

**APPENDIX C**  
**ADVANCED TRAINING MODULES**

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## D) ADVANCED THERAPEUTIC ENDOSCOPY

After having acquired the basic requirements in endoscopy, a trainee may wish to extend their endoscopic competencies. This specialized training has to be done in an endoscopic unit guaranteeing a critical number of specialized procedures per year in order to give the trainee the possibility to learn these techniques in a reasonable period of time. The training period cannot be shorter than one year and should be at best two years.

The main focus of training, besides treatment options for benign and malignant stenosis in the upper and lower GI tract (bougienage, dilatation, stent insertion), is diagnostic and therapeutic ERCP. The trainee must gain competences in sphincterotomy, stone removal including the lithotripsy techniques and bilio-pancreatic stent insertion. Optionally, he/she can gain experience in the percutaneous approach to the biliary tree.

Further, endoscopic mucosa resection in the upper and lower GI tract is a full part of this advanced training program whereas mucosal dissection techniques are optional. Optional competencies can be gained in small bowel investigations techniques like capsule endoscopy or enteroscopy.

Endoscopic ultrasound and especially therapeutic ultrasound with fine needle biopsy and drainage of collection is a further optional competence in the module of specialized endoscopy.

To gain these specialized competences, a minimum number of procedures are required:

<b>1.</b>	<b>Stenosis Treatment Upper and Lower Tract (benign and malignant)</b>	
	With at least 20 stent placement in 2 different organs	50
<b>2.</b>	<b>ERCP</b>	<b>150</b>
	Diagnostic and /or therapeutic procedures	
	Sphincterotomy (biliary/pancreatic)	75
	Stent placement (plastic/metal)	30
	Gall stones treatment (Balloon extraction, Dormia basket, mechanical lithotripsy)	40
	Percutaneous transhepatic cholangiography/cholangioscopy (optional)	50
<b>3.</b>	<b>Endoscopic Local Tumour Treatment</b>	

	Mucosectomy (independent of the organ, esophagus, stomach, duodenum, colorectum)	40
	Endoscopic submucosal dissection (ESD)	optional
<b>4.</b>	<b>Small Bowel Endoscopy</b>	
	Flexible intestinoscopy	20
	Diagnostic capsule endoscopy (analysis)	30
<b>5</b>	<b>Endosonography</b>	
	Diagnostic procedures	150
	Therapeutic procedures	20
	Fine needle puncture	40
	Transgastric/transintestinal pancreatic cyst drainage	10

## II) HEPATOLOGY

### Introduction

During the dedicated year of advanced hepatology, the trainee is expected to widen and deepen her or his knowledge and experience in all areas of hepatology covered by the basic core curriculum. In addition, the trainee should get wide experience and develop specific clinical competence in the following areas:

1. Liver transplantation
2. Intensive care management of patients with fulminant hepatic failure.
3. Intensive care management of patients with acute-on-chronic hepatic failure.
4. In-depth management of viral hepatitis B and C including management of viral resistance.
5. Management of patients with severe portal hypertension; to include specialized investigation
6. Methods and treatment such as portal pressure measurements, transjugular liver biopsy and TIPS.
7. Nutritional counsel to patients with chronic liver disease, prior to and after transplantation, and to

8. Patients with co-morbidities in addition to liver disease.

**Competencies which should be gained for certain specific conditions:**

**1. Liver transplantation**

- Knowledge of indications for liver transplantation - acute and chronic disease.
- Knowledge about the principles of living donor selection, including appropriate surgical, psychosocial and ethical considerations and questions related to living donors, non-heart-beating
- Donors, criteria for brain death and appropriate recipients.
- Knowledge of the scoring systems used in transplant assessment e.g. MELD and Child-Pugh scores
- Eligibility criteria for hepatocellular carcinoma and the ability to apply these.
- Knowledge of the evaluation and management of hepato-pulmonary syndrome, porto- pulmonary hypertension and cirrhotic cardiomyopathy.
- Knowledge about transplant immunology, including blood group matching, histocompatibility, tissue typing and application of standard and second line immunosuppression and their infectious and malignant complications.
- Knowledge of the common liver biopsy findings post-transplant and the scoring systems used in assessment.
- Ability to manage early and late complications requiring medical, endoscopic or surgical intervention.

**2. Intensive care management of patients with fulminant hepatic failure**

- Knowledge of the clinical course and prognosis in acute and subacute liver failure respectively, particularly paracetamol poisoning, other drug and toxin induced damage, ischemic hepatitis, shock liver, fulminant viral and autoimmune hepatitis and post-liver transplant

**3. Intensive care management of patients with acute-on-chronic liver failure**

- Trainees should acquire the competencies to manage patients with severe acute liver disease, especially liver failure in an ICU setting with (or without) the collaboration of respiratory physicians or those physicians supervising and managing artificial ventilation
- Knowledge of liver support techniques including artificial support

**4. Management of severe portal hypertension**

- Ability to complete patient assessment in preparation for diagnostics of the severity of the condition and the anatomical state of the portal vein and other splanchnic vessels

- Experience with rescue treatment including glue injection and acute TIPS for initially unresponsive bleeding oesophageal or gastric varices
- Experience in the management of ectopic varices e.g. stomal varices and portal hypertensive gastropathy.

## **5. Resistant ascites and its complications**

- Ability to deliver treatment for resistant ascites including salt-poor diet, fluid restriction, diuretics, paracentesis and TIPS

## **6. Advanced clinical nutritional therapy in liver disease**

- Relevant capability to evaluate severity and clinical course for patients with hepatic malnutrition
- Ability to evaluate severity and type of malnutrition (e.g. BMI, biochemistry, muscular fullness, Subjective Global Assessment) and identify the nutritionally challenged patient
- Ability to correctly prescribe enteral and parenteral nutritional therapy (including hyperalimentation in hepatic malnutrition) with reference to substitution or curative treatment, including assessment of complications of the treatment

## **7. Primary Liver Cancer**

- Knowledge of clinical course and outcome of primary liver cancer
- Knowledge of and experience of complications of e.g. portal vein thrombosis, extrahepatic metastases, malignant ascites, icterus, carcinoid syndrome/paraneoplastic syndromes
- Knowledge of and application of treatment principles for primary tumor and metastases with surgery, chemotherapy (general and local), transplant, local ablation, radiotherapy as well as targeted treatment

### **Procedural Skills Expected to be acquired during training**

- Endoscopic Variceal ligation and Fundal varix injection
- Fibroscan measurement
- Percutaneous liver biopsy (ultra-sound guided)

### **Procedures which the trainee is expected to be exposed or have detailed theoretical knowledge of:**

- Transjugular liver biopsy
- Hepatobiliary ultrasound

- Hepatic venous and portal pressure measurements
- Insertion of TIPS

### **III) INFLAMMATORY BOWEL CONDITIONS**

#### **Objectives**

The main focus is on inflammatory bowel disease which is an established subspecialty in the West. During the end of the year, the trainee should be able to further develop his/her knowledge in the following areas:

- Learn to differentiate using clinical, endoscopic, radiological and histological parameters to differentiate between ulcerative colitis and Crohn's disease, idiopathic IBD from other forms of non-infectious inflammatory conditions in the bowel (eg ischaemic colitis, Bechet's) and infectious inflammatory conditions of the bowel, in particular Crohn's disease vs intestinal tuberculosis
- Recognition of different presentations of IBD, including anorectal and extra-intestinal manifestations and inflammatory versus fistulizing versus fibrostenotic patterns of Crohn's disease on history-taking and physical examination
- Recognition and management of the intestinal (hemorrhage, obstruction, fistula, toxic megacolon and perforation) and extraintestinal (ocular, dermatologic, musculoskeletal, hepatobiliary, urinary tract) complications of IBD
- Optimization of conventional therapy for IBD (steroids, 5-ASA, immunomodulators)
- Exposure to pharmacogenetics (e.g. thiopurines) and therapeutic drug monitoring (TDM)
- Use of biologic therapy appropriately and safely, which includes benefit of top down or accelerated step up approach, pre biologic screening, monitoring and management of side effects
- Use non biologic rescue therapy such as cyclosporin and tacrolimus
- Recognise and management of drug related complications
- Understanding the basics of nutritional therapy (polymeric vs elemental, enteral vs parenteral), especially in the setting of IBD
- Understanding and implementation of current guidelines on surveillance of dysplasia and colorectal cancer in IBD (e.g. targeted surveillance using image enhanced endoscopy), recognition and management of dysplastic lesions
- Management of IBD special situations (e.g. pregnancy, paediatric population, post-operative setting e.g. pouchitis)

- Sensitivity to psychosocial influences as well as the consequences of IBD on patients and on family dynamics.
- Understanding the pathogenesis of IBD on a molecular level and its therapeutic implications
- Understanding of the epidemiology of IBD

## **Training**

Training in this subspecialty will be carried out using the following methods:

- Management of complex inflammatory bowel disease cases both in an outpatient and inpatient setting
- Working in a multidisciplinary team which includes the colorectal surgeons, dieticians, pathologists and radiologists
- Relevant endoscopic procedures (image enhanced colonoscopy, balloon assisted enteroscopy)
- Research projects and audits
- Case presentations and discussions

IBD specific conferences

## **IV) FUNCTIONAL GI DISORDERS**

Functional GI training should be obtained only in institutions that have a large patient referral base, a wide range of patients with motility and functional disorders, adequate facilities, and faculty expert in the management of these conditions

The major goal for trainees in the advanced functional GI training module is to acquire an in depth knowledge of pathophysiology, clinical presentation, diagnosis, epidemiology, and therapy of gastrointestinal motility and functional disorders.

An effective approach to the evaluation and management of patients with motility and functional bowel disorders involves several key elements:

1. An understanding of the physiology of the enteric nervous system, gastrointestinal muscle function, familiarity with concepts of the brain–gut axis, visceral sensation, the regulation of gut function during feeding and fasting conditions.
2. Exposure to patient management by physicians with experience and expertise in the field is an integral part of the training of effective and compassionate gastroenterologists.
3. Appreciation of the importance of the psychosocial aspects of functional bowel disorders and familiarity with effective treatments for chronic pain, depression, and anxiety.
4. An understanding of the utility, indications, and limitations of diagnostic motility studies. Recommendations about the use of these studies should acknowledge consensus documents commissioned by the various gastrointestinal professional societies.

### **Functional GI testing**

The following are some of the procedures that the trainees will be expected to understand the indications for and be exposed to:

- Oesophageal motility studies
- Gastric and small bowel motility studies
- Scintigraphic gastric emptying studies
- Colonic motility studies
- Anorectal motility studies
- Anal sphincter biofeedback training

## **V) NUTRITION**

Advanced Nutrition training occurs over a period of one year. Trainees should develop experience with a broad spectrum of patients requiring nutritional support. These include those with severe malnutrition, pre-operative and post-operative patients, critically ill and septic patients, patients with severe inflammatory bowel disease, liver and renal disease, cardiac or respiratory diseases, patients with severe pancreatitis, patients with burns, those with cancer, pregnant and diabetic patients. Advanced nutrition training should occur in a unit with at least one Clinician with a special interest in nutrition supported by a multidisciplinary team including dietician, nurses and pharmacist.

Trainees should attend nutrition training courses and conferences.

The training should include:

1. Attending weekly nutrition ward rounds
2. Assess and supervise patients needing nutritional support
3. Selection of patients needing gastrostomy placement
4. Initiation and supervision of patients needing parental or enteral nutrition.

At the end of training, the trainee is expected to demonstrate competency in

1. Knowledge about body composition, fluid and electrolyte balance, energy homeostasis, nutrients requirement and their measurement.
2. Understand the clinical and metabolic sequelae of malnourishment on a macro level and for specific nutrients.
3. Clinical and laboratory assessment of nutritional status including overall nutritional state and specific micronutrient and vitamin deficiencies.
4. Assessment of patients' requirement including fluid and electrolytes, nutrients and trace elements in various situations and different disease states
5. Prevention and management of refeeding syndrome.
6. Assessment and investigation of patients with GI and non-GI causes of weight loss.
7. Management of patients with intestinal failure.
8. Management of patients with stoma and fistula.
9. Management of patients with intestinal dysmotility, myopathy and autonomic neuropathy.
10. Management of patients with short bowel syndrome, enteocutaneous fistula and complex surgical complications.
11. Initiation and management of patients needing enteral nutrition. Understands the composition of various enteral preparations.
12. Initiation and management of patients needing parental nutrition. Recognition of complications of parental nutrition

Procedures which the trainee should be competent/ exposed to:

1. Endoscopic insertion of nasogastric tube
2. Endoscopic insertion of nasojejunal tube 3. Placement of endoscopic jejunostomy(PEJ) tube.
4. Central venous line insertion
5. Peripheral intravenous long line insertion 6. Tunnelled insertion of intravenous central line.

## **VI) DIGESTIVE ONCOLOGY**

Training should occur in a unit with a special interest in digestive oncology with a critical mass of patients. The training period is at least one year.

The trainee should demonstrate competencies in the following at the end of their training:

1. Knowledge of behaviour, evolution and progression of tumour of the digestive tracts.
2. Knowledge of primary and secondary prevention of tumours of the digestive tracts.
3. Detection and diagnosis of liver and GI malignancies.
4. Staging of cancer according to various recognised classifications.
5. Understanding of the various modalities available for the diagnosis and staging of GI cancer including their limitations.
6. Ability to lead a multidisciplinary team caring for patients with tumours of the digestive tracts.
7. Ability to discuss with the patients regarding treatment options and to select the most appropriate management.
8. Delivering symptom relief due to tumours, their complications and the complications of treatment.
9. Administration of pain relief to patients
10. Initiation of appropriate nutritional care in patients with GI and liver tumours.
11. Knowledge, selection and administration of chemotherapeutic agents including the benefits and disadvantages.
12. Management of adverse reactions to chemotherapy drugs.
13. Knowledge of usage of radiotherapy in various GI tumours and management of its complications.
14. Knowledge of the surgical options available and management of the sequelae of surgery.
15. Knowledge of or ability to perform therapeutic endoscopy required for patients with digestive tract tumours.