

MODULE TITLE:	SMALL BOWEL	7-Nov-2016
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REVIEWED BY:	Arend Merrie, Elizabeth Dennett (2010). Nigel Barwood, Matthew Croxford, Elizabeth Dennett, John Hansen, Paul Hollington, Michael Warner, Christopher Young (2013). Andrew Moot, Michael Warner (2016).	
Module Rationale and Objectives	<p>A general surgeon is required to have a thorough understanding of normal anatomy and physiology, as well as pathophysiology, investigations, differential diagnosis and surgical and non-surgical management of small intestinal disorders. It is important that general surgeons maintain a current understanding of the most appropriate time and manner of intervention.</p> <p>The graduating trainee will be able to:</p> <ul style="list-style-type: none"> ▪ Describe normal & abnormal anatomy of duodenum, jejunum, and ileum and their blood supply and lymphatic drainage ▪ describe common surgical pathologies of duodenum, jejunum, and ileum ▪ identify and recognise the symptoms and signs of these conditions ▪ describe and select appropriate diagnostic testing ▪ identify appropriate treatment options, and their indications and contraindications ▪ diagnose and manage pathological conditions that pertain to the duodenum, jejunum, and ileum including referral to other specialists where indicated ▪ select appropriate investigative tools ▪ adapt their skill in the context of each patient and each procedure ▪ identify and manage risk ▪ recognise the need to refer patients to other professionals ▪ convey bad news to patients in a way that conveys sensitivity to the patient's social, cultural and psychological needs ▪ communicate information to patients (and their family) about procedures, outcomes, and risks associated with surgery in ways that encourage their participation in informed decision making (consent) 	
Anatomy, Physiology, Pathology	<p>Trainees should have thorough knowledge of the normal embryology, anatomy, physiology, and pathology of:</p> <ul style="list-style-type: none"> ▪ peritoneal cavity ▪ small bowel – digestion and absorption; immune and endocrine functions; motility 	
Suggested Reading	<p>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</p> <p>For the Fellowship examination, there are no prescribed texts.</p> <p>Trainees are expected to keep abreast of the current literature, including textbooks, journal articles, consensus guidelines and other on-line resources.</p> <p>Recommended reading:</p> <ol style="list-style-type: none"> (1) Core Topics in General & Emergency Surgery: A Companion to Specialist Surgical Practice (ISBN 9780702049644), 5th edition, by S. Paterson-Brown. (2) Colorectal Surgery: A Companion to Specialist Surgical Practice (ISBN-13: 9780702049651), 5th edition by R.K.S. Phillips & S Clark. 	
Learning Opportunities and Methods	<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 accredited regional training days, in order to fulfil the research requirement.</p>	
How this module will be assessed	<p>The Generic and Clinical Examinations; Fellowship examination (written and viva voce sections); Trainee evaluation forms and logbooks; SEAM (where applicable).</p>	
Assumed Knowledge	<ul style="list-style-type: none"> ▪ Anatomy and embryology of the small intestine ▪ Functional physiology of the small intestine 	
Definitions	<p><i>Operative Management - Knows:</i> 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.</p> <p><i>Operative Management - Does:</i> In addition to the above, trainees must be competent at performing the procedure.</p>	

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 -
Small bowel obstruction (SBO)						
Early SET	<ul style="list-style-type: none"> Describe the embryology and anatomy of the small bowel Discuss the aetiologies Describe the pathophysiological changes associated with SBO Recognise and describe complications 	<ul style="list-style-type: none"> Assess and differentiate the clinical symptoms and signs Differentiate the signs of strangulation 	<ul style="list-style-type: none"> Define the role of laboratory investigations and medical imaging of SBO 	<ul style="list-style-type: none"> Review the indications and principles of non-operative management Define the indications for operative management Management of acute postoperative obstruction 		
Mid SET	<ul style="list-style-type: none"> Explain the anatomy of internal herniation 	<ul style="list-style-type: none"> Diagnose acute postoperative obstruction vs. ileus 	<ul style="list-style-type: none"> Discuss the role of investigations to distinguish post-operative ileus from obstruction 	<ul style="list-style-type: none"> Define the indications for resection Role of second look laparotomy When to defunction Management of recurrent SBO Management of SBO in the patient with advanced malignancy 	<ul style="list-style-type: none"> Laparoscopy for SBO 	<ul style="list-style-type: none"> Laparotomy Division of adhesions Bowel resection/ bypass
Intussusception						
Early SET	<ul style="list-style-type: none"> Discuss the aetiologies Describe the pathophysiology 			<ul style="list-style-type: none"> Management of Intussusception 		
Mid SET						<ul style="list-style-type: none"> Small bowel resection
"Foreign bodies" in the GI tract						
Early SET	<ul style="list-style-type: none"> Describe classification 	<ul style="list-style-type: none"> Define symptoms and signs and potential complications 	<ul style="list-style-type: none"> Radiology Endoscopy 			
Mid SET				<ul style="list-style-type: none"> Define indications for surgical intervention Management of foreign bodies Gallstone ileus 		<ul style="list-style-type: none"> Enterotomy and closure
Duodenal adenoma and carcinoma						
Early SET	<ul style="list-style-type: none"> Discuss the anatomy of the duodenum 	<ul style="list-style-type: none"> Discuss presentation 				
Mid SET	<ul style="list-style-type: none"> Discuss the natural history of duodenal carcinoma 		<ul style="list-style-type: none"> Discuss and interpret modalities for diagnosis and staging 	<ul style="list-style-type: none"> Discuss the surgical options for treatment 		
Late SET					<ul style="list-style-type: none"> Endoscopic duodenal stenting Surgical resection 	

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Duodenal diverticula						
Mid SET	<ul style="list-style-type: none"> Discuss the anatomy and complications 			<ul style="list-style-type: none"> Discuss the potential complications 	<ul style="list-style-type: none"> Duodenal diverticulectomy 	
Duodenal obstruction						
Early SET	<ul style="list-style-type: none"> Discuss the anatomy and embryology of the duodenum Discuss the aetiologies Discuss the pathophysiology 			<ul style="list-style-type: none"> Discuss the aetiology and management of electrolytic imbalance 		
Mid SET						<ul style="list-style-type: none"> Open gastrojejunostomy Duodeno-jejunostomy
Late SET					<ul style="list-style-type: none"> Laparoscopic gastrojejunostomy 	
Small bowel ischaemia						
<ul style="list-style-type: none"> acute chronic <i>See also Vascular Module</i>						
Early SET	<ul style="list-style-type: none"> Discuss the aetiologies Discuss the pathophysiology 	<ul style="list-style-type: none"> Assess clinical symptoms and signs 	<ul style="list-style-type: none"> Discuss and define role of medical imaging, lab investigations, enteroscopy / capsule endoscopy 			
Mid SET				<ul style="list-style-type: none"> Discuss management of both acute and chronic Multidisciplinary management of autoimmune SB arteritis Describe specific therapies 	<ul style="list-style-type: none"> Revascularisation Embolectomy 	<ul style="list-style-type: none"> Resection
Small bowel neoplasia/tumours						
Early SET	<ul style="list-style-type: none"> List the types and describe presentation 	<ul style="list-style-type: none"> Assess the clinical symptoms and signs 				
Mid SET			<ul style="list-style-type: none"> Define the role and interpretation of endoscopy and imaging 	<ul style="list-style-type: none"> Describe the principles of tumour assessment and treatment Role of diagnostic/therapeutic laparoscopy Multidisciplinary management Describe specific therapies 		<ul style="list-style-type: none"> Diagnostic laparoscopy Bowel resection/ bypass Mesenteric nodal resection
Late SET					<ul style="list-style-type: none"> Laparoscopic therapy 	

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Small bowel bleeding						
Early SET	<ul style="list-style-type: none"> Describe the aetiology and pathology 	<ul style="list-style-type: none"> Recognise the clinical presentations Demonstrate the ability to assess the patient with a massive bleed 		<ul style="list-style-type: none"> Design a plan of investigation and subsequent treatment for occult bleeding Discuss treatment for massive GI bleed, including a thorough knowledge of transfusion requirements and assessment of haemodynamic stability 		
Mid SET			<ul style="list-style-type: none"> Define the role and interpretation of endoscopy and imaging 	<ul style="list-style-type: none"> Understand the role of endovascular management 		<ul style="list-style-type: none"> Bowel resection
Late SET					<ul style="list-style-type: none"> On table enteroscopy 	
Meckel's diverticulum						
Early SET	<ul style="list-style-type: none"> Describe abnormality including the embryology and anatomy 	<ul style="list-style-type: none"> Recognise the different clinical presentations 	<ul style="list-style-type: none"> Define the role of medical imaging 	<ul style="list-style-type: none"> Discuss the role and techniques of resection Discuss the assessment and management of the incidental finding of a Meckel's diverticulum 		
Mid SET						<ul style="list-style-type: none"> Meckel's diverticulectomy Small bowel resection
Late SET					<ul style="list-style-type: none"> Laparoscopic Meckel's diverticulectomy 	
Small bowel fistula						
Early SET	<ul style="list-style-type: none"> Define the pathological abnormalities Describe the physiological effects of an enteric fistula at different levels 	<ul style="list-style-type: none"> Assess the clinical presentation 	<ul style="list-style-type: none"> Establish the role of medical imaging and laboratory investigations 	<ul style="list-style-type: none"> Describe the principles of management including: <ul style="list-style-type: none"> resuscitation fluid and electrolyte management nutrition sepsis control skin control 		
Mid SET				<ul style="list-style-type: none"> Timing of surgery Surgical options 	<ul style="list-style-type: none"> Management of open abdomen 	<ul style="list-style-type: none"> Small bowel resection Defunctioning Jejunostomy/ Ileostomy

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Inflammatory conditions of the small bowel						
<i>See also Colorectal Module</i>						
Early SET	<ul style="list-style-type: none"> Describe the pathology of inflammatory conditions of the small bowel 	<ul style="list-style-type: none"> Recognise and differentiate inflammatory bowel disease affecting the small intestine Be aware of possible differential diagnosis for small bowel Crohn's disease Recognise complications of IBD 	<ul style="list-style-type: none"> Define the role and interpretation of endoscopy and imaging 	<ul style="list-style-type: none"> Principles of medical management Discuss nutritional support Indications for surgical intervention 		
Mid SET				<ul style="list-style-type: none"> When to defunction 	<ul style="list-style-type: none"> Laparoscopic ileocolic resection 	<ul style="list-style-type: none"> Small bowel resection Ileocolic resection
Late SET					<ul style="list-style-type: none"> Laparoscopic assisted small bowel resection Strictureoplasty 	
Infectious disorders of the small bowel						
Early SET	<ul style="list-style-type: none"> Describe the microbiology, pathophysiology and pathology 	<ul style="list-style-type: none"> Differentiate infectious disorders from inflammatory conditions 	<ul style="list-style-type: none"> Role of laboratory investigations 	<ul style="list-style-type: none"> Principles of multidisciplinary management 		
Mid SET		<ul style="list-style-type: none"> Recognise complications requiring surgical intervention 				<ul style="list-style-type: none"> Small bowel resection
Diverticulosis of the small intestine						
Early SET	<ul style="list-style-type: none"> Describe the aetiology Describe complications 	<ul style="list-style-type: none"> Recognise significance of diverticulosis in clinical presentation Recognise the clinical features of malabsorption syndromes 	<ul style="list-style-type: none"> Define the role and interpretation of endoscopy and imaging 	<ul style="list-style-type: none"> Indications for surgical intervention 		
Mid SET						<ul style="list-style-type: none"> Small bowel resection Diverticulectomy
Intestinal failure (including post Bariatric bypass)						
<i>See also Sepsis Module (Nutrition)</i>						
Early SET	<ul style="list-style-type: none"> Describe the anatomy of the gastrointestinal tract Describe the functions of the small intestine Understand the causes and classification of intestinal failure Complications of long-term TPN 	<ul style="list-style-type: none"> Identify the symptoms and signs 	<ul style="list-style-type: none"> Outline the basic routine and the essential tests to establish a diagnosis Interpret the investigations 	<ul style="list-style-type: none"> Outline the methods of management Understand the principles of nutritional support - enteral & parenteral 		

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Intestinal failure (including post Bariatric bypass) (continued)						
Mid SET				<ul style="list-style-type: none"> ▪ Discuss the role of enzymatic replacement therapy ▪ Indications and contraindications for small bowel transplantation 		<ul style="list-style-type: none"> ▪ Insertion of a tunnelled central venous line for long-term TPN
Malabsorption syndromes						
Early SET	<ul style="list-style-type: none"> ▪ Describe pathologies causing malabsorption 	<ul style="list-style-type: none"> ▪ Nutritional assessment and clinical syndromes 	<ul style="list-style-type: none"> ▪ Laboratory ▪ Radiological ▪ Gastroenterological investigations 	<ul style="list-style-type: none"> ▪ Nutritional and metabolic support ▪ Pharmacological management ▪ Antibiotic management 		
Radiation enteritis						
Early SET	<ul style="list-style-type: none"> ▪ Define the range of acute and chronic pathologies that follow radiation therapy 	<ul style="list-style-type: none"> ▪ Discuss clinical presentation and complications 	<ul style="list-style-type: none"> ▪ Outline the basic routine and the essential tests to establish a diagnosis 	<ul style="list-style-type: none"> ▪ Discuss nutritional support 		
Mid SET				<ul style="list-style-type: none"> ▪ Discuss indications for surgical intervention 		
Small bowel trauma						
<i>See Trauma Module</i>						
Other small bowel problems including functional bowel disease and slow transit						
Early SET	<ul style="list-style-type: none"> ▪ Describe slow transit 		<ul style="list-style-type: none"> ▪ Transit studies 	<ul style="list-style-type: none"> ▪ Outline the pharmacological, dietary and psychological options in management 		