

THE EUROPEAN TRAINING SYLLABUS IN PAEDIATRIC GASTROENTEROLOGY HEPATOLOGY AND NUTRITION

This training syllabus is one of the subspecialist syllabuses for training in Tertiary Care Paediatrics as defined by the European Union of Medical Specialists (UEMS).

The syllabus has been prepared by the Committees of Gastroenterology, Hepatology, Nutrition and Trainee of the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN).

This document aims to support recognition as a European Specialist in Paediatric Gastroenterology Hepatology and Nutrition (PGH&N). This should require satisfactory certified completion of this syllabus in a recognized training programme.

The initial document from ESPGHAN was published in 2002 and subsequently revised in 2009. The current version has been updated in 2012 with the contribution of all ESPGHAN Committees.

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a) INTRODUCTION

This document describes the European Training Syllabus in Paediatric Gastroenterology, Hepatology and Nutrition (PGH&N). A Paediatric Gastroenterologist and Hepatologist is a trained paediatrician specialising in the investigation and treatment of children with gastrointestinal, liver and nutritional disorders. It is expected that most Paediatric Gastroenterologists and Hepatologists as higher specialists in PGH&N will practice within the setting of tertiary care medicine where they are able to offer a full range of diagnostic procedures and the facilities for the treatment of intestinal, liver or nutritional failure.

This training syllabus aims to:

- (i) harmonise training in PGH&N between different European countries;
- (ii) establish clearly defined standards of knowledge and skill for tertiary PGH&N care;
- (iii) foster the development of a European network of competent tertiary care centres in PGH&N;
- (iv) further enhance the European contribution to international scientific progress in

b) AIMS OF TRAINING

The trainee in PGH&N should, prior to the specialist training described in this document, have completed training in basic paediatrics. At the end of the period of training the trainee should be suitable for appointment as a tertiary specialist in PGH&N at a tertiary centre. The duration of training in the specialty should be a minimum of two years. It is highly desirable that there is an opportunity for a period of full time research preferably leading to a higher degree. There should also be an opportunity to vary the gastroenterological, hepatological and nutritional training component depending upon the trainees' requirements.

During the period of training the trainee should have had:

- i. a broad range of clinical experience in gastrointestinal and liver diseases of children together with their associated nutritional problems;
- ii. a wide experience of nutritional disorders of children;
- iii. specific training in diagnostic techniques and their interpretation;
- iv. experience in basic and/or clinical research;
- v. contact with adult gastroenterology/hepatology to be able to organize smooth transition of patients growing out from childhood to the adult gastroenterologists
- vi. knowledge of the administrative and organisational aspects of care for chronic PG&H diseases;
- vii. experience of functioning as part of a multi-disciplinary team including psycho-social aspects of care.

c) CURRICULUM**C1 CORE OBJECTIVES**

- 1) Clinical experience and knowledge of the epidemiology of the principal diseases encountered in PG&H in childhood.
- 2) Diagnostic and therapeutic procedures required for examination of the gastrointestinal tract and liver as well as nutritional evaluation & interventions:
 - i. Upper GI endoscopy
 - ii. Ileo-colonoscopy
 - iii. Endoscopic procedures eg polypectomy, removal of foreign bodies, sclerosing and/or variceal banding, clipping of oesophageal varices and bleeding vessels, pneumodilatation and bougie-dilatation, PEG insertion.
 - iv. Knowledge of ERCP, cholangiography, and videocapsule-endoscopy, double-balloon endoscopy, endosonography procedure
 - v. Suction colonic Rectal biopsy
 - vi. Liver biopsy
 - vii. Motility studies, eg pH and luminal impedance monitoring, transit studies and knowledge of manometry, intraluminal impedance
 - viii. Interpretation of pancreatic function tests, eg screening tests, faecal elastase and knowledge of intubation tests.
- 3) Nutritional skills:
 - i. Assessment of nutritional status
 - ii. Dietary requirements of children
 - iii. Pathophysiology of malnutrition
 - iv. Theory and techniques of enteral and parenteral nutritional support
 - v. Role of nutrition support teams and special therapeutic diets.
- 4) Acquire skills in co-operation with other specialists (surgeons, pathologists, radiologists, laboratory scientists, adult specialists).
- 5) Achieve skills in relevant aspects of organisation and management.
- 6) Experience in clinical audit.
- 7) Achieve skills in teaching.

8) Knowledge and some experience of research in PGH&N.

C2 SYLLABUS

Introduction:

Current general professional training in paediatrics is not adequate for tertiary specialist PGH&N. It is also necessary to define the boundaries between skills and competence of general paediatricians and those of the specialist. The content of this syllabus details the additional training required for a specialist in PGH&N and thus also defines the boundaries between general and specialist PGH&N paediatricians.

Training Requirements for Tertiary Specialists.

C2.1	Basic knowledge
C2.2	Clinical, technical and management skills and competencies
C2.3	Attitudes
C2.4	Particular problems.

C2.1 Basic Knowledge

C2.1.1 Gastroenterology

- Growth failure/failure to thrive and malnutrition - chronic diarrhoea.
- Malabsorption disorder (coeliac disease, cystic fibrosis, pancreatic insufficiency, immunodeficiencies)
- Intractable diarrhoea syndrome.
- Chronic inflammatory bowel disease.
- Know the composition of different diets/feeds used to treat IBD
- Gastrointestinal food allergy.
- Helicobacter pyloric gastritis and peptic ulcer disease.
- Gastro-oesophageal reflux disease and oesphagitis in pre-term, well infants and children with neuro-developmental disabilities
- Congenital anomalies of gastrointestinal tract.
- Functional bowel disorder (eg toddlers diarrhoea, irritable bowel syndrome, recurrent abdominal pain).
- know the differential diagnosis and be able to investigate a patient with acute abdominal pain
- Acute gastroenteritis: be able to assess dehydration and start its management
- Gastrointestinal bleeding: differential diagnosis and be able to resuscitate a patient in the acute phase of bleeding
- Motility disorders.
- Know the causes of intestinal obstruction
- Recognise when a surgical opinion is required
- be able to investigate pyloric stenosis, Hirschprung's disease and intussusception
- know the differential diagnosis of bilious vomiting including NEC
- be able to differentiate and investigate abdominal masses
- Chronic constipation: be able to differentiate between primary and secondary constipation
- Pancreatitis.
- be able to manage iron deficiency anaemia
- be able to advise on post-operative management especially where rehabilitation with enteral or parenteral nutrition support is required
- be able to interpret a small bowel biopsy and an upper GI endoscopy
- be able to interpret a DEXA bone densitometry result
- be able to interpret a Breath Test
- be able to interpret a pH study
- be able to investigate and treat acute and chronic liver disease and know when to refer to the paediatric liver unit

C2.1.2 Hepatology

- know the common causes of prolonged neonatal jaundice
- Know the differential diagnosis of conjugated hyperbilirubinemia of infancy
- Be able to promptly recognize biliary atresia and know its clinical features and outcome.
- know the infectious causes of liver disease
- know about the metabolic liver disorders
- know the causes of chronic liver disease
- Know the causes and management of acute liver failure.
- Know how to manage complications of end-stage liver disease.
- Know the correct timing to refer for liver transplantation
- know the presentation of portal hypertension and its medical, endoscopic and surgical management
- Know the differences between pre-hepatic and hepatic portal hypertension.
- Be able to liaise with intensivists, liver transplant surgeons and transplant co-ordinators regarding management of acute liver failure and complications

C2.1.3 Nutrition

- Understand the basis of normal infant/childhood feeding. (Assessment of feeding ability and nutritional status, including body mass index.
- Know the physiology of nutrient digestion, absorption, metabolism and elimination
- Recognition and management of feeding disorders including anorexia nervosa and bulimia.
- Understand the mechanisms of malnutrition in gastrointestinal and liver disease.
- Understand methods of nutritional support and their use.
- Know the dietary requirements of children.
- Know the short and long term effects of malnutrition in the infant, child and adolescent.
- Knowledge of techniques for measuring dynamic nutritional parameters e.g. resting energy expenditure.
- Understand the role of nutritional support teams in hospital and community settings, and the roles of individual team members
- Know the different types of growth charts available and how to use them
- Know the indications and contraindications for commencing enteral and parenteral nutritional support
- Know the composition of different enteral feeds, and parenteral nutrition
- Be able to devise a feeding management plan in conjunction with other team members for patients requiring home enteral tube feeding or parenteral nutrition
- Know how to investigate and manage a parenterally fed patient with pyrexia

C2.1.4 Investigation

- Understand the basis of tests of malabsorption, liver dysfunction, tests, oesophageal pH and luminal impedance monitoring and manometric studies.
- Indications and usefulness of relevant imaging and endoscopic techniques.

C2.2 Skills

C2.2.1 Clinical Skills

- i. Assessment of nutritional status of infants and children, including auxological measurement of height, weight., head circumference, skin fold thickness, mid-arm circumference
- ii. Assessment of obesity and its complications
- iii. Assessment of dehydration: planning fluid therapy.
- iv. Interpretation of plain X-ray films, contrast and other imaging studies such as US, EUS, CT, MRI, small bowel biopsy
- v. Management of enteral and parenteral nutrition.
- vi. Prescription of elimination diets.
- vii. Prescription of medication to diagnose and/or treat diseases of the gastrointestinal tract.

C2.2.2 Technical Skills

- i. Small intestinal biopsy
- ii. Upper gastrointestinal endoscopy - diagnostic/therapeutic.
- iii. Pneumodilatation and bougie-dilatation including mucosal biopsies.
- iv. Colonoscopy.
- v. Pancreatic function tests.
- vi. Oesophageal pH and motility studies e.g. transit studies and knowledge of manometry, intraluminal impedance
- vii. Liver biopsies
- viii. Knowledge of cholangiography
- ix. Sclerosis and banding of oesophageal varices and other vascular malformations. where appropriate
- x. Placement of endoscopic gastrostomy
- xi. Polypectomy
- xii. Removal of foreign bodies.

C2.2.3 Management Skills

- i. Conduct a clinical audit.
- ii. Manage admission policies, endoscopy lists etc.
- iii. Understanding of contracting and purchasing where appropriate
- iv. Organisation of post-graduate teaching programme.

C2.2.4 Research Skills

- i. Design of clinical trials including medical statistics
- ii. Data organisation and presentation
- iii. Computer literacy including conducting a literature database search

C2.3 Attitudes

- i. Understanding the need for multidisciplinary approach.
- ii. Understanding that investigations may be unpleasant, painful or frightening and that child and parents must be counselled in advance.
- iii. Develop communication skills with the child and parents to ensure their full understanding and willing participation of the care process.
- iv. Understanding the need to deliver compassionate care.
- v. Understand the particular needs of adolescents with regard to their independence and autonomy, compliance with treatment, and how this affects management of chronic conditions
- vi. Understand issues around transition from paediatric to adult care, and be able to contribute effectively to transitional care services

C2.4 Particular Problems and research

Ability to recognise, initiate diagnostic tests and outline the medical and nutritional management of:

- i. Gastroesophageal reflux disease (including extra-esophageal manifestations)
- ii. Dysphagia
- iii. Achalasia
- iv. Pyloric stenosis
- v. Intussusception
- vi. Hirschsprung's disease.
- vii. Peptic ulceration and Helicobacter pylori infection.
- viii. Vomiting.
- ix. Constipation

- x. Recurrent or protracted diarrhoea.
- xi. Acute and recurrent abdominal pain, and functional gastrointestinal disorders
- xii. Persistent jaundice in the young infant.
- xiii. Bleeding of the GI tract
- xiv. Intestinal obstruction.
- xv. Differentiation of abdominal masses.
- xvi. Acute liver failure.
- xvii. Short gut syndrome.
- xviii. Intestinal transplantation and rehabilitation.
- xix. Chronic inflammatory bowel disease.
- xx. Small intestinal failure and intractable diarrhoea syndrome.
- xxi. Infections of gastrointestinal tract and liver.
- xxii. Gastroenterological problems with AIDS.
- xxiii. Gastrointestinal food allergy, and eosinophilic gastrointestinal disorders including EE.
- xxiv. Acute diarrhoea including use of oral rehydration therapy.
- xxv. Outbreak of hospital acquired diarrhoea.
- xxvi. Chronic liver disease and metabolic liver disease.
- xxvii. Pre and post liver transplant management.
- xxviii. Intestinal motility problems including idiopathic intestinal pseudoobstruction syndrome.
- xxix. Gastrointestinal problems in handicapped children.
- xxx. Chronic under-nutrition/failure to thrive.
- xxxi. Obesity
- xxxii. Feeding disorders including anorexia nervosa
- xxxiii. Childhood feeding problems
- xxxiv. Specific nutrient deficiencies, including vitamins, minerals, trace elements and fatty acids

Principles Regarding the Assessment of Meaningful Accomplishment in Research

Each trainee must meet the following principles:

1. Research experience is an essential part of training in PGH&N.
2. For certification there must be evidence of productive research participation.
3. The evidence of meaningful accomplishment in research must be submitted.

Acceptable evidence could include one of the following :

- a) First author of a research paper accepted for publication in an appropriate peer reviewed journal.
- b) Submission of research grant proposal which has been approved by peer review.
- c) A postgraduate degree in a field relevant to paediatric gastroenterology, hepatology and nutrition.
- d) A research progress report (signed by both the applicant and supervisor) no more than five pages in length to include :
 - i. A statement of hypothesis
 - ii. A description of methodology
 - iii. Results and analysis
 - iv. Significance of the research
- e) Any other evidence which may be considered appropriate.

The trainee's supervisor would be responsible for ensuring appropriateness of research activity and be involved in planning research.

d) RECOGNITION OF SPECIALISTS IN PAEDIATRIC GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

Recognition as a European Specialist in PGH&N at either secondary or tertiary level will require satisfactory certified completion of a recognised training programme.

e) NATIONAL TRAINING PROGRAMMES

E1 EU COUNTRIES

Where national training programmes in PGH&N already exist or are at an advanced state of development they should be considered compatible with this European programme when:

- i. they have a comparable syllabus
- ii. have a similar duration
- iii. have a means of assessment of the trainee.

Where a training programme does not exist, national professional training bodies should be encouraged to adopt a national training programme in PG&H which is closely compatible with this European programme. Until such a programme exists individuals who have undergone a period of documented training compatible with this programme could obtain European recognition by passing a board examination in an EU country on a voluntary basis as laid down by the European Board of Paediatrics.

E2 NON EU COUNTRIES

The qualification of European Specialist in Paediatric Gastroenterology, Hepatology and Nutrition could be obtained as in F1 above.

f) TRAINING PROGRAMME

F1 STRUCTURE OF PROGRAMME

The syllabus is arranged as a series of modules which can be completed in one or several different training centres. It is recommended that training should be carried out at not more than four centres. Each module contains training in a specific area, expertise or skill. All modules should be completed by the majority of trainees, but where it is clear that an individual will only practice hepatology the programme can be varied to include more hepatology and less gastroenterology and without the necessity for inappropriate technical skills. It is anticipated that units undertaking training will be able to provide the necessary breadth of teaching and experience including access to trainers skilled in all aspects of clinical nutrition.

F2 MONITORING OF TRAINING: THE LOGBOOK

Each trainee's progress is monitored both by the trainee her/himself and by an assigned tutor.

The trainee will maintain a personal log book, where he/she will document relevant training experiences and will complete a self assessment for each module/topic. The log book and the trainee's progress will be discussed with their tutor at 3 monthly intervals.

Successful completion of a training module/topic will be certified by the tutor in the trainee's log book.

Self Assessment

A suggested scheme of self assessment for gastroenterology, hepatology and nutrition is given below together with notes for trainers, trainees and principles for assessment in research. In addition the content of the log book is suggested.

SELF ASSESSMENT BY TRAINEE IN PAEDIATRIC GASTROENTEROLOGY, HEPATOLOGY AND NUTRITION

Note to Trainee

This self assessment is designed to help you and your supervisor review your training and experience, and identify any gaps. As a way of assessing your knowledge and clarity of understanding, ask yourself “Could I explain this condition/treatment/procedure clearly, logically and persuasively to a consultant colleague in another specialty, who is seeking advice about their own child?”

The conditions chosen in this exercise are those which trainees might expect during their training and therefore to some extent act as a marker of the breadth of experience available in their post.

Please fill it, in pencil initially so that you can change it if necessary, and discuss it with your local tutor or mentor, before your annual review.

Note to Supervisor

Please go through this with the trainee and discuss whether you agree with his/her own self ratings - if not, try to come to a consensus.

CODING

(a) Knowledge and Experience

- 1 = I do not feel knowledgeable or competent in this topic.
- 2 = I have reasonable knowledge but no “hands-on” experience.
- 3 = I have dealt with one or a few cases of this condition/problem.
- 4 = I feel I am reasonably competent to manage and explain this condition or problem.
- 5 = I feel able to assume complete responsibility for this condition (or within the multidisciplinary team if applicable) problem.

(b) Skills

- 1 = I have never seen or done this.
- 2 = I have observed but not done.
- 3 = I have done one or a few but I do not feel competent.
- 4 = I can undertake this but still want support to be available.
- 5 = I feel able to undertake this on my own responsibility.

THE LOGBOOK

A

Newborn and Congenital Abnormalities of the Gastrointestinal Tract

A.1

Knowledge

- (i) Embryological origins of the GI tract
- (ii) Derivation of the vascular supply of the gut
- (iii) Normal histology throughout the GI tract
- (iv) Physiology of the newborn gastrointestinal tract
- (v) Antenatal diagnosis of GI problems
- (vi) Anatomical abnormalities of development including :
 - Diaphragmatic hernia
 - Tracheoesophageal fistula
 - Omphalocele
 - Gastroschisis
 - Volvulus
 - Small bowel atresias
 - Hirschsprung disease
 - Malrotation
- (vii) Be familiar with potential associated abnormalities
- (viii) Recognition and treatment of necrotising enterocolitis
- (ix) Consequences of neonatal gut problems including short-bowel syndrome
- (x) Composition of breast milk, and different/specialised formulae
- (xi) Knowledge of the physiology of lactation
- (xii) Diagnosis and management of gastroesophageal reflux in the newborn
- (xiii) Knowledge of the intestinal epithelial abnormalities e.g. microvillus atrophy, congenital chloride diarrhoea, and abetalipoproteinaemia
- (xiv) Indications and contraindications to referral for small bowel transplantation

A.2

Skills (also see Section on Nutrition and Hepatology)

A.2.1

Clinical Skills

- (i) Interpretation of plain abdominal x-ray in the newborn
- (ii) Interpretation of contrast studies used in the newborn
- (iii) Differential diagnosis of bilious vomiting in term and pre-term infant
- (iv) Differential diagnosis and investigation of a neonate with an abdominal mass.
- (v) Prescription of enteral and parenteral nutrition in the preterm infant
- (vi) Investigations for jaundice in the term and preterm infant
- (vii) Care of the patient with short gut syndrome

A.2.2

Technical skills

- (i) Understanding of need and risk of placement of central lines
- (ii) Use and care of central venous catheters

- (i) Positive promotion of breast feeding in term and preterm infant
- (ii) The special ethical considerations of neonatal short gut syndrome
- (iii) Counselling of family with antenatal diagnosis of a gut/liver abnormality

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal <i>1-6</i>	Comments	Supervisor's Signature & Date
A.1	Knowledge			
(i)				
(ii)				
(iii)				
(iv)				
(v)				
(vi)				
(vii)				
(viii)				
(ix)				
(x)				
(xi)				
(xii)				
(xiii)				
(xiv)				
A.2	Skills			
A.2.1				
(i)				
(ii)				
(iii)				
(iv)				

(v)					
(vi)					
(vii)					
A.2.2					
(i)					
(ii)					
A.3	Attitudes				
(i)					
(ii)					
(iii)					

B**Acute and Chronic Diarrhoea****B.1****Knowledge**

- (i) Be able to evaluate complex cases of malabsorption
- (ii) Common diarrhoeal pathogens in:
 - a. Community acquired infection
 - b. Hospital acquired infection
 - c. The immunocompromised patient
- (iii) Constitution of different oral rehydration therapies
- (iv) Causes of chronic diarrhoea in developed and developing world
- (v) A basic knowledge of gut immunology
- (vi) Auto-immune enteropathy (example IPEX) and other immunological causes of Chronic diarrhoea (Example CGD, GVHD)
- (vii) Intractable diarrhoeas of infancy
- (viii) Small bowel bacterial overgrowth: pathophysiology, diagnosis and management
- (ix) Gastroenterological problems encountered in patients with AIDS
- (x) Coeliac disease:
 - a. Genetics
 - b. Presentation – symptoms
 - c. Serological testing
 - d. Screening of high risk populations
 - e. Short and long term complications
 - f. know and recognise the histopathological changes in coeliac disease

B.2**Skills****B.2.1****Clinical Skills**

- (i) Differentiating between secretory and osmotic diarrhoea
- (ii) Assessing dehydration and initiating appropriate treatment
- (iii) Deciding when a child with diarrhoea needs admission
- (iv) Differential diagnosis of a patient with chronic diarrhoea
- (v) Interpreting a small bowel biopsy
- (vi) Ordering investigations for a patient with suspected malabsorption
- (vii) Assessing adherence to a gluten free diet
- (viii) Interpreting a DEXA bone densitometry result

B.2.2**Technical skills**

- (i) Taking basic anthropometrical measurements
- (ii) Upper gastrointestinal endoscopy
- (iii) Small intestinal biopsy
- (iv) care and trouble shooting of gastro-jejunostomies

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
B.1 Knowledge				
(i)a				
(i)b				
(i)c				
(ii)				
(iii)				
(iv)				
(v)				
(vi)a				
(vi)b				
(vi)c				
(vi)d				
(vi)e				
B.2 Skills				
B.2.1				
(i)				
(ii)				
(iii)				
(iv)				
(v)				
(vi)				
(vii)				
(viii)				
B.2.2				
(i)				
(ii)				

(iii)					
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C**Motility Disorders (including Gastro-oesophageal Reflux)****C.1 Knowledge**

- (i) Detailed understanding of the pathophysiology of normal gastrointestinal transit mechanisms
- (ii) Causes of intestinal pseudo-obstruction, Hirschprung disease, Gastroparesis, Achalasia
- (iii) Epidemiology, aetiology, clinical presentation and treatment options for infantile colic
- (iv) Pathophysiology of vomiting
- (v) Pathophysiology of gastro-oesophageal reflux and in health and disease
- (vi) Complications of gastro-oesophageal reflux disease (GERD)
- (vii) Surgical treatments for GERD including indications for surgery and commonly encountered short and long term complications
- (viii) Understanding indications for gastrostomy, fundoplication, transpyloric feeding, management of complications
- (ix) Gastrointestinal problems in neuro-developmentally handicapped children
- (x) Causes of organic constipation
- (xi) Surgical treatments of chronic constipation

C.2 Skills**C.2.1 Clinical Skills**

- (i) Differential diagnosis of a patient with acute and chronic vomiting
- (ii) Interpreting an oesophageal pH study
- (iii) Interpreting Transit studies and Anorectal, colonic and ileal manometry
- (iv) Differentiating organic and idiopathic constipation
- (v) Devising a management plan for a patient with encopresis
- (vi) Attendance at multi disciplinary radiology and histopathology meetings

C.2.2 Technical Skills

- (i) Performing an oesophageal pH study
- (ii) Motility studies (optional), impedance, multichannel oesophageal manometry
- (iii) Upper GI endoscopy
- (iv) Oesophageal dilatation (optional)

C.3 Attitudes

- (i) Understanding families with a child with chronic constipation and related problems, infantile colic and feeding disorders
- (ii) Understanding and sympathetic approach to families of patients with neurodevelopmental handicap

C.4 Treatments

- (i) Commonly used anti-emetics, prokinetics
- (ii) Developing a stepwise treatment to GORD
- (iii) Mechanisms of action of gastroprotective drugs
- (iv) Mechanisms of action of commonly prescribed laxatives

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
C.1		Knowledge		
(i)				
(ii)				
(iii)				
(iv)				
(v)				
(vi)				
(vii)				
(viii)				
(ix)				
(x)				
C.2		Skills		
C.2.1				
(i)				
(ii)				
(iii)				
(iv)				
(v)				
(vi)				
C.2.2				
(i)				
(ii)				

(iii)					
(iv)					
C.3	Attitudes				
(i)					
C.4	Treatments				
(i)					
(ii)					
(iii)					
(iv)					

D**Surgical Problems of the Gastrointestinal Tract****D.1 Knowledge**

- (i) Differentiation of abdominal masses
- (ii) Clinical presentation of pyloric stenosis
- (iii) Clinical presentation of intussusception
- (iv) Causes of intestinal obstruction
- (v) Pathogenesis, pathology, clinical features and treatment options in Hirschsprung's disease
- (vi) Aetiology, pathology and clinical presentation of patients with short gut syndrome
- (vii) Treatment regimens used in short gut syndrome
- (viii) Care of patients on Home PN

D.2 Skills**D.2.1 Clinical Skills**

- (i) Differential diagnosis and investigation of a patient with acute abdominal pain
- (ii) Differential diagnosis and investigation of a child with an abdominal mass
- (iii) Investigation of a patient with suspected pyloric stenosis
- (iv) Investigation of a patient with suspected intussusception
- (v) Managing a patient with an ingested foreign body
- (vi) Interpreting a rectal biopsy including features found in a patient with Hirschsprung's disease
- (vii) Management of short Gut Syndrome
- (viii) Indications for referring a patient with Intestinal failure for small bowel transplant assessment
- (ix) Stoma care and management of high output

D.2.2 Technical skills

- (i) PEG placement (optional)

D.3 Attitudes

- (i) Positive approach to the shared care of patients between different hospital teams
- (ii) Ethical issues surrounding small bowel transplantation

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
D.1		Knowledge		
(i)				
(ii)				
(iii)				
(iv)				
(v)				
(vi)				
(vii)				
D.2		Skills		
D.2.1				
(i)				
(ii)				
(iii)				
(iv)				
(v)				
(vi)				
(vii)				
(viii)				
(ix)				
D.2.2				
(i)				
D.3		Attitudes		
(i)				
(ii)				

E**Inflammatory Bowel Disease (IBD)****E.1****Knowledge**

- (i) Knowledge of different aetiological factors in disease development
- (ii) Understanding normal mucosal immunology and the changes in IBD
- (iii) Recognising the different presentations of IBD in children compared to adults
- (iv) Macroscopic and microscopic features of Crohns disease, ulcerative colitis and indeterminate colitis
- (v) Extraintestinal manifestations:
 - a. Joints
 - b. Cutaneous
 - c. Hepatic
 - d. Ophthalmic
- (vi) Understanding complications of IBD, including:
 - a. Malnutrition
 - b. Osteoporosis
 - c. Risk of dysplasia
- (vii) Be familiar with anti-inflammatory, immunomodulators and biological drugs
- (viii)
- (ix) Indications for surgery in IBD
- (x) Knowledge of commonly used scoring systems in IBD patients
- (xi) Vaccinations in patients with IBD

E.2**Skills****E.2.1****Clinical Skills**

- (i) Organising appropriate investigations for suspected IBD including:
 - a. Bloods/serology, markers of disease activity
 - b. Radiology
 - c. Endoscopy
- (ii) Writing a concise clinic letter covering outpatient and inpatient management
- (iii) Attendance at histopathology meetings
- (iv) Interpretation of DEXA scans
- (v) Choosing a treatment relating to type location and severity of disease
- (vi) Participation in paediatric transition and adult IBD clinics

E.2.2**Technical skills (see also Endoscopy Logbook)**

- (i) Upper GI endoscopy including paediatric and adult patients (100 procedures recommended)
- (ii) Colonoscopy including paediatric and adult patients (50 procedures recommended)

E.3**Attitudes**

- (i) Counselling children and parents in advance about the procedures involved in diagnosis
- (ii) Explaining the diagnosis of IBD compassionately and offering suitable literature
- (iii) Working as part of a multidisciplinary team
- (iv) Realising the major psychosocial impact of the disease
- (v) Continuing disease education for patients and parents

E.4**Treatments**

- (i) Nutritional treatment options for IBD including elemental and polymeric feeds

- (ii) Mechanisms of action, side effects, toxicity and routine monitoring for patients on aminosalicylates, corticosteroids and immunosuppressants
- (iii) The role of biologics and their complications
- (iv) Drugs used for patients who have abnormal DEXA scans
- (v) Bowel preparation regimens for colonoscopy

Date	Method of Learning see key (front of section)	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
E.1		Knowledge		
(i)				
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(v)a				
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(v)c				
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(vi)a				
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E.2		Skills		
E.2.1				
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E.2.2					
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E.3		Attitudes			
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E.4		Treatments			
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F
Nutrition
F.1
Knowledge

- (i) The normal nutrient requirements of growing infants and children including estimates of energy and macro and micronutrients
- (ii) Physiology of nutrient digestion, absorption, metabolism, and elimination
- (iii) Pathophysiology of malnutrition
- (iv) Specific nutrient deficiencies including iron, zinc, copper, selenium, folate, vitamins A-E, and essential fatty acids
- (v) The role of nutrition in specific disease conditions: extensive burns, malignant disease, cardiac disease, renal disease and neuro-developmental handicap
- (vi) The epidemiology, aetiology and clinical features of anorexia and bulimia nervosa
- (vii) The epidemiology, aetiology and clinical features of childhood obesity
- (viii) An understanding of nitrogen balance
- (ix) The techniques used for measuring dynamic nutritional parameters e.g. resting energy expenditure
- (x) Knowledge of the short and long term effects of malnutrition in the infant, child and adolescent
- (xi) Knowledge of the haematological and biochemical indices of nutritional status
- (xii) The role of nutrition support teams in hospital and community settings
- (xiii) Knowledge of the common nutritional problems in patients with cystic fibrosis
- (xiv) Long term health implications of genetic programming

F.2
Skills

- (i) Being able to measure length, weight, head circumference, midarm circumference and triceps skinfold thickness and use them to assess current and long term growth
- (ii) Calculating a patient's body mass index and applying this information to specific clinical situations
- (iii) An ability to take a detailed diet history
- (iv) Attendance at nutritional support meetings
- (v) Devising a management plan for an obese patient

F.3
Attitudes

- (i) Working as an active member of a multi disciplinary nutritional support team with emphasis on communication and team building
- (ii) Counselling patients and families about the benefits and risks of enteral and parenteral nutrition
- (iii) A supportive and sympathetic approach to a patient with a chronic eating disorder

F.4
Enteral feeding (combining Knowledge and Skills)

- (i) Indications and contraindications for commencing enteral feeds
- (ii) Composition of different enteral feeds
- (iii) The role of different members of the nutritional support team in the establishment of and maintenance of patients on enteral nutrition
- (iv) Practical knowledge of the availability of different nasogastric tubes and gastrostomy devices
- (v) Short and long term complications of enteral feeding
- (vi) Preparing a patient for discharge on home enteral feeding
- (vii) Changing a gastrostomy
- (viii) Insertion of a percutaneous endoscopic gastrostomy (optional)

F.5
Parenteral Nutrition (combining Knowledge and Skills)

- (i) Indications and contraindications for commencing parenteral feeding

- (ii) Composition of different parenteral feeds
- (iii) The role of different members of the nutritional support team in the establishment of and maintenance of patients on enteral nutrition
- (iv) Short and long term complications of parenteral feeding
- (v) Preparing a patient for discharge on home parenteral feeding
- (vi) Investigating and managing a patient on parenteral feeding with pyrexia

F.6 Special problem: Failure to thrive (combining Knowledge and Skills)

- (i) Pathophysiology of carbohydrate, protein and fat absorption in relation to failure to thrive
- (ii) Differentiating the wasted patient from the stunted patient
- (iii) Plotting measurements on centile charts including velocity and disease specific charts
- (iv) Diagnosis and investigation of a patient with failure to thrive

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
F.1	Knowledge			
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F.2	Skills			
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F.3	Attitudes			
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F.4		Enteral Feeding			
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F.5		Parenteral Feeding			
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F.6		Failure to Thrive			
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G**Hepatology****G.1****Knowledge**

- (i) Common causes of prolonged neonatal jaundice including extrahepatic biliary atresia, syndromic cholestasis, metabolic and infectious causes
- (ii) Infectious causes of hepatitis including viral hepatitis A-E
- (iii) Metabolic liver disorders Wilson's disease, alpha-1-antitrypsin deficiency, and cystic fibrosis
- (iv) Knowledge of the causes of acute liver failure
- (v) Knowledge of the causes of chronic liver disease including those needing transplantation
- (vi) Pathology and clinical presentation of autoimmune liver disease and sclerosing cholangitis
- (vii) Pathophysiology of portal hypertension
- (viii) Presentation, investigation and treatment of portal hypertension
- (ix) Indications and contraindications to liver transplantation
- (x) Mechanisms of malnutrition in patients with chronic liver disease

G.2**Skills****G.2.1****Clinical Skills**

- (i) Interpretation of a normal liver biopsy and recognising features of common encountered diseases
- (ii) Investigation of jaundice including an infant with conjugated hyperbilirubinaemia
- (iii) Interpretation of abnormal liver function tests
- (iv) Managing a patient with suspected significant GI bleed
- (v) Investigation, treatment and follow up of patient with vertical transmission of hepatitis B & C
- (vi) Referring a patient for liver transplant assessment
- (vii) Routine outpatient care following liver transplant including monitoring for complications e.g. rejection

G.2.2**Technical skills**

- (i) Percutaneous liver biopsy (50 procedures recommended)
- (ii) Upper GI endoscopy with banding or sclerotherapy of oesophageal varices (optional)
- (iii) Ascitic tap
- (iv) Endoscopic retrograde cholangiopancreoscopy (ERCP) (optional)

G.3**Attitudes**

- (i) Counselling a family of an infant with prolonged cholestasis
- (ii) Ethical considerations surrounding liver transplant

G.4**Treatments**

- (i) Prescribing fat soluble vitamins and ursodeoxycholic acid
- (ii) Drugs used to treat an episode of ascending cholangitis
- (iii) Prescription of diuretics for ascites
- (iv) Prescription of common immunosuppressive drugs e.g. cyclosporin, tacrolimus and adjusting the dose according to drug levels

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
G.1		Knowledge		
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G.3		Attitudes			
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G.4		Treatments			
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H**Miscellaneous Clinical Topics (not covered elsewhere)****H.1****Knowledge**

- (i) Epidemiology, aetiology, pathology and clinical features of a patient presenting with a GI bleed
- (ii) Pathophysiology of common disorders of exocrine pancreatic dysfunction
- (iii) Macro and micronutrient consequences of exocrine pancreatic dysfunction
- (iv) Knowledge of exocrine pancreatic dysfunction in cystic fibrosis and Schwachmann diamond syndrome
- (v) Epidemiology and mechanisms of disease in helicobacter pylori infection and peptic ulcer disease
- (vi) Long term consequences of helicobacter pylori infection
- (vii) Definition of and clinical features of food allergy

H.2**Skills****H.2.1****Clinical Skills**

- (i) Resuscitation of a patient with a significant GI bleed
- (ii) Prescribing pancreatic enzyme supplements
- (iii) Interpreting a sweat test
- (iv) Diagnosing Helicobacter pylori by different diagnostic methods including breathe tests
- (v) Evidence based prescribing of helicobacter pylori eradication regimes
- (vi) Diagnosing and treating a patient with suspected food allergy
- (vii) Indications for investing a patient with recurrent abdominal pain

H.2.2**Technical Skills**

- (i) Pancreatic function tests
- (ii) Injection of ulcers (optional)
- (iii) Retained foreign body Be able to perform an endoscopic removal of an ingested foreign body
- (iv) ERCP (optional)
- (v) Interpretation of MRCP
- (vi) Endoscopic USS (optional)

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
H.1		Knowledge		
(i)				
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H.2		Skills		
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Research and Management
I.1 Knowledge

- (i) How to undertake an evidence based search of medical literature
- (ii) A working knowledge of medical statistics
- (iii) Critical appraisal of published literature
- (iv) Knowledge of the various steps in the audit process
- (v) Understanding the ethics applicable to research submission
- (vi) The role of the research and development department
- (vii) Sources of funding for research projects including charities

I.2 Skills

- (i) Writing a peer reviewed research grant application
- (ii) Writing an abstract
- (iii) First author of a research paper in peer reviewed journal
- (iv) Presentation of poster/paper at local, national and international research meetings
- (v) Presentation at a journal club
- (vi) Computer literacy in searching for and presenting evidence
- (vii) Conduct a clinical audit
- (viii) Writing an ethics application
- (ix) Participation in undergraduate and post-graduate teaching
- (x) Development of core teaching material to enable regular teaching participation
- (xi) Organising a post graduate teaching programme
- (xii) Membership of BSPGHAN/ESPGHAN
- (xiii) MD/PhD relevant to paediatric gastroenterology, hepatology and nutrition

I.3 Attitudes

- (i) Maintaining a commitment to continuing self education and teaching.

I.4 Management

- (i) Organising a rota
- (ii) Structure of NHS on local regional and national scale
- (iii) Supervised review of referral letters
- (iv) Organising an endoscopy list
- (v) Attendance at a medical directorship meeting
- (vi) Understanding clinical governance
- (vii) The complaints procedure and how to respond to a complaint
- (viii) Budget control and writing a business plan

Date	Method of Learning <i>see key (front of section)</i>	Self Appraisal 1-6	Comments	Supervisor's Signature & Date
I.1	Knowledge			

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I.2	Skills				
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I.3	Attitudes				
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