

<b>MODULE TITLE:</b>	<b>POST FELLOWSHIP EDUCATION AND TRAINING PROGRAM IN TRANSPLANTATION SURGERY</b>	<b>22-Mar-2018</b>
<b>DEVELOPED BY:</b>	<b>Michael Fink, Henry Pleass</b>	
<b>Module Rationale and Objectives</b>	<p>A transplant 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. The transplant surgeon should be aware of the implications for management of patients with organ failure presenting with general surgical conditions. The transplant surgeon should be capable of participating in multi-organ donation. The transplant surgeon should also be prepared for and capable of caring for the characteristic complications of organ transplantation that includes serious sepsis and malignancy.</p> <p>This curriculum module is divided into the following sections, outlining essential and desirable technical expertise for the following:</p> <ul style="list-style-type: none"> <li>▪ Renal Transplantation</li> <li>▪ Pancreas Transplantation</li> <li>▪ Liver Transplantation</li> </ul> <p>This curriculum also covers for all organs:</p> <ul style="list-style-type: none"> <li>▪ Living and deceased (donation after brain death and donation after cardiac death) donation, including donor assessment and risk of transmission of infection and malignancy</li> <li>▪ Principles of eligibility for transplantation and organ allocation</li> <li>▪ ABO and histocompatibility, cellular, humoral and vascular rejection processes, Cytotoxic and flow cytometric crossmatch analysis and luminex technology.</li> <li>▪ Causes of graft dysfunction</li> <li>▪ Immunosuppressive agents</li> <li>▪ Complications of immunosuppression – medical, viral, bacterial, fungal, and oncological</li> </ul>	
<b>Suggested Reading</b>	<p>The following text is recommended:</p> <p>(1) <i>Transplantation Surgery: Companion to Specialist Surgical Practice</i> (ISBN 9780702021466), 7<sup>th</sup> edition, by J.L. Forsythe.</p> <p>Trainees are expected to keep abreast of the current literature, including textbooks, journal articles, consensus guidelines and other on-line resources.</p>	
<b>Learning Opportunities and Methods</b>	<p>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.</p> <p>Trainees are encouraged to present their research at national and/or regional training days, in order to fulfil the research requirement.</p> <p>Trainees should seek all opportunities open to them, to attend multi-organ procurements. The anatomical exposure is a valuable experience.</p>	
<b>How this module will be assessed</b>	<p>In-training assessment forms and logbooks.</p>	

MEDICAL EXPERTISE	JUDGEMENT / CLINICAL DECISION MAKING			TECHNICAL EXPERTISE		
	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE EXPERIENCE – ESSENTIAL	OPERATIVE EXPERIENCE - DESIRABLE	OPERATIVE KNOWLEDGE
<b>GENERAL TRANSPLANTATION CURRICULUM</b>						
<b>Brain death/Donation after cardiac death (DCD)</b>						
<ul style="list-style-type: none"> <li>Describe the likely sequences that lead to the development of brain death</li> </ul>	<ul style="list-style-type: none"> <li>Identify the criteria for brain death and how these criteria are completed</li> </ul>	<ul style="list-style-type: none"> <li>Identify the essential tests to evaluate relevant organ function</li> <li>Identify tests that are required to ensure that transplanting of the organ will not place the recipient at risk</li> </ul>	<ul style="list-style-type: none"> <li>Describe the processes that occur in the DCD donor</li> </ul>	<ul style="list-style-type: none"> <li>Operation of multi-organ donation</li> </ul>		
<b>Malignancy in transplantation</b>						
<ul style="list-style-type: none"> <li>Describe the underlying disorders that predispose transplant recipients to multiple malignancies</li> </ul>	<ul style="list-style-type: none"> <li>Identify the symptoms and signs</li> </ul>	<ul style="list-style-type: none"> <li>Outline the appropriate screening tests to identify likely malignancies in transplant recipients</li> </ul>	<ul style="list-style-type: none"> <li>Outline the appropriate management of the common malignancies associated with transplantation</li> </ul>			<ul style="list-style-type: none"> <li>Identify procedures that could require a referral for specialist support</li> </ul>
<b>Operating on the immunosuppressed/post transplantation patient</b>						
<ul style="list-style-type: none"> <li>Describe processes of immuno-compromise in transplant recipients</li> </ul>		<ul style="list-style-type: none"> <li>Outline pre-operative preparation for operations on transplants recipients</li> </ul>	<ul style="list-style-type: none"> <li>Outline principals of management in operations on immuno-compromised patients</li> </ul>			

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<b>RENAL TRANSPLANTATION CURRICULUM</b>						
<b>Renal Failure Acute Chronic</b>						
<ul style="list-style-type: none"> <li>▪ Describe the anatomy of the kidney and urinary tract</li> <li>▪ Describe the function of the kidney</li> <li>▪ Describe the causes and prevention of renal failure</li> <li>▪ Review the implications of operating on patients with renal failure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify the symptoms and signs: <ul style="list-style-type: none"> <li>- acute</li> <li>- chronic</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Outline tests to identify: <ul style="list-style-type: none"> <li>- cause</li> <li>- effects</li> <li>- associated diseases</li> </ul> </li> <li>▪ Interpret the investigations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Outline the methods of management: <ul style="list-style-type: none"> <li>- acute</li> <li>- chronic</li> </ul> </li> <li>▪ Detail the consent requirements for living donor nephrectomy and recipient renal transplantation</li> <li>▪ Vascular access and peritoneal dialysis: <ul style="list-style-type: none"> <li>- indications</li> <li>- contraindications</li> <li>- procedural requirements</li> <li>- complications</li> </ul> </li> <li>▪ Outline the contraindications to renal transplantation</li> <li>▪ Evaluate the options for kidney donation</li> <li>▪ Outline the management of surgical problems presenting in patients with renal failure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Placement of venous dialysis catheter</li> <li>▪ Placement of peritoneal dialysis catheter</li> <li>▪ Performance of at least 40 renal access procedures as the primary operator</li> </ul>		<ul style="list-style-type: none"> <li>▪ AV fistula and management of complications</li> </ul>
<b>Renal Transplantation</b>						
<ul style="list-style-type: none"> <li>▪ Describe: <ul style="list-style-type: none"> <li>- Renal physiology</li> <li>- Aetiology of renal disease</li> <li>- Co-morbidities associated with chronic renal failure</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Assessment of the potential renal transplant recipient</li> </ul>		<ul style="list-style-type: none"> <li>▪ Assessment of post-transplant renal recipient, including management of immunosuppression</li> </ul>	<ul style="list-style-type: none"> <li>▪ Performance as primary surgeon or first assistant of at least 15 deceased organ donor procedures, including both brain stem dead and donation after cardiac death donors, at least 10 of which must be multi-organ</li> <li>▪ Attendance of at least 40 renal transplants, including both live and deceased organ donors, and performance of at least 20 renal transplants as the primary surgeon</li> </ul>	<ul style="list-style-type: none"> <li>▪ Performance of live donor nephrectomy (laparoscopic)</li> <li>▪ Performance of open nephrectomy</li> <li>▪ Management of vascular complications with respect to the renal transplant procedure, management of a renal transplant lymphocele (drainage, laparoscopic, open or percutaneous)</li> <li>▪ Management of ureteric complications</li> </ul>	

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	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE EXPERIENCE – ESSENTIAL	OPERATIVE EXPERIENCE - DESIRABLE	OPERATIVE KNOWLEDGE
<b>Acute rejection following renal transplantation</b>						
<ul style="list-style-type: none"> <li>▪ Describe: <ul style="list-style-type: none"> <li>- immunology of HLA matching</li> <li>- cytotoxic cross match</li> <li>- immunosuppression</li> <li>- process of rejection</li> </ul> </li> <li>▪ Knowledge of DSA levels and interpretation of luminex results</li> <li>▪ Knowledge of ABOi Transplant and pre-transplant management to reduce antibody titres</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify the symptoms and signs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify the essential tests to identify the rejection episode</li> </ul>		<ul style="list-style-type: none"> <li>▪ Renal biopsy and complications</li> <li>▪ Transplant nephrectomy</li> </ul>		

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	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE EXPERIENCE – ESSENTIAL	OPERATIVE EXPERIENCE - DESIRABLE	OPERATIVE KNOWLEDGE
<b>PANCREAS TRANSPLANTATION CURRICULUM</b>						
<b>Pancreatic endocrine failure</b>						
<ul style="list-style-type: none"> <li>▪ Describe:               <ul style="list-style-type: none"> <li>- anatomy</li> <li>- functions of islets of Langerhans</li> <li>- causes and prevention of diabetes mellitus</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify the symptoms and signs of diabetes mellitus and its end organ complications</li> </ul>	<ul style="list-style-type: none"> <li>▪ Outline:               <ul style="list-style-type: none"> <li>- basic routine and essential tests to identify the cause of diabetes mellitus</li> <li>- long-term effects of insulin dependent diabetes mellitus</li> </ul> </li> <li>▪ Interpret the investigations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Outline the methods of management:               <ul style="list-style-type: none"> <li>- advanced complications</li> <li>- renal failure</li> </ul> </li> <li>▪ Indications and contraindications for pancreas transplantation</li> </ul>			
<b>Pancreas Transplantation</b>						
<i>The full renal transplant curriculum is a requirement for pancreas transplantation</i>						
<ul style="list-style-type: none"> <li>▪ Describe:               <ul style="list-style-type: none"> <li>- Embryology and anatomy of the pancreas</li> <li>- Pancreatic exocrine and endocrine physiology</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Indications for pancreas solid organ transplantation and pancreatic islet cell transplantation</li> </ul>		<ul style="list-style-type: none"> <li>▪ The diagnosis, management and surgery for specific surgical complications associated with pancreas transplantation e.g. vascular thrombosis, pancreatic leak, and peritonitis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Performance of at least 15 multi-organ procurements from deceased donors as primary surgeon or first assistant, at least five of which must include pancreas and liver procurement en bloc</li> <li>▪ Performance of at least 10 supervised back table preparations of the pancreas allograft</li> <li>▪ Performance of at least 10 implantation procedures as primary surgeon or first assistant</li> </ul>	<ul style="list-style-type: none"> <li>▪ Additional back table techniques when donor and graft unavailable/unusable.</li> <li>▪ Both portal venous and systemic venous drainage techniques</li> <li>▪ Both enteric and bladder drainage techniques</li> </ul>	

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	CLINICAL ASSESSMENT	INVESTIGATIONS	PRINCIPLES OF MANAGEMENT	OPERATIVE EXPERIENCE – ESSENTIAL	OPERATIVE EXPERIENCE - DESIRABLE	OPERATIVE KNOWLEDGE
<b>LIVER TRANSPLANTATION CURRICULUM</b>						
<b>Liver failure acute chronic</b>						
<ul style="list-style-type: none"> <li>▪ Describe the anatomy of the liver and biliary tract</li> <li>▪ Describe the functions of the liver</li> <li>▪ Describe the causes and prevention of liver failure</li> <li>▪ Describe the pathophysiology of ascites and portal hypertension</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify the symptoms and signs               <ul style="list-style-type: none"> <li>- acute</li> <li>- chronic</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Outline the routine investigations of causes and status of liver failure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Outline the management of:               <ul style="list-style-type: none"> <li>- chronic liver failure</li> <li>- ascites</li> <li>- portal hypertension</li> <li>- hepatocellular carcinoma</li> </ul> </li> <li>▪ Outline the indications for liver transplantation</li> <li>▪ Outline the management of general surgical problems presenting in patients with liver failure (including referral to appropriate specialists)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Laparoscopic assessment of the liver, including ultrasound</li> </ul>	<ul style="list-style-type: none"> <li>▪ Upper GI endoscopy and interventions for bleeding</li> </ul>	<ul style="list-style-type: none"> <li>▪ Abdominal paracentesis</li> <li>▪ Interventions for portal hypertension, including radiological and surgical shunt procedures</li> </ul>
<b>Liver Transplantation</b>						
<ul style="list-style-type: none"> <li>▪ Describe:               <ul style="list-style-type: none"> <li>- Embryology and anatomy of the liver</li> <li>- Hepatic physiology</li> <li>- Pathophysiology of liver disease, including end-stage liver disease</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Indications for liver transplantation</li> <li>▪ Assessment of the potential liver transplant recipient</li> </ul>		<ul style="list-style-type: none"> <li>▪ The diagnosis, management and surgery for specific surgical complications associated with liver transplantation e.g. bleeding, vascular stenosis and thrombosis, biliary leak and stricture.</li> <li>▪ Assessment of post-transplant liver recipient, including management of immunosuppression</li> </ul>	<ul style="list-style-type: none"> <li>▪ Performance of multi-organ retrieval operation: minimum of 15 liver procurements as primary surgeon or first assistant</li> <li>▪ Performance of a minimum of 40 liver transplants as primary surgeon or first assistant</li> </ul>	<ul style="list-style-type: none"> <li>▪ Split liver transplantation (donor and recipient procedures)</li> <li>▪ Living donor liver transplantation</li> </ul>	