national and/or accredited regional training days, in order to fulfil the research requirement.

SET trainees should seek all opportunities open to them, to attend multi-organ procurements. The anatomical exposure is a valuable experience.

How this module will be assessed

The Generic and Clinical Examinations; Fellowship examination (written and viva voce sections); Trainee evaluation forms and logbooks; SEAM (where applicable).

Definitions

Operative Management - Knows:	Trainees are required to be familiar with the indications, benefits and limitations of the procedure; trainees should be able to describe the relevant operative techniques involved in performing the procedure; trainees are encouraged to at least observe and preferably assist in these procedures.
Operative Management - Does:	In addition to the above, trainees must be competent at performing the procedure.

SET LEVEL	MEDICAL EXPERTISE	JUDGEMENT / CLINICAL DECISION MAKING			TECHNICAL EXPERTISE	
	ANATOMY PHYSIOLOGY PATHOLOGY	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE MANAGEMENT - KNOWS -	OPERATIVE MANAGEMENT - DOES -
Renal failure ▪ **acute** ▪ **chronic**						
Early SET	▪ Describe the anatomy of the kidney and urinary tract ▪ Describe the function of the kidney ▪ Describe the causes and prevention of renal failure	▪ Identify the symptoms and signs: - acute - chronic	▪ Outline the basic routine and the essential tests to identify: - cause - effects - associated diseases ▪ Interpret the investigations	▪ Outline the methods of management: - acute - chronic ▪ Outline the requirements for consent for both donor and recipient procedures	▪ Placement of venous dialysis catheter	
Mid SET	▪ Review the implications of operating on patients with renal failure			▪ Vascular access and peritoneal dialysis: - indications - contraindications - procedural requirements - complications ▪ Outline the contraindications to renal transplantation ▪ Evaluate the options for kidney donation ▪ Outline the management of general surgical problems presenting in patients with renal failure (including referral to appropriate specialists)	▪ Placement of peritoneal dialysis catheter	
Late SET					▪ Multi-organ donation ▪ Living donor ▪ Kidney donation: - laparoscopic - open ▪ Renal transplantation ▪ AV fistula and management of complications; **See also Vascular Module**	
Acute rejection following renal transplantation						
Early SET	▪ Describe: - immunology of HLA matching - cytotoxic cross match - immunosuppression - process of rejection	▪ Identify the symptoms and signs	▪ Identify the essential tests to identify the rejection episode			
Mid SET					▪ Renal biopsy and complications ▪ Transplant nephrectomy	

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	ANATOMY PHYSIOLOGY PATHOLOGY	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE MANAGEMENT - KNOWS -	OPERATIVE MANAGEMENT - DOES -
Tertiary hyperpara-thyroidism *See also Endocrine Module*						
Early SET	▪ Describe: - onset of hyperpara-thyroidism in renal failure - consequences	▪ Identify the symptoms and signs	▪ Outline the essential tests to prove the nature of the hyperpara-thyroidism	▪ Identify: - indications - contraindications - complications of parathyroidectomy		
Mid SET		▪ Describe the prevention of hyperpara-thyroidism		▪ Describe the influence of renal transplantation on the presence of hyperpara-thyroidism	▪ Parathyroidectomy associated with renal failure	
Late SET					▪ Outline: - success rate - follow-up of parathyroidectomy in renal failure - procedure of parathyroid transplantation	
Brain death/ Donation after cardiac death (DCD)						
Early SET	▪ Describe the likely sequences that lead to the development of brain death	▪ Identify the criteria for brain death and how these criteria are completed	▪ Identify the essential tests to evaluate relevant organ function ▪ Identify tests that are required to ensure that transplanting of the organ will not place the recipient at risk			
Late SET					▪ Operation of multi-organ donation	
Malignancy in transplantation						
Early SET	▪ Describe the underlying disorders that predispose transplant recipients to multiple malignancies	▪ Identify the symptoms and signs ▪ Recommend appropriate screening	▪ Outline the appropriate screening tests to identify likely malignancies in transplant recipients			
Mid SET				▪ Outline the appropriate management of the common malignancies associated with transplantation ▪ Describe procedures that may be carried out by general surgeons caring for transplant recipients		
Late SET					▪ Identify procedures that could require a referral for specialist support	

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	ANATOMY PHYSIOLOGY PATHOLOGY	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE MANAGEMENT - KNOWS -	OPERATIVE MANAGEMENT - DOES -
Liver failure ▪ **acute** ▪ **chronic**						
Early SET	▪ Describe the anatomy of the liver and biliary tract ▪ Describe the functions of the liver ▪ Describe the causes and prevention of liver failure ▪ Describe the pathophysiology of ascites and portal hypertension	▪ Identify the symptoms and signs - acute - chronic	▪ Outline the routine investigations of causes and status of liver failure	▪ Outline the management of: - chronic liver failure - ascites - portal hypertension		▪ Abdominal paracentesis
Mid SET				▪ Outline the indications for liver transplantation ▪ Outline the management of general surgical problems presenting in patients with liver failure (including referral to appropriate specialists)	▪ Upper GI endoscopy and interventions for bleeding	▪ Laparoscopic assessment of the liver, including ultrasound
Late SET					▪ Interventions for portal hypertension ▪ Surgical procedure of liver transplantation	
Pancreatic endocrine failure						
Early SET	▪ Describe: - anatomy - functions of islets of Langerhans - causes and prevention of diabetes mellitus	▪ Identify the symptoms and signs of diabetes mellitus and its end organ complications	▪ Outline: - basic routine and essential tests to identify the cause of diabetes mellitus - long-term effects of insulin dependent diabetes mellitus ▪ Interpret the investigations			
Mid SET				▪ Outline the methods of management: - advanced complications - renal failure ▪ Indications and contraindications for pancreas transplantation		
Late SET					▪ Multi-organ donation	

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	ANATOMY PHYSIOLOGY PATHOLOGY	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE MANAGEMENT - KNOWS -	OPERATIVE MANAGEMENT - DOES -
Short bowel syndrome *See also Small Bowel Module*						
Early SET	▪ Describe the anatomy of the gastrointestinal tract ▪ Describe the functions of the small intestine ▪ List the causes of short bowel syndrome	▪ Identify the symptoms and signs	▪ Outline the basic routine and the essential tests to establish a diagnosis ▪ Interpret the investigations			
Mid SET				▪ Outline the methods of management ▪ Discuss nutritional support ▪ Discuss the role of enzymatic replacement therapy ▪ Indications and contraindications for small bowel transplantation	▪ Insertion of a Hickman line for long-term TPN	
Late SET					▪ Multi-organ donation	
Operating on the immunosuppressed/ post transplantation patient						
Early SET	▪ Describe processes of immuno-compromise in transplant recipients					
Mid SET			▪ Outline pre-operative preparation for operations on transplants recipients	▪ Outline principles of management in operations on immuno-compromised patients		