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# European Training Requirements (ETRs) for Paediatric Gastroenterology, Hepatology and Nutrition (PGHN)

***European Standards of Postgraduate Medical Specialist Training***

## Composition of the syllabus subcommittee

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# INTRODUCTION

## UEMS Preamble

The UEMS (Union Européenne des Médecins Spécialistes, or European Union of Medical Specialists) is a non-governmental organisation representing national associations of medical specialists at the European level. With its current membership of 40 national associations and operating through 43 Specialist Sections and their European Boards, 17 Multidisciplinary Joint Committees and 4 Thematic Federations the UEMS is committed to promote the free movement of medical specialists across Europe while ensuring the professional consensus on the framework for the highest possible level of their training which will pave the way to the improvement of quality of care for the benefit of all European citizens and beyond.

**UEMS and its Postgraduate Medical Specialists Training programmes**. In 1994, the UEMS adopted its Charter on Postgraduate Training aiming at providing the recommendations at the European level for high quality training. This Charter set the basis for the European approach in the field of harmonisation of Postgraduate Specialist Medical Training, most importantly with the ongoing dissemination of its periodically updated Chapter 6's, specific to each specialty. After the most recent version of the EU Directive on the recognition of Professional Qualifications was introduced in 2011, the UEMS Specialist Sections and other UEMS Bodies have continued working on developing the documents on European Training Requirement(s) (ETRs). They reflect modern medical practice and current scientific findings in each of the specialty fields and particular competencies covered and being represented within the UEMS. In 2012 the UEMS Council adopted the document Template Structure for ETR.

**The linkage between the quality of medical care and quality of training of medical professionals**. It is the UEMS' conviction that the quality of medical care and expertise are directly linked to the quality of training, achieved competencies and their continuous update and development provided to the medical professionals. No matter where doctors are trained, they should have the same core competencies. The UEMS ETRs reflect many years (or even decades) of experience on the ground of the UEMS Sections/ Multidisciplinary Joint Committees (MJCs) and Boards developing in close collaboration with the relevant European Scientific Societies training requirements coupled with European Medical Assessments. It is one among the clear aims of the UEMS ETRs to raise standards of training to make sure that European patients find high quality standards of safe specialist care. While professional activity is regulated by national laws in European Union (EU) Member States, it is the UEMS understanding that it has basically to comply with international treaties and United Nations (UN) declarations on Human Rights as well as the World Medical Association (WMA) International Code of Medical Ethics.

**UEMS and European legislation facilitating the mobility of medical professionals**. The UEMS Council and its Specialist Sections, first created in 1962, have regularly provided advice and expert opinion to the European Commission. This helped create the framework that informed the drawing up of the Doctors Directives in 1975, which provided for the mutual recognition of medical diplomas and the free movement of doctors throughout the EU. The revised EU Directive on the recognition of Professional Qualifications (2013/55/EU) allows member states to decide on a common set of minimum knowledge, skills and competencies that are needed to pursue a given profession through a Common Training Framework (CTF) which represents the third mechanism that could be used to ensure mobility within the EU. This directive states that "professional qualifications obtained under common training frameworks should automatically be recognised by Member States. Professional organisations which are representative at Union level and, under certain circumstances, national professional organisations or competent authorities should be able to submit suggestions for common training principles to the Commission, in order to allow for an assessment with the national coordinators of the possible consequences of such principles for the national education and training systems, as well as for the national rules governing access to regulated professions". The UEMS supported CTFs since they encompass the key elements developed in modern educational and training models, i.e. knowledge, skills, professionalism. In addition, the Directive 2011/24/EU of the European Parliament and of the Council of 9 March 2011 on the application of patients' rights in cross-border healthcare introduced a strong incentive for harmonisation of medical training and achieved competencies among EU/European Economic Area (EEA) Countries through the requirements to assure good and comparable quality of care to increasingly mobile European citizens.

The UEMS ETR documents aim to provide for each specialty the basic training requirements as well as optional elements, and should be regularly updated by UEMS Specialist Sections and European Boards to reflect scientific and medical progress. The three-part structure of these documents reflects the UEMS approach to have a coherent pragmatic document for each individual specialty, not only for medical specialists but also for decision-makers at the national and European level interested in knowing more about medical specialist training. To foster harmonisation of the ETR by adopting more specific guidelines, the Canadian Medical Education Directives for Specialists (CanMEDS) competency framework is recommended which defines the entire set of roles of the professionals which are common across both medicine and surgery. UEMS has an agreement to use an abbreviated version of the competencies within those roles.

**Importance of making a distinction between Knowledge and Competency in ETR documents**. Competency-based medical education (CBME) is not oriented towards the period of clinical rotations, but towards trainee, and trainee's progress in the acquisition of competencies. Having a clear distinction within an ETR's content between competencies and knowledge helps define both how that training should be delivered and how it should be

assessed. The UEMS considers that the appropriate use of different methods of assessment of knowledge and acquired skills, emphasising the workplace-based assessment, is an essential component of quality postgraduate training, focused on high standards of specialist medical practice. To improve the methods of assessment it is also recommended to use the so-called Entrustable Professional Activities (EPAs) in all specialties ETRs. In order to recognise common and harmonised standards on the quality assurance in specialist training and specialist practice at a European level some UEMS Specialist Sections and Boards also have, for a long time, organised European examinations (supported and appraised by the UEMS Council of European Specialist Medical Assessments (CESMA)).

**Overlapping of learning outcomes and competencies**. Each of the UEMS ETRs defines a syllabus or knowledge base and describes learning outcomes defined for given competencies. Some of these curricula encompass a whole specialty, other focus on areas within or across specialties and define content of the training requirements for specific areas of expertise. By recognising the potential overlapping it creates the opportunity for those writing ETRs to draft overlapping or common goals for learning outcomes. Similar measurement does not necessarily equate to the same targets. Rather, across different specialties the final goal may differ, i.e. there may be clearly defined individual goals for trainees with different expectations.

**UEMS ETRs and national curricula**. The UEMS strongly encourages the National Medical Competent Authorities (NMCAs) to adopt such requirements and believes that this is the most efficient way of implementation of good standards in postgraduate training. We clearly respect and support the vital role of the NMCAs in setting high standards of training and care in their respective Countries and checking through robust quality control mechanisms the qualifications of medical specialists moving across Europe. The UEMS ETRs are developed by professionals for professionals and this adds unique value to them. UEMS aim is to indicate the knowledge and competencies that should be achieved by trainees in EU/EEA countries and also competencies and organisation of the training centres. The training environment and results described in UEMS ETRs may be achieved in adapted ways, depending on local traditions, organisation of healthcare system and of medical specialist training. Adaptation of UEMS ETRs to local conditions assures the highest quality of specialist training and each state may include additional requirements, depending on local needs.

**Importance of collaboration with other representative European medical bodies**. The UEMS always wishes to work with all Colleagues, NMAs, professional and scientific organisations across Europe. In the process of ETRs development, the UEMS recognises the importance of meaningful collaboration with the other European medical representative bodies, the European Junior Doctors (EJD representing doctors in training), the European Union of General Practitioners (UEMO – Union Européenne des Médecins Omnipraticiens), the Standing Committee of European Doctors (CPME - Comité Permanent des Médecins Européens), the Federation of European Salaried Doctors (FEMS) and the European

Association of Senior Hospital Doctors (AEMH - Association Européenne des Médecins Hospitaliers). In addition, UEMS continues to develop closer links with the many European specialist societies. UEMS, in collaboration with its fellow European representative bodies, has constantly been highlighting the importance of coordinated postgraduate specialist medical training programmes always accepting the differing needs of different specialties. In this way quality medical care is delivered by highly qualified medical specialists - essential to ensuring consumer confidence and protection all over Europe.

**Conclusions**. UEMS is very proud for all the hard work that has been done until now in developing the UEMS ETRs as well as that they are increasingly implemented as national curricula. However, we also recognise the need for constant improvement, and we are always open to further suggestions. The UEMS insists that the medical profession remains the driver in defining its own specialist training and continuous professional development needs. On this basis, we sincerely look forward to working with the key European Union responsible bodies, as well as the national stakeholders in implementing the basic common strategies and requirements outlined with this initiative. We are confident that the priorities detailed in UEMS ETR documents developed for individual specialties (and/or competencies) will become evident in national strategies and programmes, as well as action plans for postgraduate medical education and training.

## Specialty of Paediatric Gastroenterology, Hepatology and Nutrition

Paediatrics is an independent medical specialty based on the knowledge and skills required for the prevention, diagnosis and management of all aspects of illness and injury affecting children of all age groups from birth, through adolescence and up to the age of 16 to 18 years depending on the individual country. Paediatrics also encompasses child health and covers growth, development, health promotion and prevention of disease. The influence of the family and other environmental factors also plays an important role in a child's development and for those children with chronic conditions, many require life-long management with a smooth transition of care from paediatric to adult services.

We believe, therefore, that all physicians practising paediatric gastroenterology, hepatology and nutrition (PGHN) require a solid basic training in general paediatrics, as set out by many national training authorities (NTAs), and in the recommended European Common Trunk Syllabus, approved by the European Academy of Paediatrics-Union Européenne des Médecins Spécialistes (EAP-UEMS). This basic paediatric training, which should be a minimum of 3 years duration, should be the prelude to specialist training, and will underpin many of the principles set out in this specialist syllabus.

PGHN is a specialty concerned with the diagnosis and management of disorders that affect the gastrointestinal (GI) tract, pancreas and liver. Furthermore, this specialty includes care of nutrition in healthy children and nutritional support for patients, including enteral and parenteral nutrition.

This document sets out the minimum requirements for training in PGHN. PGHN is a subsection of the Tertiary Care Group of the EAP-UEMS through the European Board of Paediatrics (EBP). Furthermore, this document gives a framework for PGHN training that serves European countries and other regions globally where formal national PGHN training options are not available.

The initial European Training Requirements (ETR) for PGHN were endorsed by UEMS in 2018, when the syllabus was completed and approved. The syllabus has now been revised. The updated version was prepared in 2024 by the ETR Working Group of the Education Committee of European Society of Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN), under the direction of the President of ESPGHAN, the Council of ESPGHAN, the Gastroenterology Committee, the Hepatology Committee and the Committee of Nutrition.

This document is based on the previous ESPGHAN syllabus for subspecialty training, the Level 3 Paediatrics Sub-specialty Syllabus of the United Kingdom and the Speciality Training Programme and Curriculum for Gastroenterology and Hepatology (the 'Blue Book').

## Aims of the Specialty

The aims of providing ETRs for trainees, trainers and training institution in PGHN are to:

- Improve the level of care for children with GI, liver, pancreatic and nutritional conditions.
- Align training programmes in PGHN between different European countries.
- Develop a framework for PGHN training that serves European countries and other regions globally where formal national PGHN training options are not available.
- Establish clearly defined standards of knowledge and skills required to practice PGHN.
- Foster the development of a European network of competent PGHN care centres.

## Procedure of ETR Development/ Revision

### Composition of the syllabus subcommittee

The ETRs were developed by the Education Committee of ESPGHAN: Ilse Broekaert, Barbara de Koning, Tudor Pop, Osvaldo Borrelli, Vangelis Giamouris, Agata Strozyk, Elena Cernat, Joerg Jahnel, Lisa Cooke

### Revision of the ETR

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The Endoscopy Special Interest Group: Raoul Furlano, Priya Narula, Mike Thomson, Matjaz Homan

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# TRAINING REQUIREMENTS FOR TRAINEES

## Trainee in Paediatric Gastroenterology, Hepatology and Nutrition

A medical trainee is a doctor who has completed their general professional training as a medical doctor and is trained and assessed in an accredited training programme leading towards medical specialist registration. Variably known in different countries as an intern, or registrar.

## Content of training and learning outcome

### Competencies required of the trainee

**CanMEDs Framework**

A medical doctor who has successfully completed at least 3 years of training in general paediatrics will be eligible for further specialist training in PGHN. The key areas of general professional competencies required of a PGHN specialist are the same as those for all physicians. A PGHN specialist should be:

- An expert in the medical domain: The PGHN specialist is equipped with the requisite knowledge and expertise to effectively address the needs of children and adolescents suffering from disorders that affect the GI tract, liver, and pancreas. Furthermore, the PGHN specialist takes care of nutrition in healthy children and nutritional support for patients, including enteral and parenteral nutrition. Recognizing the multidimensional and interdisciplinary nature of PGHN, the specialist possesses a comprehensive understanding and proficiency that surpasses the confines of individual bodily systems and specific age demographics. This expertise is seamlessly integrated into daily clinical practice. The PGHN specialist demonstrates adept clinical reasoning, ensuring that diagnostic and therapeutic approaches align with the principles of evidence-based and cost-saving medical care. They exercise caution to avoid unnecessary or detrimental procedures or treatments. Adhering to both national and international standards, the specialist acknowledges their strengths, whilst remaining cognizant of the limitations inherent in their knowledge and skills, thereby facilitating appropriate referrals to other specialists when warranted. Continual updating of knowledge and skills is a priority for the PGHN specialist.
- A proficient communicator: The PGHN specialist engages in attentive listening, skilfully extracting and amalgamating pertinent details from patients and their families. They establish an instructive and educative dialogue with patients, offering tailored feedback as needed. Recognizing the diverse influences shaping a patient's narrative - including age, gender, disability, ethnicity, and cultural background - the specialist navigates these factors to comprehend the

patient's history, relationships, and readiness to engage with treatment. Guiding patients through comprehensive age-appropriate education regarding their condition, treatment options, associated risks, and preventive measures, the PGHN specialist fosters a relationship founded on trust, empathy, and mutual understanding, thereby integrating shared decision-making into the therapeutic process. In collaborative healthcare settings, the PGHN specialist adeptly communicates with peers, allied healthcare professionals, and other members of the multidisciplinary team (MDT), articulating pertinent information with clarity and precision, both in written and verbal formats, to uphold effective dialogue and ensure optimal patient care.

- A collaborator: Understanding the interconnected nature of conditions affecting the GI tract, the liver, the pancreas and nutritional status, the PGHN specialist operates at the divergence of medical fields. Effectively collaborating and forming partnerships with other healthcare practitioners, the specialist excels in multidisciplinary environments. They appreciate and respect the roles, viewpoints, and contributions of their peers, guaranteeing seamless transitions of patient care to colleagues and other healthcare providers as necessary, with patient safety as paramount consideration.

- A leader: The PGHN specialist possesses a well-defined perspective on their role and standing within the healthcare institution. They assume responsibility for the treatment of patients with GI, liver, pancreatic and nutritional conditions and endeavour to spearhead initiatives pertinent to PGHN. With the goal to enhance patient care within the healthcare system, the PGHN specialist takes proactive measures. Furthermore, at a managerial level, the specialist leads their team and supports staff, employing adept management abilities to organize and coordinate patient care effectively.

- A health advocate: The PGHN specialist actively advocates for the well-being of patients dealing with GI, liver, pancreatic and nutritional conditions, both within their clinical practice and beyond. This advocacy may take place individually or through involvement with scientific and professional organisations specializing in PGHN. By pinpointing key health determinants, the PGHN specialist creates comprehensive management and prevention strategies, ensuring that patients can access appropriate healthcare and social services. Additionally, they identify vulnerable patient groups at risk of GI, liver, pancreatic and nutritional diseases and their associated complications, applying insights from primary and secondary prevention measures. Moreover, the PGHN specialist is vigilant in recognizing opportunities to enhance PGHN healthcare at a broader level.

- A diligent scholar: The PGHN specialist applies himself to continuous learning in the field of PGHN. In addition to their personal educational aims, the specialist imparts knowledge to students, patients, colleagues, and the wider community. They meticulously evaluate sources of medical information, appreciating the ongoing importance of research, and actively engage in and contribute to research endeavours.

- A committed professional: The PGHN specialist is unwavering in their commitment to delivering top-tier care to patients living with GI, liver, pancreatic and nutritional conditions. This commitment extends to adhering to the highest ethical standards in medicine, encompassing informed consent, advanced directives, research ethics, and upholding patient autonomy with utmost respect.

*Theoretical knowledge*

A summary of the anticipated knowledge of a PGHN specialist upon completion of training is outlined below. Further information on the theoretical knowledge is available in the syllabus provided in the appendix.

**Aim of training in PGHN**

The aim of training in PGHN, which is accomplished at a secondary or tertiary care facility, is to allow competent practice by a specialist who would be expected to deal with complex problems in PGHN. Training in PGHN can only be certified after successful completion of at least 3 years training in general paediatrics. PGHN training should cover the following areas:

Gastroenterology:

- Management of maldigestion and malabsorption resulting from acute and chronic diarrhoea or congenital and acquired conditions.
- Management of GI anomalies requiring surgical treatment in early infancy
- Management of upper GI disease
- Management of inflammatory bowel disease (IBD)
- Management of food allergy and GI eosinophilic diseases
- Management of disorders of gut-brain interaction
- Management of motility disorders
- Management of polyps and tumours
- Management of anorectal disease
- Management of life-threatening GI conditions

Hepatology:

- Management of acute liver failure
- Management of chronic and end-stage liver disease and the associated complications
- Investigation and management of children and adolescents with suspected liver disease
- Management of different conditions of infantile cholestasis
- Knowledge about the liver transplantation process
- Management of acute and chronic diseases of the pancreas

Nutrition:

- Nutrition in healthy children

- Management of complex nutritional needs in children requiring nutritional support
- Knowledge about the basic and advanced diagnostic and therapeutic management of reversible and irreversible intestinal failure

Technical skills:

- Provision and interpretation of GI diagnostic and therapeutic procedures including certified endoscopic competency

**End result of training**

The training programme aims to develop fully competent PGHN specialists capable of delivering complete care for the conditions outlined below (Appendix Table 1).

At the end of training, the paediatrician trained in PGHN should:

- Provide clinical care within the framework of a specialised care unit in the inpatient/outpatient setting using various specialised diagnostic and therapeutic modalities.
- Liaise with the appropriate laboratories and similar departments.
- Liaise with colleagues in primary and secondary care paediatrics in the provision of high-quality local care.
- Liaise and consult with other specialists.
- Develop an integrated pattern of care with colleagues in the adult speciality as well as genetics.
- Be trained in clinical research methods and be capable of understanding and establishing a research study.
- Participate in activities needed to support effective healthcare such as administrative issues, research activities and quality improvement projects.

*Practical and clinical skills*

A PGHN specialist should be able to achieve the skills during his/her training in PGHN as described in Appendix Table 1.

*Non-technical skills and professionalism*

A PGHN specialist should be able to achieve the skills during his/her training in PGHN as described in Appendix Table 1.

## Levels of Competence

**Competence** implies the legal recognition of an overall capability involving, through one or more steps in training, the successful achievement of one or more competencies. The ability to perform a task effectively is achieved through knowledge, technical and non-technical skills, professionalism and experience.

**Levels of competence** widely used are

1: The trainee has observed, has knowledge of, describes;

2: The trainee performs, manages, demonstrates under direct supervision;

3: The trainee performs, manages, demonstrates under distant supervision;

4: The trainee performs, manages, demonstrates independently.

**Entrustable Professional Activities (EPAs)** form a higher level of competence, and at the same time go beyond as they connect the competency framework to the workplace. EPAs are defined units of professional work that can be entrusted to a trainee once he/she has demonstrated sufficient competence to perform the activity independently, without assistance or need for advice.

When describing the level of competence for particular parts of the curriculum or for EPAs, including their assessment, the application of the different **CanMEDs roles** may be helpful.

Competencies should be evaluated throughout the training period. There are several tools for this, describing different aspects of training. Some of these are set out below. Formal and informal reflection on these assessments is important. Evidence of achieving competencies and reflections must be documented.

**EPAs for PGHN:**

**EPA 1: Diagnosis and Management of Paediatric Inflammatory Bowel Diseases and Diarrheal Disorders**

Evaluate, diagnose, and manage paediatric inflammatory bowel disease (IBD) (Crohn's disease, ulcerative colitis, IBD-unclassified (IBD-U)) and acute or chronic diarrheal conditions, including infectious, malabsorptive, congenital, and immune-mediated causes (e.g., coeliac disease). Management includes investigations, treatment planning, monitoring, and coordination of multidisciplinary care.

**EPA 2: Recognition and Initial Management of Life-Threatening Gastrointestinal Conditions**

Evaluate, diagnose, and manage acute paediatric gastrointestinal emergencies including gastrointestinal (GI) bleeding, intestinal obstruction and conditions requiring urgent surgical intervention, including initial resuscitation, investigation and coordination with multidisciplinary teams.

**EPA 3: Diagnosis and Management of Upper Gastrointestinal Disorders**

Evaluate, diagnose, and manage paediatric oesophageal and gastric conditions including foreign body ingestion, oesophageal strictures, Helicobacter pylori infection, gastritis, and peptic ulcer disease. Involves diagnosis, treatment planning, follow-up, and coordination with relevant specialists.

**EPA 4: Management of Food Allergies and Eosinophilic Gastrointestinal Disorders**

Evaluate, diagnose, and manage food allergies and eosinophilic gastrointestinal disorders, focusing on accurate diagnosis, medical treatment, and patient/family education, as well as collaboration with other relevant healthcare professionals or services.

**EPA 5: Management of Disorders of Gut-Brain Interaction and Motility Disorders**

Evaluate, diagnose, and manage functional gastrointestinal disorders and motility disorders in children, including infantile colic, irritable bowel syndrome (IBS), constipation, gastrooesophageal reflux, dysphagia, and paediatric intestinal pseudo-obstruction (PIPO), using evidence-based interventions and appropriate onward referrals.

**EPA 6: Surveillance and Management of Polyps, Tumours, and Anorectal Disorders**

Screens, diagnoses, and manages intestinal polyps, polyposis syndromes, and anorectal disorders such as rectal bleeding, fissures, fistulae, and prolapse, including endoscopic assessment, surveillance, and collaboration with surgical teams.

**EPA 7: Manage Nutritional Assessment and Support for Children with Acute, Chronic, and Complex Nutritional Needs**

Assessment includes anthropometry and diet history to identify and manage malnutrition and obesity, risk of refeeding syndrome and subsequent treatment if missed, understands when indicated and prescribes enteral and parenteral nutrition, and works and collaborates with dietitians in a multidisciplinary team.

**EPA 8: Manage Intestinal Failure and Coordinate Intestinal Rehabilitation Programs**

Includes enteral/parenteral nutrition (PN), prevention of complications (e.g., intestinal failure associated liver disease (IFALD), sepsis), family training for home parenteral nutrition, and referral for intestinal transplant.

**EPA 9: Perform and Interpret Diagnostic and Therapeutic Procedures Including Gastrointestinal Endoscopy, Liver Biopsy, Motility Studies and Know about Radiological Investigations**

Includes pre-procedure assessment, endoscopic safety, percutaneous endoscopic gastrostomy (PEG) placement, biopsy interpretation, management of complications, and achievement of competence thresholds. Includes knowledge about motility studies (pH-metry, manometry) and radiological investigations (ultrasound, X-ray, CT, MRI).

**EPA 10: Diagnose and Manage Acute and Chronic Liver Disease in Children**

Evaluate, diagnose, and manage liver test anomalies, viral hepatitis, acute liver failure, metabolic and autoimmune liver diseases, portal hypertension, and metabolic dysfunction-associated steatotic liver disease (MASLD).

**EPA 11: Evaluate and Manage Children with Cholestasis and Other Hepatobiliary Disorders**

Evaluate, diagnose, and manage cholestasis including biliary atresia, progressive familial intrahepatic cholestasis (PFIC), Alagille syndrome, and choledochal malformations.

**EPA 12: Manage Liver Transplantation Process**

Knowledge about indications and transplant process, immunosuppressive drugs, and transplant-related complications.

**EPA 13: Assess and Manage Pancreatic Disorders in Children**

Evaluate, diagnose, and manage acute and chronic pancreatitis, pancreatic exocrine insufficiency, and nutritional management in chronic pancreatitis, exocrine insufficiency and cystic fibrosis (CF).

**EPA 14: Coordinate Multidisciplinary and Transitional Care for Complex and Chronically Ill PGHN Patients**

Involves collaboration with dietitians, psychologists, speech and language therapists, nurses, social workers, surgeons, radiologists, and adult services; includes adolescent healthcare and manages process of transition and later transfer to adults.

**EPA 15: Demonstrate Leadership, Scholarship, and Advocacy within the PGHN Discipline**

Covers quality improvement, ethical practice, teaching, and contribution to research and evidence-based care.

A detailed description of the EPAs is written in Appendix Table 2.

## Organisation of training

### Schedule of training

**Clinical training**

A medical doctor who has successfully completed his/her training of at least 3 years in general paediatrics will be eligible for access to further PGHN specialist training. A clinical training period of full-time employment of at least 24 months or the equivalent duration in part-time work, preferably uninterrupted, is considered adequate, but in some institutions or countries, longer training may be required.

**Academic (research and teaching) training**

There are no current guidelines for research training within the European syllabus of tertiary care training, however, research training (clinical or laboratory based) of a least 6 months, is highly recommended. Trainees should also have the opportunity to have training in clinical teaching and educational supervision. These arrangements will need to be negotiated at national level.

### Curriculum of training

The curriculum aims to cover training of future PGHN specialists for general competencies and PGHN-specific competencies. It should allow flexibility for personal development according to the needs of the individual, the centre and the country where the candidate is training. Defining a standard European curriculum is challenging. Some countries already have their curricula for training in PGHN. A European curriculum should consider diverse health systems and clinical settings of different countries, as well as a different spectrum of skills required by the national curricula.

A curriculum for PGHN specialists is based on the following general principles in paediatrics and a special focus on PGHN:

- Competence in history taking, physical examination with emphasis on special PGHN examination, competence in diagnostic, management and continuing care of patients with the most common as well as rare PGHN diseases.
- Competence in communication with children and parents/caregivers.
- Competence in communication and collaboration with colleagues from the same field, with expertise in other paediatric subspecialties, adult gastroenterologists, paediatric

surgeons, geneticists, radiologists, pharmacists, dietitians, psychologists, speech and language therapists, social workers, inside the country and at international level.
- To practice evidence-based medicine and follow national and international recommendations for diagnosis and treatment of patients.
- To be competent to obtain informed consent for PGHN procedures.
- To practice cost-effective care.
- To invest time into continuous medical education to maintain the quality of the practice.
- To understand the importance of public health and preventive medicine.
- To be a future mentor for trainees, to teach and support them.
- To understand the basic principles and importance of research work.
- To understand the importance of ethics in research.

Trainees must collect proof of their achievements in the above principles which will also help them if they wish to seek employment in a country different from the country in which they trained. The same level of knowledge and competence should be requested in different countries and the curriculum of training is the fundamental background to achieve this common goal.

To gain the necessary experience in the care management of different diagnoses on a range of patients, during the whole period of his/her speciality training. This should include the care of outpatients, inpatients (including emergency admissions) and community care where appropriate.

## Assessment and evaluation

### *Formative assessments*

'Formative assessments' evaluate on trainees' understanding and progress during the training. They happen throughout the learning process. A formative assessment is carried out mainly to give feedback to the trainee to improve him/herself or others (e.g. teachers, accrediting bodies, examiners, educational institutions).

### *Summative assessments*

A 'summative assessment' evaluates formally what trainees have learned and are competent to perform at the end of the learning process. The primary purpose of establishing whether performance measured at a single defined point in time meets established performance standards. ESPGHAN is in the process of working on a European PGHN Examination coordinated by UEMS.

All facets of training should be adequately supervised and assessed, with the purpose of ensuring a continuous progression of the trainee's knowledge and skills as well as professional conduct and ethics. Assessment of competences is defined as the process of obtaining information relative to a known objective or goal, which includes (but is not limited to) testing.

Trainees should be assessed according to summative and formative elements. The latter refering to following definite criteria during a designated period, whilst the former addresses the trainee's achievements at the end of a defined period or project. Evaluation refers to the process of attributing value, which is designed to provide information that will help substantiate a judgement about a given situation.

The main principles of training assessments should include four separate components of competence: assessment of knowledge, assessment of experience and progress monitoring referenced through logbooks, assessment of work competence (workplace assessment of skills, knowledge and attitudes during regular clinical performance) and a face-to-face assessment (such as annual appraisals for example).

These tools should be used routinely during the learning process, offering trainees timely and specific feedback on their performance to inform on their progress with ample opportunities for discussion.

The assessment of training competence is the responsibility of the NTAs, and if not available, a supervisor, tasked with developing their own appraisal systems and assessment frameworks. Many countries hold validated end of training examinations constituting part of the assessment for certification. It is recommended that the NTAs issue a certification of completion of training (or 'diploma') recognising all aspects of assessment that have been satisfactorily completed.

A final examination at the end of training that covers the entire curriculum is an effective tool to define the competence of a physician trained in PGHN. If there is no national PGHN training programme, assessment can take place at a European level becoming the responsibility of UEMS in cooperation with ESPGHAN. For that specific case, the installation of a European PGHN exam is planned. However, trainees training in countries with a certified PGHN training programme are encouraged to take this PGHN exam in order to become European board certified for PGHN. Furthermore, ESPGHAN standards of quality should be applied for provision of endoscopy skills certification.

**Logbook**

The trainee should keep a written or electronic logbook of patients they have seen, procedures conducted, diagnosis and therapeutic interventions instigated and followed-up. This will constitute part of their portfolio.

The trainee will be required to keep his/her personal logbook or equivalent up to date according to national guidelines and EU directives. The logbook should be endorsed by his/her tutor or authorised deputy. The trainee should attend (in person and/or online) and provide evidence of attendance at local, regional, national and international basic and advanced PGHN meetings. It is recommended that trainees give presentations at this type of meeting.

**Competency assessment**

Competencies should be evaluated throughout the training period. There are several different tools for this, describing different aspects of training. Formal and informal reflection on these assessments is an important aspect of a trainee's success. Assessment for key capabilities in PGHN are summarized in Appendix Tables 2-4.

| Assessment | Purpose | Method |
|---|---|---|
| Mini-CEX<br>(Mini clinical evalution exercise) | Provides feedback on skills needed in clinical care. | Trainer observes a trainee examining a patient and explaining the management plan to the parents/caregivers. |
| CbD<br>(Case-based discussion) | Assesses clinical reasoning or decision making. | Trainee presents a more complex case to the trainer and discusses the evidence or basis for diagnosis or treatment. |
| DOPS<br>(Directly observed procedural skills) | Assesses practical skills. | Trainee undertakes a practical skill whilst being observed. E.g., paediatric gastroscopy DOPS, paediatric ileo-colonoscopy DOPS. |
| LEADER | Focuses on leadership skills. | A trainee is observed leading a team (e.g., during resuscitation). |
| HAT<br>(Handover assessment tool) | Evaluates handover skills. | Handover episodes are supervised and discussed. |
| DOC<br>(Discussion of correspondence) | Assesses letter writing skills. | Outpatient care letters or discharge letters are reviewed and discussed. |
| MSF<br><br>(Multi-source feedback) | Provides wider feedback on the performance of the trainee. | Confidential comments from a wide range of colleagues, patients, and trainee are sought. |

**Participation in audit project**

The trainee should conduct at least one systematic style review of a topic and in addition prepare a detailed evidence-based appraisal of a diagnostic test or a therapeutic intervention.

## Governance

The oversight of an individual's training programme will be managed by the training programme director (TPD) and the institution(s) where the programme is conducted. A trainer, who meets the criteria specified, will be accountable to the programme director for providing the necessary training within their specialty.

# TRAINING REQUIREMENTS FOR TRAINERS

## Process for recognition as trainer

### Requested qualification and experience

The training centre should preferably include two trainers. The TPD should be a practising paediatrician and PGHN specialist **for a minimum of five years**.

There should be additional trainers who should provide training across all aspects of the speciality and be research active in PGHN. In some centers, an educational supervisor may assist the TPD in coordinating the training programme for trainees. To provide a comprehensive education, if any specific aspect of training cannot be provided in one centre, the trainees should be taught in another suitable centre by a PGHN trainer specifically identified for that purpose.

A trainer is a person who holds acknowledged expertise in one or more fields of PGHN. This person's contribution may be restricted to those areas of expertise. Trainers should have practised PGHN for a **minimum of two years**.

Each center should provide a well-defined training programme to address the needs of the trainees in accordance with the available facilities of the institution. Regular reviews should allow flexibility and a process to promptly identify and address any unmet educational needs. The trainer should work with the trainee to create a personal development plan (PDP).

Trainers should provide the trainees' appraisal and assessment of progress. The appraisal should determine educational needs and use an objective tool to assess performance and achievements. Assessment should cover the following aspects provided in terms of:

- Training experience related to the syllabus.
- Achievements related to the current PDP.
- Professional achievements and career ambitions.

To provide appropriate individualised monitoring of the trainee, the number of trainees should not exceed the number of trainers in the centre.

The TPD and the trainers should meet with the trainee at the beginning of the programme to define the PDP and the individual educational contract. Reviews of progress should take place at three-month intervals during the first year of training to allow the necessary adjustments to be adopted.

An annual full assessment should be conducted, ideally at a national level, to review attained skills and to assess the achievement of training objectives within the teaching programme. Assessments should be detailed and contain statements on the theoretical and practical experience accumulated by the trainee. The trainee should provide an overall report of the training received as well as the difficulties encountered (portfolio). Reports should be submitted to the TPD or national body.

## Core competencies of trainers

Trainers in the field of PGHN should

I. *know all aspects of the given specialty curriculum and and the problems related to its clinical implementation.* They should be trained in the practices of medical education.
II. *be familiar with principles of modern medical education with focus on assessment tools, how to support trainees in difficulty and how to give effective feedback, including career advice.* Trainers should have a comprehensive understanding of all aspects of the specialty. They should engage in continuous professional development to enhance their educational skills (e.g., endoscopy train-the-trainer courses), as well as participate in conferences, and actively take part in professional development initiatives.
III. *be able to promote trainee's competencies including ethical behaviours and humanistic values as well as trainee's scientific curiosity.* They should recognise and address any trainee inappropriate behaviour by promoting professional behaviour. Trainers should provide adequate supportive measures where necessary. Trainers should be encouraged to take part in 360-degree feedback from their peers as well as from students. Leadership skills are paramount to effectively guide trainees and promote a supportive learning environment.
IV. *further develop their own leadership and mentorship competencies.* Trainers should have knowledge in mentorship and be able to create a safe learning environment. They should possess experience in teaching and training students, and the ability to effectively identify and address the learning needs of trainees. Trainers should provide the guidance needed to help trainees achieve their academic and clinical goals.

Overall, these competencies ensure that PGHN specialists can contribute to the education and development of future specialists in the field as trainers.

## Quality management for trainers

The TPD is responsible for ensuring and maintaining the quality of the PGHN training programme. The educational work of trainers and TPDs should be appraised not less than annually within their institution as local guidance determines.

Trainers, supervisors, and teachers should be officially recognised within their training institution and national bodies. The skills, responsibilities, and duties required for each position should be clearly specified. Transparent procedures should be in place for the appointment of each role, specifying the competencies required for each position.

Since the core competencies of trainers include experience in the medical field and regular updating of their educational skills, each institution should ensure that trainers are provided with regular training opportunities with sufficient time and resources to effectively support their educational role. Continuing education should be encouraged through regular updates to the training curriculum in accordance with the latest medical advances and educational methodologies, and through training opportunities provided by national and international PGHN societies.

The quality of training should be evaluated regularly. Programme directors and trainers should possess considerable knowledge and experience in postgraduate training, and should have completed the 'Train the Trainer Courses', mostly acceptable in the frames of continuous professional development. Trainers, supervisors, and teachers should receive regular and constructive feedback on their performance to ensure progressive professional development. This quality assessment should include input from trainees through methods such as interviews and requests for feedback, as well as monitoring of trainees' progress under the trainer's supervision.

# TRAINING REQUIREMENTS FOR TRAINING INSTITUTIONS

## Process for recognition as training centre

### Requirement on staff and clinical activities

**Clinical activities requirements**

A full training centre should provide adequate experience in all fields of PGHN including acute and emergency care. Training centres should have a sufficient throughput of patients, an appropriate case-mix to meet training objectives, and be adequately resourced with teaching staff. The training should expose the trainee to a broad range of clinical experience.

A group of related institutions can be considered as a centre, and each constituent considered as a unit contributes to one or more modules for training. Those training units are institutions that provide training in one or more modules. They should provide adequate exposure to address the learning needs of trainees for each module and provide access to appropriately experienced teachers.

The centre should have access and working relationships with other relevant specialities such as adult gastroenterology, radiology, laboratory medicine, pathology, paediatric surgery, genetics, pharmacy, child psychiatry, etc. Demonstration of involvement of other members of the MDT (particularly allied health professionals such as specialised nurses, dietitians, speech and language therapists, social workers, and psychologists) is necessary for recognition of clinical activities.

Collaboration between paediatric and adult specialists in gastroenterology, hepatology and nutrition is crucial, alongside the development of individualised transition plans. Joint clinics are encouraged, allowing both teams to align on treatment strategies and introduce the young adult to their new care provider. Each transition plan should be personalised. An MDT approach, which also includes a coordinator and psychological support, is vital for comprehensive care.

A detailed description of the Transition process is mentioned in the Appendix "Training Objectives Pertaining to the Care of Adolescents and Young Adults with Chronic disorders".

**Scientific activity requirements**

The centre should provide evidence of on-going clinical research with access to basic research, teaching and educational supervision. The centre should hold regular and planned teaching programmes with participation in regional/national meetings.

**Composition of training staff and trainee/trainer ratio**

The training staff in a centre should include at least two trainers. To provide appropriate individualised monitoring of the trainee, the number of trainees should not exceed the number of trainers in the centre (trainee/trainer ratio of maximum 1). The TPD should have a minimum of 5 years' experience in practicing PGHN and hold a paediatric specialist accreditation.

## Requirement on equipment, accommodation

A training centre should be well equipped and supported to facilitate the clinical practices expected of such an institution, thereby ensuring the provision of essential educational opportunities for trainees. This includes having advanced medical equipment, diagnostic tools, treatment facilities, and technological resources necessary for comprehensive PGHN training.

The training centre should contain an endoscopy unit or a room where endoscopies can be performed. Endoscopy facilities should have the personnel and technical resources required by national and/or state standards to complete all planned pediatric procedures safely and effectively. The facility should be paediatric-specific, patient- and family-centered and may be integrated into an adult endoscopy unit.

The endoscopy unit should use up to date endoscopes with appropriate cleaning equipment and processes. The unit should be staffed by fully trained endoscopy nurses and assistants and should undergo regular quality control assurance according to local, national, or international criteria. These quality control assessments might include assessment of patient comfort levels, facilities, complication rates (perforation, post polypectomy bleeding, etc.), procedure completion rates, and referral appropriateness. The unit should have implemented a Critical Incident Reporting System (CIRS) or equivalent. Protocols and guidelines should be available within the unit to ensure the proper management of complex patients. Trainees should receive formal induction training on entry to an endoscopy unit particularly regarding patient safety issues including consent. As far as practicable, endoscopy sessions during which training occurs should be adjusted to the needs of the trainee. The trainer should undertake formal competency 'sign-off', when the competency standards have been achieved. Training should take place in an accredited endoscopy unit (at a national level). Facilities for abdominal ultrasound and ultrasound guided biopsy are necessary at the training centre.

Training institutions should provide a library and/or internet facility with access to the latest global scientific literature, including prominent international PGHN journals. Basic textbooks in PGHN should be readily available and there should be easy access to a comprehensive

reference library. They should also offer essential physical infrastructure for trainees, such as a dedicated office space with computer access and quiet study areas.

Given the importance of research in PGHN, trainees should gain a thorough understanding of the design and execution of scientific research, either within their training institution or through collaborations with other centres or universities. Training programmes should be flexible enough to accommodate periods of part-time research.

## Quality management within training institutions

**Accreditation and reaccreditation by the national competent authority**

The recognition of training institutions will ultimately be part of a joint process involving EAP-UEMS and ESPGHAN. It is anticipated that ESPGHAN will act as the agent for EAP-UEMS and the Confederation of European Specialists in Paediatrics (CESP) in executing this task. A list of the names and characteristics of existing national training centres will be created and held by ESPGHAN and EAP-UEMS, which will oversee quality assurance of the recognised centres every 5 years using the guidelines suggested by the UEMS.

For each EU member country, a list of centres, units, training directors, tutors and teachers should be compiled and updated on an annual basis. Each centre is characterised by the available modules or areas of teaching activity, tutors and teachers available, and the size of the clinical practice as defined by the needs of the trainee.

Accreditation and reaccreditation will initially be given by ESPGHAN and ultimately be approved by EAP-UEMS. The approval process will follow the EU guidelines (currently in preparation). A training centre can be a single institution or a group of related establishments.

**Clinical Governance**

Effective clinical governance within PGHN training programmes rests upon collaborative oversight by the TPD and the involved institutions. The TPD assumes primary responsibility for the programme's governance, ensuring that it aligns with established standards and objectives. Concurrently, the hosting institutions are accountable for providing an environment conducive to high-quality training delivery.

Each trainer bears direct responsibility to the TPD for imparting comprehensive training within their respective areas of specialisation. This accountability necessitates a structured approach to workforce management within training institutions, accommodating the specific demands

of specialty training. Central to this approach is the effective management of workload, where priority is consistently given to fostering a supportive environment for training activities.

**Manpower planning as part of the defined national manpower plan**

In the realm of PGHN training, effective manpower planning is fundamental to the success and sustainability of specialised educational programmes. It is recommended that training institutions appoint a dedicated coordinator tasked with overseeing the planning, implementation, and supervision of the specialty training programme. This coordinator plays a pivotal role in ensuring that the programme meets defined educational goals and adheres to regulatory standards.

Clear delineation of roles between trainers and trainees is crucial to the smooth operation of the training programme. It is imperative that both parties understand their respective responsibilities and expectations. To facilitate optimal learning outcomes, scheduled sessions specifically allocated for interactive specialty training sessions should be established. The frequency and duration of these sessions should be tailored to the local infrastructural capabilities and resources available, ensuring consistency and depth with training delivery.

Manpower planning within PGHN training programmes falls under the jurisdiction of the national PGHN board and if this does not exist the national paediatric board, tasked with assessing and responding to the specific regional and national requirements for skilled specialists in the field. This adaptive approach ensures that the allocation of resources and the deployment of personnel align closely with evolving healthcare demands and educational priorities.

**Regular report on teaching and scientific activities sent to relevant authorities**

Regular reports should be submitted to the TPD or the national body at the end of training unless problems arise, in which case the TPD or national body should be contacted immediately. Assessments should be detailed and contain statements of theoretical and practical experience accumulated by the trainers and trainees.

**External auditing**

Accrediation may be performed by visiting PGHN centres in Europe involving collaboration with the UEMS. During these visits, the evaluation groups review different aspects of the training programmes, including curriculum, assessment procedures, teaching methods, and trainee outcomes. A critical component of the external auditing process is the maintenance of a comprehensive database of all recognised training centres in Europe. The database will be updated regularly, with input from national experts. This database will serve as a valuable resource for trainees seeking to find appropriate centres for PGHN training. By providing up

to date information on accredited training centres, the database will help ensure that trainees have access to all possible training opportunities. Upon completion of the audits, detailed reports will be given to the training centres, outlining their findings and recommendations. Centres that meet the required standards will receive accreditation, identifying their commitment to excellence in PGHN training. For centres that do not initially meet these standards, the audit reports will serve as a roadmap for necessary improvements, with a follow-up planned to ensure progress. Moreover, the accreditation process will be dynamic, with regular re-evaluations to ensure that training centres continue to meet the standards of PGHN education.

**Internal auditing and quality assurance**

The centre should provide adequate experience in all fields of PGHN including emergency care. It should provide all training modules. The number of activities should be sufficient to provide at least a minimum experience for a trainee. A group of related establishments can be considered a centre, and each individual component can be considered a unit by contributing with one or more modules. The centre should have easy access and close relationships with the other relevant specialities involved in PGHN.

Demonstration of the involvement of other members of the MDT, particularly specialised nurses, dietitians, speech and language therapists, social workers, and psychologists is necessary for recognition. The centre should provide evidence of on-going clinical research and access to basic research. In countries that have approved centres for PGHN care, full training centres should be one of these.

The centre will be responsible for regular clinical staff/seminar teaching and participation in regional/national meetings. Basic textbooks in PGHN should be immediately available and there should be easy access to a comprehensive reference library.

Training units are institutions that provide training in one or more modules. They should provide adequate exposure in the defined area and provide a trainer who is deemed competent in those areas.

**Transparency of training programmes**

According to national and regional guidelines, UEMS highly recommends that training institutions create clear training programmes and make them accessible to the public, by posting them on their website. Training centres should detail the training they offer, including specific details about the clinical services provided, the trainers involved, the number of trainee slots available, and the specific time dedicated to PGHN. This information should cover the structure of the training programmes, the clinical or laboratory experience available to trainees, and the support and interaction with the trainer and TPD. Additionally, a designated

contact person or point of access should be available for prospective trainees to obtain information about the programme.

**Structure for coordination of training**

A TPD should oversee and organise the official education programme. The TPD will be supported by trainers who contribute their expertise to the programme. In some centres, an educational supervisor may assist the TPD in coordinating the training programme for trainees, ensuring the smooth delivery of educational activities.

**Framework of approval – how are they approved?**

The content of training programmes should be meticulously outlined to specify how and by whom the key achievements of the training will be assessed. This assessment process should be thorough and transparent, ensuring that the accomplishments of trainees are verified through both relevant documents and the testimony of trainers and other staff who have directly worked with the trainee. This dual approach ensures a comprehensive evaluation of the trainee's capabilities and progress. It is necessary that a European medical specialist with competence in PGHN can provide adequate and universally accepted evidence of having successfully completed the training programme when relocating from one European country to another. This means that the qualifications and training institution awards should meet the highest standards of PGHN training. Furthermore, the approval framework should include rigorous mechanisms for quality assurance and continuous improvement. This includes regular audits and reviews of the training institution's curriculum, teaching methodologies, and assessment procedures. After fulfilling the whole training programme, the framework of approval should guarantee that the trainee possesses not only the required knowledge but also the clinical skills and competencies essential for the role of a PGHN specialist.

The framework for approving training institutions in PGHN should be detailed and multifaceted, ensuring that training programmes are rigorous, comprehensive, and aligned with European standards. This will not only enhance the quality of PGHN care but also fosters a cohesive and high-standard medical community across Europe.

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## GLOSSARY including list of acronyms with explanations

AEMH - Association Européenne des Médecins Hospitaliers

ALF - acute liver failure

AYA - adolescent and young adult

BMR - basic metabolic rate

CanMEDs - Canadian Medical Education Directives for Specialists

CBC - complete blood count

CbD - case-based discussion

CBME - competency-based medical education

CESMA - Council of European Specialist Medical Assessments

CESP - Confederation of European Specialists in Paediatrics

CF - cystic fibrosis

CIRS - Critical Incident Reporting System

CLD - chronic liver disease

CPME - Comité Permanent des Médecins Européens

CTF - Common Training Framework

DOC - discussion of correspondence

DOPS - Directly observed procedural skills

EAP - European Academy of Paediatrics

EBP - European Board of Paediatrics

EEA - European Economic Area

EJD - European Junior Doctors

EN - enteral nutrition

ENT - Ear-Nose-Throat

EPA - Entrustable Professional Activity

ERCP - endoscopic retrograde cholangiopancreatography

ESPGHAN - European Society of Paediatric Gastroenterology, Hepatology and Nutrition

ETR - European Training Requirement

EU - European Union

EUS - endoscopic ultrasound

EuTEACH - European Training in Effective Adolescent Care and Health team

FEMS - Federation of European Salaried Doctors

GI - gastrointestinal

GORD - gastro-oesophageal reflux disease

GvHD - graft-versus-host disease

HAT - handover assessment tool

HEADSSS - Home, Education/Employment, Activities, Drugs, Sex and relationships, Self-harm and depression, Safety and abuse (Questionnaire)

HIV - human immunodeficiency virus

HLA - human lymphocyte antigen

IBD - inflammatory bowel disease

IBD-U - inflammatory bowel disease unclassified

IBS - irritable bowel syndrome

IFALD - intestinal failure associated liver disease

IPEX - immunodysregulation polyendocrinopathy enteropathy X-linked syndrome

IV - intravenous

LEADER - Clinical leadership assessment skills

MASLD - metabolic dysfunction-associated steatotic liver disease

MDT - multidisciplinary team

Mini-CEX - mini clinical evaluation exercise

MJC - Multidisciplinary Joint Committee

MSF - multi-source feedback

NMCA - National Medical Competent Authority

NSAID - Nonsteroidal Anti-Inflammatory Drug

NTA - national training authority

OSCE - objective structured clinical examination

PDP - personal development plan

PEG - percutaneous endoscopic gastrostomy

PEG-J - percutaneous endoscopic gastrostomy with jejunal tube

PEJ - percutaneous endoscopic jejunostomy

PFIC - progressive familial intrahepatic cholestasis

PGHN - Paediatric Gastroenterology, Hepatology and Nutrition

PICU - paediatric intensive care unit

PIPO - paediatric intestinal pseudoobstruction

PN - parenteral nutrition

PTLD - post-transplant lymphoproliferative disorder

RMR - resting metabolic rate

SCID - severe combined immunodeficiency

SIRS - systemic inflammatory response syndrome

TIPS - transjugular intra-hepatic portosystemic shunt

TPD - training programme director

UEMO - Union Européenne des Médecins Omnipraticiens

UEMS - Union Européenne des Médecins Spécialistes (European Union for Medical Specialists)

UN - United Nations

WHO - World Health Organization

WMA - World Medical Association

# APPENDICES

## Table 1: Theoretical knowledge in PGHN

Degree of knowledge required: B=basic, specialty textbook; H=high, up to date scientific knowledge.

| **A** | **BASIC KNOWLEDGE** | |
|---|---|---|
| 1. | Anatomy (gross and microscopic) of the liver, pancreas and GI tract | H |
| 2. | Embryology of the liver, pancreas and GI tract | B |
| 3. | Biochemistry, especially GI hormones, enzymes and neurotransmitters | H |
| 4. | Hepatic metabolism and transport, biliary physiology and pathophysiology | H |
| 5. | Cellular turnover, growth, differentiation and death | B |
| 6. | Mucosal immunity and immunology | H |
| 7. | Physiology including motility, digestion, absorption and secretion | H |
| 8. | Physiological and other changes in the GI tract and liver associated with growing | B |
| 9. | Basic knowledge in genetics and applied PGHN genetics | B |
| | | |
| **B** | **BASIC SKILLS** | |
| 1. | Establishing an appropriate atmosphere and putting the patient and parents/caregivers at ease and at the centre of the consultation | H |
| 2. | Understanding the need to deliver compassionate care | H |
| 3. | Taking an appropriate medical history | H |
| 4. | Performing a thorough physical examination | H |
| 5. | Considering initial diagnosis and differential diagnosis | H |
| 6. | Arranging appropriate, cost-effective and ethical diagnostic investigations | H |

| | | |
|---|---|---|
| 7. | Knowing of appropriate use and interpretation of laboratory tests. For the use of point-of-care instruments for laboratory tests, be aware of limitations and know about options for micro- techniques for laboratory tests, atraumatic sampling and transport conditions for specific specimens. | H |
| 8. | Reaching diagnostic conclusions | H |
| 9. | Communicating diagnostic results and possible treatment options clearly to patients, parents/caregivers taking into consideration the patient's age and language that all understand | H |
| 10. | Understanding the particular needs of adolescents with regard to their independence and autonomy, compliance with treatment, and how this affects management of chronic conditions | H |
| 11. | Considering various treatment options | H |
| 12. | Obtaining help or second opinions from colleagues or other health professionals | H |
| 13. | Prescribing or recommending therapies or procedures | H |
| 14. | Providing sensitive and empathetic emotional support allowing efficient consultation time | H |
| 15. | Understanding principles of evidence-based medicine including implications for clinical practice | H |
| 16. | Using artificial intelligence tools effectively in daily clinical work and research | B |
| 17. | Understands adolescent medicine and knowledge of how to manage the process of transition and transfer to adult care | H |
| | | |
| **C** | **BIOSTATISTICS** | |
| 1. | Application of parametric and nonparametric statistics | B |
| 2. | Statistical modelling | B |
| 3. | Principles of screening and surveillance programmes | B |
| 4. | Study design | B |
| 5. | Evidence-based PGHN | B |
| 6. | Critical appraisal of literature and principles of systematic reviews | B |
| | | |
| **D** | **MANAGEMENT SKILLS** | |

| | | |
|---|---|---|
| 1. | Personal management including time management | B |
| 2. | Understanding the need for an MDT approach (collaboration with (paediatric) histopathologists, (paediatric) radiologists, paediatric psychotherapists, (paediatric) surgeons, and allied health professionals, etc.) | B |
| 3. | Understanding that investigations may be unpleasant, painful, or frightening and that a child and parents/caregivers should be counselled in advance | B |
| 4. | Understanding issues around transition from paediatric to adult care, and being able to contribute effectively to transitional care services | B |
| 5. | Ethical behaviour – understanding ethical aspects in diagnostic procedures, treatment and supporting the patients and their families but also offering ethical aspects of the research conduct and reporting | B |
| 6. | Clinical governance | B |
| 7. | Awareness and understanding of legal frameworks and obligations | B |
| 8. | Understanding the importance of teaching colleagues and students | B |
| 9. | Research management<br>• Be able to understand and interpret research results<br>• Participate in research<br>• Develop the skills to conduct research in the future<br>• Recognise possible research biases<br>• Be able to present research at national and/or international PGHN scientific meetings<br>• Develop skills to write scientific papers<br>• Develop skills to write research grant proposals<br>• Knowledge regarding the application of consensus and recommendations in clinical practice | B |
| | | |
| **E** | **EDUCATION** | |
| 1. | Defining aims of teaching courses/programmes/lectures | B |
| 2. | Targeting different audiences | B |
| 3. | Preparation of teaching materials | B |
| 4. | Distance based learning using web sites | B |

| | | |
|---|---|---|
| 5. | Using artificial intelligence effectively in education and training of trainees and trainers | B |
| | | |
| **F** | **GASTROENTEROLOGY DISORDERS** | |
| **I** | **Management of inflammatory bowel disease (IBD)**<br><br>*Including:*<br><br>• *Crohn's disease*<br>• *Ulcerative colitis*<br>• *IBD-Unclassified (IBD-U)* | |
| 1. | Incorporates knowledge of basic sciences relevant to IBD to understand and manage the disease | B |
| 2. | Understands appropriate endoscopic, pathophysiological and radiological investigations to diagnose IBD | H |
| 3. | Identifies relevant differential diagnoses (infections; disorders of gut brain interaction; food allergic colitis; eosinophilic colitis; vasculitis; immune dysregulation) | H |
| 4. | Knows and uses classifications of IBD, e.g., the Paris classification | H |
| 5. | Knows how to assess the severity of IBD using disease activity and endoscopic scores | H |
| 6. | Understands effective treatment strategies including nutritional therapy, aminosalicylates, corticosteroids, immune modulation, and biologic treatment | H |
| 7. | Understands and identifies the potential risks and side effects of drugs used in the treatment of IBD | H |
| 8. | Knows how to perform and interpret a nutritional assessment and plans nutritional interventions together with a dietitian | H |
| 9. | Formulates an individualised treatment plan and monitoring schedule to check for treatment efficacy and potential side effects | H |
| 10. | Uses antibiotics appropriately when needed | H |
| 11. | Recognises the potential complications of IBD, including surgical complications (e.g., intra-abdominal mass, abscess, perforation, strictures and fistulae), malnutrition, growth failure, delayed puberty and extra-intestinal manifestations | H |
| 12. | Has knowledge about vaccination requirements | H |
| 13. | Knows when to start cancer surveillance | H |

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| 14. | Knows how to treat perianal disease | H |
| 15. | Knows how to recognise the flare-up of the disease and takes appropriate action to adjust treatment as necessary, including referral for surgery and the involvement of other healthcare professionals | H |
| 16. | Understands adolescent medicine and knows how to manage the process of transition and transfer to adult gastroenterology | H |
| 17. | Identifies and understands specific approaches to very-early onset IBD patients including consideration of possible monogenic diseases with differential diagnosis | H |
| 18. | Knows how to interpret and contextualise commonly used diagnostic tests, e.g., TPMT, 6-TG, faecal calprotectin, and anti-TNF levels and antibodies | H |
| 19. | Knows how to investigate, diagnose, and treat anaemia associated with IBD | H |
| **II** | **Management of acute, chronic diarrhoea alongside congenital and acquired conditions causing maldigestion and malabsorption**<br><br>*Including:*<br><br>• *Acute viral gastroenteritis*<br>• *Bacterial, parasitic, and helminthic infections of the small intestine*<br>• *Coeliac disease*<br>• *Early onset protracted diarrhoea (congenital enteropathies, transport disorders, protein-losing enteropathies)*<br>• *Protracted diarrhoea caused by immune dysregulation*<br>• *Pancreatic exocrine insufficiency* | |
| 1. | Recognises the mechanism and knows how to distinguish between secretory and osmotic diarrhoea | H |
| 2. | Be able to assess dehydration and provide the management of acute gastroenteritis | H |
| 3. | Be able to diagnose and treat bacterial, parasitic, and helminthic infections of the small intestine | H |
| 4. | Understands the causes of acute gastroenteritis considering local disease incidence | H |
| 5. | Has knowledge about the causes of early-onset protracted diarrhoea (including genetic conditions):<br><br>• Congenital enteropathies: e.g., microvillus inclusion disease, tufting enteropathy, and phenotypic diarrhoea | B |

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| | • Transport disorders including acrodermatitis enteropathica, glucose-galactose malabsorption, and sucrase-isomaltase deficiency<br>• Congenital protein-losing enteropathies (e.g., congenital lymphangiectasia or congenital disorders of glycosylation) or acquired (e.g., post-Fontan procedure)<br>• Diarrhoea caused by immune dysregulation:<br>• Congenital (e.g., immunoglobulin deficiency, immunodysregulation polyendocrinopathy enteropathy X-linked syndrome [IPEX], severe combined immunodeficiency [SCID] and Omenn syndrome/Hyper IgE syndrome)<br>• Acquired – secondary to other diseases or treatments (e.g., post-organ transplant or due to human immunodeficiency virus [HIV] infection) | |
| 6. | Recognises and manages secretory diarrhoea, including of infectious and congenital origin | H |
| 7. | Recognises the presenting features of coeliac disease:<br><br>• Knows the appropriate investigations to diagnose coeliac disease: interpretation of serological tests, the indications for endoscopy, and interprets histopathological classification, and the role of human lymphocyte antigen (HLA) testing in coeliac disease diagnosis<br>• Knows the nutritional aspects of a gluten-free diet<br>• Recognises the importance of adherence to a gluten-free diet in coeliac disease<br>• Recognises the key points for patient follow up focusing on dietary compliance and monitoring for complications<br>• Knows how, when and why to perform a gluten challenge<br>• Understands the advice on testing family members for coeliac disease<br>• Understands the psychosocial and financial burden of following a restrictive gluten free diet | H |
| 8. | Identifies and manages pancreatic exocrine insufficiency including cystic fibrosis, chronic pancreatitis, Shwachman-Bodian-Diamond syndrome, and mitochondrial disease (e.g., Pearson's syndrome) | H |
| **III** | **Diagnosis and management of GI anomalies requiring surgical treatment in early infancy**<br><br>*Including:*<br><br>• *Abdominal wall defects*<br>• *Oesophageal atresia +/- tracheoesophageal fistula* | |

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| | • *Duodenal obstructions*<br>• *Intestinal atresia*<br>• *Anorectal anomalies*<br>• *Pyloric stenosis*<br>• *Hirschsprung's disease*<br>• *Meconium ileus and distal intestinal obstruction syndrome* | |
| 1. | Understands the possible genetic causes or associations of congenital GI anomalies | B |
| 2. | Be able to collaborate with surgeons regarding diagnosis, treatment, possible complications and follow up of patients | H |
| 3. | Be able to advise on postoperative management of patients | H |
| **IV** | **Management of life-threatening GI conditions**<br><br>*Including:*<br><br>• *GI bleeding*<br>• *Diseases requiring imminent surgical treatment* | |
| 1. | Knows how to assess severity of GI bleeding | H |
| 2. | Applies the principles of fluid resuscitation | H |
| 3. | Arranges endoscopy at the appropriate time | H |
| 4. | Participates in interventional upper GI endoscopy (with variceal banding +/- sclerotherapy) | B |
| 5. | Knows methods to manage haemostasis | B |
| 6. | Recognises the signs of re-bleeding and liaises with other disciplines such as interventional radiology or surgery to manage and treat | H |
| 7. | Applies an understanding of the role of pharmacotherapy in managing acute GI bleeding | H |
| 8. | Advises other centres on how to initiate first-line treatment for GI bleeding and when it is safe to transfer the child to another centre for definitive treatment | H |
| 9. | Knows the causes of intestinal obstruction and mechanical ileus | H |
| 10. | Knows the differential diagnosis and is able to investigate a patient with acute abdominal pain (including acute appendicitis, perforation, intussusception, etc.) | H |

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| 11. | Knows the differential diagnosis of bilious vomiting | H |
| 12. | Is able to investigate abdominal masses | H |
| 13. | Is able to recognise and diagnose bowel ischeamia together with possible causes in cooperation with a (paediatric) surgeon | H |
| **V** | **Management of upper GI disease**<br><br>*Including:*<br><br>• *Oesophageal disorders caused by caustic agents, medications and trauma*<br>• *Foreign body oesophageal impaction*<br>• *Diagnosis and management of oesophageal strictures*<br>• *Helicobacter pylori infection*<br>• *Other causes of gastritis*<br>• *Peptic ulcer disease* | |
| 1. | Knows how to diagnose and understands treatment modalities in oesophageal disorder caused by caustic agents, medications, infection and trauma | H |
| 2. | Recognises the importance of an early diagnosis and management of oesophageal impaction by foreign body | H |
| 3. | Knows causes of oesophageal strictures and stenosis and recognises treatment options | H |
| 4. | Understands *Helicobacter pylori* infection and its clinical implications | H |
| 5. | Knows how and when to diagnose and treat *H. pylori* infection | H |
| 6. | Recognises differential causes of gastritis and peptic ulcer disease (e.g., H. pylori infection, other infections, IBD, immune related) | H |
| 7. | Knows how to diagnose and treat peptic ulcer disease | H |
| **VI** | **Management of nutrition allergies and GI eosinophilic diseases** | |
| 1. | Knows and recognises symptoms of food allergy | H |
| 2. | Knows the nutritional treatment strategy for food allergy including cow's milk protein allergy | H |
| 3. | Recognises symptoms of eosinophilic oesophagitis | H |
| 4. | Understands endoscopic and histopathological criteria for the diagnosis of eosinophlic oesophagitis and other eosinophilic GI disorders | H |

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| 5. | Knows nutritional and medical treatment options for eosinophilic oesophagitis and other eosinophilic GI disorders | H |
| **VII** | **Manages disorders of gut-brain interaction**<br><br>*Including:*<br><br>• *Infantile regurgitation*<br>• *Infantile colic*<br>• *Aerophagia*<br>• *Rumination*<br>• *Functional abdominal pain*<br>• *Irritable bowel syndrome (IBS)*<br>• *Abdominal migraine*<br>• *Functional dyspepsia*<br>• *Cyclic vomiting syndrome*<br>• *Functional constipation* | |
| 1. | Describes the brain–gut axis and the role of psychological factors in the pathogenesis of symptoms | H |
| 2. | Recognises the contribution of disordered GI motility to patients' symptoms | H |
| 3. | Recognises the full spectrum of disorders of gut-brain interaction | H |
| 4. | Involves patients in deciding treatment options, self-management, and how and when to refer to clinical psychology | H |
| 5. | Manages the causes of constipation and can distinguish between idiopathic and secondary constipation | H |
| 6. | Manages the syndromes of disordered defecation including infant dyschezia and retentive constipation; understands the range of treatment | H |
| 7. | Recommends effective and judicious use of laxatives according to guidelines and coordinates ongoing care | H |
| 8. | Recognises differential diagnoses, e.g., Hirschsprung's disease | H |
| **VIII** | **Motility disorders**<br><br>*Includes:*<br><br>• *Gastro-oesophageal reflux*<br>• *Oesophageal dysmotility*<br>• *Gastric dysmotility*<br>• *Slow-transit constipation* | H |

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| | • *Chronic intestinal pseudoobstruction (CIPO)* | |
| 1. | Describes the enteric nervous system and understands its function | B |
| 2. | Demonstrates an understanding of the range of factors that control GI motility | B |
| 3. | Makes a differential diagnosis of nausea and vomiting and knows how to investigate the symptoms | H |
| 4. | Recognises that bilious vomiting may reflect a surgical problem (e.g., malrotation or volvulus), or have a congenital cause (e.g., web or malrotation) | H |
| 5. | Makes a thorough clinical assessment of gastro-oesophageal reflux and oesophagitis in patients, including children and adolescents with neurodisability | H |
| 6. | Interprets results of pH and impedance monitoring | H |
| 7. | Understands the relationship of reflux to pharyngeal, laryngeal and respiratory symptoms as well as oesophagitis | H |
| 8. | Discusses the medical treatment options for gastro-oesophageal reflux disease (GORD) | H |
| 9. | Recognises indications for surgery in patients with GORD; has knowledge about the potential complications of surgery | B |
| 10. | Assesses a patient with dysphagia, including the use of endoscopy, contrast studies, and manometry where appropriate, and manages the condition appropriately | H |
| 11. | Recognises and manages achalasia | B |
| 12. | Knows and recognises organic causes of constipation (including slow-transit constipation) | H |
| 13. | Manages patients with gastric dysmotility | H |
| 14. | Knows how to recognise, diagnose and manage CIPO (including possible genetic cause) | B |
| 15. | Has knowledge about indications for specialist testing in specific situations, e.g., gastric emptying studies | B |
| **IX** | **Management of polyps and tumours**<br><br>*Including:*<br><br>• *Intestinal polyp*<br>• *Polyposis syndromes*<br>• *Small intestinal lymphoma* | |

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| | • *Other intestinal tumours* | |
| 1. | Has knowledge about the different types of bowel polyps including the management of premalignant conditions | B |
| 2. | Has knowledge about the principles of screening and surveillance in polyposis syndromes including familial adenomatous polyposis, juvenile polyposis syndrome, Peutz–Jeghers syndrome | B |
| 3. | Understands risk factors and diagnostic procedures of intestinal malignancies | B |
| 4. | Has knowledge about the collaboration with the haematologist and oncologists for management of intestinal malignancies | B |
| 5. | To view and if possible, undertake endoscopic polypectomy in a patient | B |
| **X** | **Management of anorectal disease**<br><br>*Including:*<br><br>• *Mucosal rectal prolapse*<br>• *Haemorrhoids*<br>• *Fissure*<br>• *Perianal fistula*<br>• *Pruritus ani*<br>• *Proctitis*<br>• *Rectal Bleeding* | |
| 1. | Understands the differential diagnosis of anorectal disease including rectal bleeding | H |
| 2. | Recognises treatment options for anorectal disease | H |
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| **G** | **DISORDERS OF LIVER AND PANCREAS** | |
| **I** | **Interpretation of liver test abnormalities** | |
| 1. | Demonstrates knowledge about the basics in liver testing | H |
| **II** | **Management of acute liver failure**<br><br>*Including:*<br><br>• *Acute liver failure*<br>• *Acute on chronic liver failure* | |

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| 1. | Demonstrates knowledge of the causes and clinical manifestations of acute liver failure | H |
| 2. | Knows how to investigate for the different causes of acute liver failure | H |
| 3. | Knows the initial management of the acute liver failure patient until the transfer to a liver unit | H |
| 4. | Knows indications and contraindications for liver biopsy in acute liver failure | H |
| 5. | Understands the pathophysiology of complications of acute liver failure | H |
| 6. | Knows about the option of plasmapheresis in acute liver failure | B |
| **III** | **Management of chronic and end-stage liver disease and the associated complications**<br><br>*Including:*<br><br>• *Cirrhosis/ advanced chronic liver disease*<br>• *Portal hypertension*<br>• *Autoimmune liver disease*<br>• *Sclerosing cholangitis*<br>• *Gallbladder stones*<br>• *Metabolic liver disease (including Wilson disease, alpha-1-antitrypsin deficiency, cystic fibrosis)*<br>• *Intestinal failure associated liver disease (IFALD),*<br>• *metabolic dysfunction-associated steatotic liver disease (MASLD)*<br>• *Outlet obstruction syndromes (Budd-Chiari syndrome)*<br>• *Viral hepatitis*<br>• *Toxic liver disease* | |
| 1. | Understands the clinical presentation and complications of chronic liver disease | H |
| 2. | Understands the pathophysiology and clinical presentation of portal hypertension and its complications | H |
| 3. | Knows the diagnostic procedures in portal hypertension | H |
| 4. | Knows the risk for upper GI bleeding and its management strategy | H |
| 5. | Understands the different causes of ascites in children with liver disease and knows the treatment options for ascites and spontaneous bacterial peritonitis | H |

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| 6. | Understands the indications and contraindications for a transjugular intra-hepatic portosystemic shunt (TIPS) or surgical shunt surgery in children with portal hypertension | B |
| 7. | Has knowledge about metabolic diseases affecting the liver | H |
| 8. | Understands diagnostic procedures and treatment of autoimmune liver disease (including sclerosing cholangitis) | H |
| 9. | Understands risk factors for IFALD | H |
| 10. | Interprets diagnostic tests for hepatotropic viruses and is aware of available treatment options for viral hepatitis B and C | H |
| 11. | Has knowledge about the liver complications of immunodeficiency, including post chemotherapy | B |
| 12. | Identifies the various presentations of hepatic vascular abnormalities | H |
| 13. | Understands patho-mechanism, presentation and treatment options of hepatic outflow obstruction (Budd–Chiari syndrome and sinusoidal obstruction syndrome | H |
| 14. | Explains the causes and complications of gallbladder stones | H |
| 15. | Understands the clinical picture, diagnostic procedures and treatment options of cholangitis | H |
| 16. | Recognises and manages MASLD | H |
| 17. | Has knowledge about the differential diagnosis of benign and malignant liver masses, and is able to initiate the work-up for liver masses and liaises with the oncologist (in case of malignant liver tumours) | B |
| 18. | Recognises and objectively assesses nutritional deficiencies in children with chronic liver disease, and understands the indications for enteral or parenteral support and their limitations in cooperation with a dietitian if available | H |
| 19. | Manages the investigation of persistently raised transaminases in a child | H |
| **IV** | **Management of different conditions of infantile cholestasis**<br><br>*Including:*<br><br>• *Biliary atresia*<br>• *Progressive familial intrahepatic cholestasis*<br>• *Alagille syndrome*<br>• *Choledochal malformations* | |

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| 1. | Knows the causes, pathophysiology and possible genetic basis of intra- and extra-hepatic cholestasis | H |
| 2. | Understands the importance of appropriate investigations and a medical treatment for infantile cholestasis | H |
| 3. | Understands the urgent need for certain cases of infantile cholestasis to be referred to a liver centre | H |
| 4. | Interprets liver biochemistry, ultrasound and other imaging findings and biopsy results in infantile cholestasis and understands their importance and limitations in helping to reach a diagnosis | H |
| 5. | Has knowledge about biliary atresia and understands the principles of the Kasai porto-enterostomy | B |
| 6. | Knows how to treat cholangitis, pruritus and failed bile drainage in children post-Kasai | B |
| 7. | Has knowledge about the assessment for liver transplant | B |
| 8. | Manages pruritus secondary to liver disease | H |
| 9. | Has knowledge about different types of biliary diversion surgery | B |
| 10. | Has knowledge about the causes of unconjugated jaundice and understands the associated risks | H |
| 11. | Recognises and objectively assesses nutritional deficiencies in cholestatic children and competently manages those deficiencies in cooperation with a dietitian if available | H |
| **V** | **Management of transplantation process** | |
| 1. | Has knowledge about the principles of patient selection for liver transplantation | B |
| 2. | Understands the importance of the timely inclusion of the transplant team | H |
| 3. | Has knowledge about the indications and contraindications for liver transplant | B |
| 4. | Has knowledge about the process of transplant assessment | B |
| 5. | Has knowledge about immunosuppressive drugs used in transplantation including side effects | B |
| 6. | Has knowledge about transplant-related complications | B |
| 7. | Has knowledge about the management of patients in the post-transplant period | B |
| **VI** | **Pancreas** | |

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| | *Including:*<br><br>• *Acute pancreatitis*<br>• *Chronic pancreatitis*<br>• *Cystic fibrosis*<br>• *Pancreatic exocrine insufficiency*<br>• *Congenital causes of pancreatic dysfunction* | |
| 1. | Identifies the aetiology and the potential complications of acute and chronic pancreatitis | H |
| 2. | Provides nutritional support to patients with chronic or acute pancreatic disease in cooperation with a dietitian as part of an MDT where available | H |
| 3. | Recognises common and uncommon causes of pancreatic exocrine insufficiency | H |
| 4. | Knows the diagnostic procedures for cystic fibrosis including genetic testing | B |
| 5. | Recognises the short- and long-term complications of cystic fibrosis | H |
| 6. | Collaborates with other subspecialties in the treatment of cystic fibrosis | H |
| 7. | Monitors the potential effects of pancreatic exocrine insufficiency and manages pancreatic enzyme replacement therapy in cooperation with a dietitian if available | H |
| 8. | Has knowledge about intervention methods such as endoscopic retrograde cholangiopancreatography (ERCP) incl. sphincterotomy, stent placement, etc. | B |
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| **H** | **NUTRITION** | |
| **I** | **Nutrition in healthy children**<br><br>*Including:*<br><br>• *Nutritional requirements*<br>• *Nutrition in infancy (breastfeeding, formula feeding, complementary feeding), preschool and school-aged children*<br>• *Nutritional assessment including body composition assessment*<br>• *Use of growth charts*<br>• *Management of malnutrition*<br><br>○ *Faltering growth*<br>○ *Overweight/obesity* | |

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| 1. | Knows the physiology of nutrient digestion, absorption, metabolism, and elimination | B |
| 2. | Has knowledge about how to estimate daily energy requirements considering resting metabolic rate (RMR)/ basic metabolic rate (BMR) (e.g., equations), physical activity level, stress factor and losses | B |
| 3. | Has knowledge of human milk composition and understands the importance of breastfeeding and its beneficial effects. Appreciates the importance of strategies that aim to increase the rate of breastfeeding. | B |
| 4. | Understands the different formulations of infant and follow-up formula | H |
| 5. | Understands the indications for specialised infant formula | H |
| 6. | Has knowledge about complementary feeding (including baby-led weaning and vegetarian/vegan complementary feeding) | B |
| 7. | Understands the assessment of a child's feeding ability | B |
| 8. | Has knowledge about the normal nutrient requirements of growing infants and children | H |
| 9. | Knows how to estimate nutritional needs (e.g., dietary assessment methods) | B |
| 10. | Can perform nutritional status and dietary assessment (with appropriate tools); this includes knowledge of the clinical, anthropometric, haematological, and biochemical indices of nutritional status including body composition | B |
| 11. | Knows how to interpret the results of a nutritional assessment | B |
| 12. | Knows the different types of growth charts available and how to use them | H |
| 13. | Has knowledge about the aetiology and the clinical consequences of under- and overnutrition (obesity) in the infant, child and adolescent | H |
| 14. | Has knowledge of dual-energy X-ray absorptiometry and bone densitometry to evaluate bone health | B |
| 15. | Understands the role of nutritional support teams in hospital and community settings, and the roles of individual team members including when to refer patients to an appropriate healthcare professional such as a dietitian, a speech and language therapist, or a psychologist | H |
| 16. | Has basic knowledge of the gut microbiota and the use of expressed breast milk related to the "probiotic" treatment of diseases | B |
| **II** | **Management of the complex nutritional needs requiring nutritional support in cooperation with a dietitian as part of an MDT approach if available**<br><br>*Including:* | |

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| | • *Nutritional support*<br>• *Enteral nutrition (including formula, type and mode of delivery)*<br>• *Basics of parenteral nutrition*<br>• *Feeding disorders*<br>• *Nutritional support in different diseases*<br>• *Complication of nutritional treatment* | |
| 1. | Identifies patients with faltering growth, significant weight loss or those who require complex nutritional support | H |
| 2. | Understands the methods of nutritional support and their use | H |
| 3. | Has knowledge about and discusses foods for special medical purposes such as specialist infant formulas and the indications for their use, including feeding composition and feeding in special circumstances (e.g., feeding preterm infants and patients with renal, cardiac, liver, and metabolic diseases) in cooperation with a dietitian if available | B |
| 4. | Understands the principles and mainstream approaches to manage malnutrition (both disease and starvation associated malnutrition) (e.g., dietary counselling, fortification, supplementation, enteral nutrition, parenteral nutrition) | B |
| 5. | Balances the benefits and risks of the methods of giving artificial nutritional support, including the indications and complications of enteral nutrition | H |
| 6. | Understands the modality of enteral nutrition | H |
| 7. | Understands the indications for nasogastric and nasojejunal feeding | H |
| 8. | Understands the benefits and risks of the insertion of a feeding tube (e.g., percutaneous endoscopic gastrostomy (PEG), nasojejunal tube) | H |
| 9. | Has knowledge about feeding disorders, including anorexia nervosa and bulimia | B |
| 10. | Provides general advice in overweight and obese children and plans long-term follow up | B |
| 11. | Provides nutritional support to children with neuro-disabling conditions | B |
| 12. | Has knowledge about conditions that lead to abnormal energy requirements (e.g., cardiac, critical illness or oncologic patient) | B |
| 13. | Understands the ways by which acute and chronic illness can affect nutritional status and nutritional requirements | B |
| 14. | Understands nutritional needs in patients with liver disease in cooperation with a dietitian if available | B |
| 15. | Understands the nutritional needs in cystic fibrosis and exocrine pancreatic insufficiency in cooperation with a dietitian if available | B |

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| 16. | Manages nutritional support in post-surgical patients in cooperation with a dietitian if available | B |
| 17. | Understands the different nutritional needs in children with a jejunostomy, ileostomy or colostomy in cooperation with a dietitian if available | B |
| 18. | Assesses dietary intake and requirements in patients with IBD and provides nutritional support to maintain normal growth in cooperation with a dietitian if available | H |
| 19. | Knows how to provide (exclusive) enteral nutrition in Crohn's disease | H |
| 20. | Prescribes a gluten-free diet, ensures compliance and monitors children with coeliac disease | H |
| 21. | Provides nutritional support in children with single and multiple food allergies, and oversees the nutritional management including dietary exclusions and substitutions in cooperation with a dietitian if available | B |
| 22. | Has knowledge about dietetic treatment in patients with eosinophilic esophagitis in cooperation with a dietitian if available | B |
| 23. | Identifies who is at risk of refeeding syndrome and how to minimise and manage such risks in cooperation with a dietitian if available | H |
| 24. | Applies and advocates the ethical and legal implications of the provision, withdrawal and withholding of artificial nutrition support | B |
| **III** | **Management of all aspects of reversible and irreversible intestinal failure**<br><br>*Including:*<br><br>• *Intestinal failure (e.g., congenital enteropathies, short bowel syndrome)*<br>• *Parenteral nutrition* | |
| 1. | Identifies the need for parenteral and enteral nutrition in intestinal failure | H |
| 2. | Knows how to balance provision of enteral and parenteral nutrition in patients with intestinal failure, and monitors the safety and efficacy of parenteral nutrition | B |
| 3. | Knows how to prescribe enteral nutrition in intestinal failure related to the type of the disease | B |
| 4. | Assesses nutritional/fluid requirements and prescribes appropriate and individualised amounts of parenteral nutrition in consultation with the MDT | B |
| 5. | Knows venous access types for the provision of parenteral nutrition and the indications for the insertion of tunnelled central venous catheters | B |
| 6. | Has knowledge about congenital gut disorders (e.g., enteropathies, transport disorders, immune dysregulation and severe motility disorders) and acquired pathologies (e.g., short bowel syndrome) that may require nutritional support | B |

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| 7. | Understands the origin of symptoms in short bowel syndrome related to remnant length and type of intestine | B |
| 8. | Together with the intestinal rehabilitation team, manages the fluid, electrolyte and micronutrient disturbances associated with short bowel syndrome, high output stomas, enteropathies and protracted diarrhoea of infancy | B |
| 9. | Identifies the indications for and appropriate timing of non-transplant surgical options in patients with short bowel syndrome (e.g., intestinal lengthening, closure of stoma) | B |
| 10. | Understands the mechanisms of intestinal adaptation, the time over which it occurs and how to promote it | B |
| 11. | Recognises the indication for home parenteral nutrition | H |
| 12. | As a part of nutritional support team, supports families in completing the training programme to establish a patient on home parenteral nutrition | B |
| 13. | Recognises the potential complications of intestinal failure (e.g., bacterial overgrowth, IFALD, central line associated complications, challenges of achieving normal development, linear and bone growth, and quality of life) | B |
| 14. | Understands when to make a referral for consideration of a small intestinal (+/- liver) transplant and understands the risks of transplantation | B |
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| **I** | **PROCEDURES** | |
| **I** | **Management with diagnostic and therapeutic procedures** | |
| 1. | Assessment of nutritional status of infants and children, including anthropometric measurements (height, weight, head circumference, skin-fold thickness, mid-arm and waist circumference) | B |
| 2. | Assessment of dehydration and planning fluid therapy | H |
| 3. | Knows the indications, and how to insert and manage a nasogastric tube | H |
| 4. | Knows the indications of jejunal feeding and how to achieve it by nasojejunal tube, PEG-J placement or through a jejunostomy feeding tube | B |
| 5. | Knows the indications for abdominal ultrasound and collaborates with radiology in the interpretation of findings | H |
| 6. | Knows the appropriate timing of upper endoscopy and ileo-colonoscopy | H |
| 7. | Manages the indications and contraindications for endoscopy and the implications of comorbidities (e.g., critical illness, diabetes mellitus and immune deficiency) | B |
| 8. | Prepares a patient for ileo- colonoscopy and understands the safety and appropriateness of the procedure in different age groups | H |

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| 9. | Understands endoscope design, construction and maintenance | H |
| 10. | Selects the correct endoscopic equipment based on patient age and weight as well as task required, can perform pre-procedure equipment checks and demonstrates problem-solving for equipment malfunction | H |
| 11. | Discusses the rationale for and performs safe pre- and post-operative checks, such as those included in the World Health Organisation (WHO) surgical safety checklist | H |
| 12. | Performs upper GI endoscopy in at least 100 children and adolescents; intubates the duodenum and performs the J-manoeuvre to view the fundus under supervision with performance enhancing feedback, until competence achieved according to current standards | H |
| 13. | Performs ileo-colonoscopy in at least 50 children and adolescents reaching the caecum and intubating the terminal ileum as required under supervision with performance enhancing feedback, until competence achieved according to current standards | H |
| 14. | Takes biopsies as required at the preferred sites | H |
| 15. | Interprets the histological results of the oesophageal, gastric and intestinal biopsies with the histopathologist | H |
| 16. | Knows the indications and different methods and participates in the placement of PEG and understands possible complications | H |
| 17. | Knows the indications and participates in the installation of PEG-J or possibly direct jejunostomy and understands possible complications | B |
| 18. | Knows how to maintain a PEG, PEG-J and PEJ and how to treat major and minor complications | H |
| 19. | Knows about indication and method of replacement of a PEG with a gastrostomy tube or button | H |
| 20. | Recognises and manages the indications, contraindications and complications of endoscopic polyp removal | B |
| 21. | Recognises the risks of foreign body ingestion, particularly button battery ingestion, multiple magnet ingestion | H |
| 22. | Indicates foreign body removal based on symptoms, type of foreign body and part of the GI tract where the foreign body is located | H |
| 23. | Knows the appropriate time for endoscopy in children with GI bleeding | H |
| 24. | Participates in the treatment of upper GI bleeding during therapeutic upper GI endoscopy | B |
| 25. | Participates in balloon dilatation and bougie-dilatation in gastrointestinal stenosis and knows about the complications | B |

| | | |
|---|---|---|
| 26. | Knows the indications for and performs oesophageal pH metry and impedance in at least 20 children and adolescents | H |
| 27. | Knows how to interpret results of oesophageal pH metry and impedance | H |
| 28. | Knows the indications for oesophageal manometry and knows how to interpret the results | B |
| 29. | Knows the indications for anorectal manometry and knows how to implement the results | B |
| 30. | Knows the indications for colonic manometry and knows how to implement the results | B |
| 31. | Knows the indications and contraindications for liver biopsy | H |
| 32. | Interprets the histological results of liver biopsies with a histopathologist | H |
| 33. | Recognises the complications of liver biopsy | H |
| 34. | Knows the indications for capsule videoendoscopy, enteroscopy, endoscopic ultrasound (EUS) and ERCP and participates in the interpretation of the results | B |
| 35. | Knows when to refer a patient for radiological investigations (plain X-ray films, contrast and other imaging studies such as ultrasound, endoscopic ultrasound, computed tomography, magnetic resonance imaging, cholangiography) and knows how to interpret the results together with the radiologist | H |

## Table 2: Entrustable Professional Activities in Paediatric Gastroenterology, Hepatology and Nutrition

**EPA 1: Diagnosis and Management of Paediatric Inflammatory Bowel Diseases and Diarrhoeal Disorders**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA encompasses the comprehensive evaluation, diagnosis, and management of **paediatric inflammatory bowel disease (IBD)** — including Crohn's disease, ulcerative colitis, and IBD-unclassified — and **acute or chronic diarrhoeal disorders**, encompassing infectious, malabsorptive, congenital, and immune-mediated causes. Fellows apply advanced knowledge of intestinal anatomy, mucosal immunology, microbiome, epithelial transport, and nutrition to provide holistic, evidence-based care. Management includes diagnostic endoscopy and imaging, interpretation of laboratory tests, nutritional assessment, pharmacotherapy, long-term disease monitoring, and coordination of multidisciplinary support. |
| **Key Competencies (Canadian Medical Education Directions for Specialists (CanMEDS))** | **Medical Expert** – Integrates high-level understanding of gut immunopathology, motility, absorption, and microbiology to diagnose and treat complex diarrhoeal and inflammatory conditions.<br>**Communicator** – Effectively explains diagnostic results, chronic treatment plans, and nutritional guidance to patients and families using age-appropriate language.<br>**Collaborator** – Works with dietitians, geneticists, pathologists, and surgeons.<br>**Scholar** – Applies up-to-date literature on microbial diagnostics, nutritional interventions and biologic agents.<br>**Leader** – Organises multidisciplinary clinics for children with IBD and complex diarrhoeal disorders and contributes to clinical governance.<br>**Health Advocate** – Promotes vaccination, nutritional adequacy, and psychological support.<br>**Professional** – Demonstrates empathy, confidentiality, and ethical conduct in chronic disease management. |
| **Observable Tasks** | **For Inflammatory Bowel Disease (IBD):**<br>• Conducts detailed medical, dietary, family, and psychosocial history with growth and pubertal assessment.<br>• Selects and interprets investigations: CBC, ESR, CRP, stool |

| Component | Description |
|---|---|
| | calprotectin, iron studies, liver panel, TPMT/6-TG levels, anti-TNF levels/ antibodies, serologic screening for infections.<br>• Orders and interprets imaging (ultrasound, MR enterography, perineal MRI) and performs endoscopy with targeted biopsies.<br>• Classifies disease using the **Paris classification** and applies validated activity indices (PCDAI, PUCAI).<br>• Formulates personalized treatment strategies — exclusive enteral nutrition, corticosteroids, immunomodulators, biologics — balancing efficacy and safety.<br>• Identifies and manages complications: growth failure, perianal disease, anaemia, strictures, abscesses, extraintestinal manifestations.<br>• Coordinates multidisciplinary IBD care (dietitian, psychologist, surgeon, social worker).<br>• Plans long-term surveillance for vaccinations, bone health, and colorectal cancer.<br>**For Diarrhoeal Disorders:**<br>• **Infectious diarrhoea:** Recognises bacterial, viral, and parasitic causes; orders appropriate stool studies; applies rehydration, antimicrobial, and infection-control protocols; advises on prevention and travel-related risks.<br>• **Malabsorptive disorders:** Diagnoses coeliac disease (serology, endoscopy, gluten challenge), manages via gluten-free diet, monitors adherence and complications; evaluates pancreatic exocrine insufficiency (PEI) and initiates enzyme replacement (with dietitian); collaborates with pneumology/CF-team on cystic fibrosis (CF).<br>• **Congenital diarrhoeal disorders:** Recognises presentations of congenital enteropathies (e.g., microvillus inclusion, tufting enteropathy), transport defects (e.g., glucose-galactose malabsorption), and congenital protein-losing enteropathies; interprets genetic tests and coordinates care with metabolic/genetic specialists.<br>• **Immune-mediated diarrhoea:** Diagnoses immune dysregulation syndromes (e.g., IPEX, CVID), interprets immunologic panels, coordinates immunosuppressive therapy.<br>• **Chronic/protracted diarrhoea:** Differentiates osmotic vs. secretory mechanisms; manages hydration, micronutrient replacement, and nutritional support. |

| Component | Description |
|---|---|
| | • Documents disease course and ensures transition to adult gastroenterology services when appropriate. |
| **Assessment Methods** | - **Mini-Clinical Evaluation Exercise (Mini-CEX):** Assessment during inpatient or outpatient management of IBD and diarrhoeal cases.<br>- **Case-based Discussion (CbD):** Evaluation of diagnostic reasoning and therapeutic decision-making.<br>- **Direct Observation of Procedural Skills (DOPS):** Endoscopy, biopsy, nutritional assessment, or stool microscopy interpretation.<br>- **Chart audit/ Case log:** Record of IBD and diarrhoea cases managed with outcomes and follow-up plans.<br>- **Multi-source feedback:** Input from nurses, dietitians, and allied health professionals on communication and teamwork.<br>- **Simulation/ Objective Structured Clinical Examination (OSCE):** Acute diarrhoea management, initial diagnosis of IBD or IBD flare.<br>- **Portfolio/ Reflection:** Evidence of learning in immunopathology, microbiology, and nutritional therapy. |
| **Supervision Level (1–4)** | **Expected progression:**<br>- **Level 2 (Direct supervision):** Initial assessment and management under close supervision, especially for complex congenital/immune-mediated diarrhoeas.<br>- **Level 3 (Indirect supervision):** Manages typical IBD and diarrhoeal disorders independently with supervisor readily available.<br>- **Level 4 (Independent practice):** Fully entrusted to evaluate, diagnose, treat, and coordinate multidisciplinary care for IBD and diarrhoeal disorders, including long-term monitoring and transition planning. Typically achieved by completion of fellowship. |

**EPA 2: Recognition and Initial Management of Life-Threatening Gastrointestinal Conditions**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA covers the prompt **recognition, stabilization, and multidisciplinary management** of **acute, life-threatening gastrointestinal (GI) conditions** in children, including **GI bleeding**, **intestinal obstruction**, **systemic inflammatory response syndrome** (SIRS) secondary to severe pancreatitis, **bowel ischemia**, and **conditions requiring urgent surgical intervention** (e.g., malrotation with volvulus, GI perforation, necrotizing enterocolitis, intestinal atresia, gastroschisis, intussusception, severe ulcer bleeding). It includes **initial resuscitation**, **diagnostic evaluation**, **coordination with critical care and surgical teams**, and **leadership in acute management** settings. Fellows are expected to integrate advanced knowledge of GI anatomy, haemodynamics, fluid resuscitation, and acute care protocols to ensure patient safety and optimal outcomes. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Rapidly assess and prioritize life-threatening GI emergencies; apply advanced understanding of pathophysiology of GI bleeding, obstruction, and ischemia.<br>**Communicator** – Deliver clear, concise communication during emergencies with the multidisciplinary team and families.<br>**Collaborator** – Coordinate urgent management with paediatric intensivists, surgeons, radiologists, anaesthesiologists, and nurses.<br>**Leader** – Take a lead role in resuscitation and stabilization; manage workflow and resource utilization during crises.<br>**Health Advocate** – Ensure timely transfer to tertiary centres or surgical intervention when indicated.<br>**Scholar** – Apply evidence-based guidelines on paediatric fluid management, transfusion thresholds, and endoscopic timing.<br>**Professional** – Maintain composure, accountability, and ethical decision-making during emergencies. |
| **Observable Tasks** | - **Initial Recognition and Assessment:** Identify clinical features of upper and lower GI bleeding (hematemesis, melena, haematochezia), assess and risk stratify signs of shock. Identify clinical features of SIRS. Differentiate mechanical obstruction (bilious vomiting, abdominal distension, absent stool) from functional causes.<br>- **Immediate Stabilization:** Initiate ABC (airway, breathing, circulation) assessment; appropriate request for help (intensive care unit); secure intravenous (IV) access; initiate isotonic fluid resuscitation and blood transfusion when indicated.<br>- **Investigations:** Request appropriate labs (complete blood count (CBC), |

| Component | Description |
|---|---|
| | coagulation, crossmatch, liver tests, lactate, electrolytes) and imaging (abdominal X-ray, ultrasound, contrast studies) to identify obstruction or perforation.<br>- **Management of GI Bleeding:** Administer proton pump inhibitors; initiate vasoactive agents in variceal bleeding; coordinate urgent endoscopy when patient is stable.<br>- **Coordination with intensive care unit** in SIRS and severe bleeding; communicate findings clearly and facilitate handover.<br>- **Coordination with Surgical Team:** Recognize indications for urgent surgical referral (e.g., volvulus, perforation, intestinal atresia, gastroschisis, necrotizing enterocolitis, intussusception); communicate findings clearly and facilitate handover.<br>- **Endoscopic and Interventional Management:** Participate in or assist with endoscopic haemostasis as appropriate under supervision; liaise with interventional radiology when appropriate.<br>- **Post-Acute Care:** Monitor for re-bleeding, perforation, or postoperative complications; arrange ongoing follow-up and documentation.<br>- **Family Communication:** Provide timely updates to parents/caregivers, explain interventions, and obtain consent for urgent procedures when feasible.<br>- **Transfer and Escalation:** Lead or support safe transfer of unstable patients to paediatric intensive care unit (PICU) or tertiary surgical centres following stabilization protocols. |
| **Assessment Methods** | - **Mini-CEX:** Observation of fellow during acute GI bleeding or obstruction management.<br>- **DOPS:** Participation in resuscitation, nasogastric decompression, or endoscopic haemostasis.<br>- **Simulation/OSCE:** Scenario-based assessment of recognition and management of GI emergencies.<br>- **CbD:** Review of clinical decision-making in complex acute GI cases.<br>- **MSF:** Evaluation of teamwork, leadership, and communication in emergency contexts.<br>- **Morbidity and Mortality Review/ Case Log:** Reflection on outcomes, delays, and communication in acute cases. |
| **Supervision Level (1–4)** | **Expected progression:**<br>- **Level 1:** Observes acute GI emergency management and assists under direct supervision.<br>- **Level 2:** Performs initial assessment and stabilization under direct supervision with guidance on decision-making.<br>- **Level 3:** Manages acute GI bleeding and obstruction with **indirect** |

| Component | Description |
|---|---|
| | **supervision**, consulting seniors for surgical decision points.<br>- **Level 4:** Functions **independently** in recognizing and initiating management of life-threatening GI emergencies, coordinating multidisciplinary response, and ensuring stabilization before definitive intervention or transfer. Achieved by fellowship completion. |

**EPA 3: Diagnosis and Management of Upper Gastrointestinal (GI) Disorders**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA involves the comprehensive evaluation, diagnosis, and management of **paediatric oesophageal and gastric disorders**, including **foreign body ingestion**, **oesophageal strictures**, ***Helicobacter pylori* infection**, **gastritis**, and **peptic ulcer disease**. It requires integrating detailed knowledge of GI anatomy, mucosal injury and repair, acid regulation, infection, and motility, as well as procedural competence in endoscopic diagnosis and intervention. Fellows are expected to identify urgent conditions (e.g., button battery impaction), initiate acute management, arrange definitive treatment, and plan long-term follow-up in coordination with relevant disciplines. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Applies advanced understanding of oesophageal and gastric physiology, mucosal defence, and pathogenesis of *H. pylori* infection and ulceration.<br>**Communicator** – Explains investigations, procedures, and chronic management plans clearly to families.<br>**Collaborator** – Works with radiologists, surgeons, and pathologists for diagnostic confirmation and procedural safety.<br>**Leader** – Coordinates care pathways for endoscopy, emergency response to foreign-body ingestion, and follow-up services.<br>**Health Advocate** – Promotes injury prevention (e.g., button-battery safety) and rational antibiotic use.<br>**Scholar** – Appraises current guidelines on *H. pylori* eradication, reflux disease, and caustic injury management.<br>**Professional** – Maintains professionalism and empathy, particularly when discussing invasive procedures. |
| **Observable Tasks** | - **Initial Assessment:** Obtain detailed history (dysphagia, odynophagia, vomiting, GI bleeding, medication use, caustic ingestion); perform focused physical examination.<br>- **Foreign Body and Caustic Ingestion:** Recognise urgency; order appropriate radiographs; arrange **immediate endoscopic removal** for button batteries, sharp objects, or symptomatic impactions; provide airway protection; coordinate with Ear-Nose-Throat (ENT)/surgical team.<br>- **Oesophageal Strictures:** Identify causes (post-surgery, caustic, reflux, eosinophilic oesophagitis); plan dilatation under supervision; ensure post-procedure monitoring.<br>- ***Helicobacter pylori* infection and Gastritis:** Select and interpret non-invasive (stool antigen, breath test) and invasive tests (biopsy, urease test, histology); tailor *H. pylori* eradication therapy; counsel on |

| Component | Description |
|---|---|
| | adherence and resistance.<br>- **Peptic Ulcer Disease:** Evaluate for bleeding or perforation; start proton-pump inhibitors; treat underlying cause (*H. pylori*, Nonsteroidal Anti-Inflammatory Drug (NSAID), stress ulcer); manage complications.<br>- **Functional Dyspepsia/ Gastroesophageal Reflux Disease (GORD) Overlap:** Differentiate organic from functional symptoms; manage empirically with acid suppression and lifestyle advice; escalate to endoscopy if refractory.<br>- **Follow-up and Surveillance:** Assess healing, repeat testing for *H. pylori* eradication, ensure nutritional recovery, monitor for recurrence.<br>- **Multidisciplinary Coordination:** Liaise with dietitians (nutrition after caustic injury or ulcer), speech and language therapists (swallowing issues), and surgeons (severe strictures). |
| **Assessment Methods** | - **Mini-CEX:** Observation during consultation or inpatient management of upper-GI disease.<br>- **DOPS:** Endoscopic procedures (foreign-body removal, biopsy, dilation).<br>- **CbD:** Clinical reasoning in gastritis, peptic ulcer, or caustic injury.<br>- **Simulation/ OSCE:** Emergency management of button-battery ingestion or upper-GI bleed.<br>- **Portfolio/ Case Log:** Record of diagnostic endoscopies and management outcomes.<br>- **Multi-source Feedback:** Communication and collaboration with surgical and anaesthesiology colleagues. |
| **Supervision Level (1–4)** | **Level 1:** Observes evaluation and endoscopic procedures.<br>**Level 2:** Manages straightforward reflux or *H. pylori* cases under direct supervision.<br>**Level 3:** Independently manages most upper-GI conditions, performing diagnostic endoscopy with **indirect supervision**.<br>**Level 4:** Fully entrusted to assess, treat, and coordinate multidisciplinary management of complex upper-GI disorders, including safe emergency decision-making and post-procedure follow-up. Expected by fellowship completion. |

**EPA 4: Management of Food Allergies and Eosinophilic Gastrointestinal Disorders**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA encompasses the evaluation, diagnosis, and management of **food allergies** and **eosinophilic gastrointestinal disorders (EGIDs)** such as **eosinophilic oesophagitis (EoE)**, **eosinophilic gastroenteritis**, and **colitis**. It involves integrating immunopathological understanding with clinical insight to identify allergic and eosinophilic mechanisms of disease, implement nutritional and pharmacologic therapy, and coordinate multidisciplinary care. The fellow is expected to interpret allergy testing, endoscopic and histologic findings, and collaborate closely with allergologists, dietitians, and pathologists to optimize patient outcomes. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Applies deep understanding of mucosal immunology, Th2-mediated inflammation, and food-induced immune responses to diagnose and manage allergic and eosinophilic GI disorders.<br>**Communicator** – Counsels families sensitively about elimination diets, diagnostic testing, and chronic disease implications.<br>**Collaborator** – Works effectively with allergologists, dietitians, speech and language therapists, and pathologists.<br>**Scholar** – Interprets up-to-date literature on dietary and medical therapies (PPIs, topical steroids, biologics) for EoE and food allergy.<br>**Health Advocate** – Promotes awareness of food allergy safety, prevention of anaphylaxis, and nutritional adequacy during elimination diets.<br>**Leader** – Coordinates multidisciplinary gastroenterology-allergology clinics and ensures cohesive care pathways.<br>**Professional** – Balances empathy and evidence-based discussion when addressing chronic dietary restrictions and their psychosocial impacts. |
| **Observable Tasks** | - **Initial Evaluation:** Obtain detailed allergy-focused history including feeding patterns, symptom triggers, family atopy history, and growth parameters.<br>- **Diagnostic Workup:** Identify indications for and interpret skin-prick tests and serum specific IgE in collaboration with allergologists.<br>- **Eosinophilic GI Disorders:** Recognize clinical features (dysphagia, food impaction, feeding difficulty, vomiting, abdominal pain); perform upper endoscopy, use standardised scoring and obtain adequate biopsies from multiple GI segments.<br>- **Histopathology Interpretation:** Collaborate with pathologist to confirm eosinophilic infiltration and rule out mimicking conditions (e.g., IBD, parasitic infection, celiac disease).<br>- **Medical Management:** prescribe PPI, topical swallowed corticosteroids |

| Component | Description |
|---|---|
| | or food elimination diet if indicated; consider emerging biologics (e.g., dupilumab) in refractory cases.<br>- **Dietary Management:** Implement and monitor empiric or targeted elimination diets (e.g., 1, 2-, 4-, or 6-food elimination), ensuring collaboration with a dietitian to prevent malnutrition.<br>- **Food Allergy Management:** Diagnose cow's milk protein allergy and other food-induced GI syndromes; advise on hypoallergenic or amino acid–based formulas; manage reintroduction protocols and oral food challenges under appropriate supervision.<br>- **Education and Counselling:** Educate families about label reading, cross-contamination, nutritional substitutes, and psychosocial support.<br>- **Follow-up:** Monitor symptom resolution, growth, and histologic remission; schedule endoscopic reassessment as required. |
| **Assessment Methods** | - **Mini-CEX:** Observation of patient assessment and dietary counselling sessions.<br>- **CbD:** Review of diagnostic reasoning, diet selection, and medication management.<br>- **DOPS:** Performance and biopsy sampling during diagnostic endoscopy for EoE.<br>- **Portfolio/ Logbook:** Documentation of allergy and EGID cases managed, including outcomes.<br>- **MSF:** Input from dietitians, allergologists, and nurses on multidisciplinary collaboration.<br>- **Chart Audit:** Review of adherence to dietary protocols and monitoring of nutritional adequacy. |
| **Supervision Level (1–4)** | **Level 1:** Observes allergy testing and initial counselling; assists in endoscopic procedures.<br>**Level 2:** Manages common food allergies (e.g., cow's milk protein allergy) and uncomplicated EoE under **direct supervision**.<br>**Level 3:** Independently manages typical cases of food allergy and EoE, performing diagnostic endoscopy with **indirect supervision**.<br>**Level 4:** Functions **independently** in diagnosing, treating, and coordinating multidisciplinary management of complex eosinophilic and allergic GI disorders, including dietary, pharmacologic, and psychosocial aspects. Expected by fellowship completion. |

**EPA 5: Management of Disorders of Gut-Brain Interaction (DGBIs) and Motility Disorders**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA involves the **evaluation, diagnosis, and management** of **functional gastrointestinal (GI) disorders** (disorders of gut–brain interaction (DGBI)) and **motility disorders** in infants, children, and adolescents. It encompasses conditions such as **infantile colic, irritable bowel syndrome (IBS), functional abdominal pain, functional dyspepsia, and functional constipation as well as gastroesophageal reflux disease (GORD), gastroesophageal dysmotility, slow-transit constipation, and paediatric intestinal pseudo-obstruction (PIPO)**. Fellows are expected to integrate understanding of **visceral hypersensitivity and psychosocial influences** as well as **enteric neurophysiology** with advanced diagnostic and therapeutic approaches. The EPA also includes coordination with multidisciplinary services (psychology, dietetics, and physiotherapy as well as surgery) and application of evidence-based management strategies. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates deep understanding of the gut-brain axis, enteric nervous system, motility physiology, and diagnostic approaches to functional and motility disorders.<br>**Communicator** – Provides empathetic, clear explanations of functional symptoms to patients and caregivers to promote understanding and adherence.<br>**Collaborator** – Works closely with psychologists, dietitians, physiotherapists, radiologists, and motility lab staff.<br>**Leader** – Coordinates integrated care clinics for complex functional disorders or dysmotility.<br>**Scholar** – Critically appraises and applies research on gut–brain mechanisms, neuromodulators, and behavioural therapies.<br>**Health Advocate** – Promotes awareness of the biopsychosocial nature of DGBI, avoiding unnecessary invasive testing.<br>**Professional** – Maintains empathy and professionalism when addressing chronic and medically unexplained symptoms. |
| **Observable Tasks** | - **Assessment and Diagnosis:** Obtain comprehensive biopsychosocial history, including symptom patterns, stressors, and growth history. Use **Rome IV criteria** for DGBIs.<br>- **Differentiation:** Distinguish DGBI from organic causes (e.g., celiac disease, IBD, hypothyroidism, Hirschsprung's disease).<br>- **Motility Testing:** Indicate and interpret investigations including **pH-impedance studies**, **manometry (oesophageal, anorectal, colonic)**, **gastric emptying**, and **scintigraphy**. |

| Component | Description |
|---|---|
| | - **GERD Management:** Diagnose GERD and functional regurgitation; initiate acid suppression or feeding modifications; recognise surgical indications for fundoplication.<br>- **Constipation and Defecation Disorders:** Evaluate and manage idiopathic and secondary constipation; apply disimpaction regimens, maintenance laxatives, and behavioural interventions; use **anorectal manometry** results to guide therapy.<br>- **IBS and Functional Abdominal Pain:** Apply fibre-based dietary interventions; consider gut-directed psychotherapies and neuromodulators when indicated.<br>- **Dysphagia and Oesophageal Dysmotility:** Coordinate diagnostic work-up (barium swallow, endoscopy, manometry); initiate appropriate medical or surgical management.<br>- **Chronic Intestinal Pseudo-obstruction (CIPO):** Recognise clinical and radiologic features; coordinate nutritional, pharmacological, and surgical care with intestinal rehabilitation and motility teams.<br>- **Patient and Family Education:** Explain chronicity, prognosis, and gut-brain axis; provide reassurance, realistic expectations, and long-term follow-up. |
| **Assessment Methods** | - **Mini-CEX:** Observation during outpatient evaluation of functional GI or motility disorder.<br>- **CbD:** Review of diagnostic reasoning, test interpretation, and multidisciplinary planning.<br>- **DOPS:** Supervised participation in motility testing (pH-impedance, manometry).<br>- **Simulation/OSCE:** Assessment of counselling skills for chronic functional pain or constipation.<br>- **Portfolio/ Case Log:** Record of DGBI and motility disorder cases, including testing and outcomes.<br>- **MSF:** Evaluation from psychologists, nurses, and allied health professionals. |
| **Supervision Level (1–4)** | **Level 1:** Observes consultations for DGBI and motility disorders; assists with testing.<br>**Level 2:** Conducts initial assessments and basic management under **direct supervision**.<br>**Level 3:** Independently manages common functional disorders and interprets basic motility studies with **indirect supervision**.<br>**Level 4:** Fully entrusted to manage and coordinate multidisciplinary care for complex functional and motility disorders, including CIPO and refractory constipation. Expected at completion of fellowship. |

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**EPA 6: Surveillance and Management of Polyps, Tumours, and Anorectal Disorders**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA encompasses the **screening, diagnosis, and management of intestinal polyps, polyposis syndromes, intestinal tumours, and anorectal disorders** such as rectal bleeding, fissures, fistulae, prolapse, and haemorrhoids. It includes performing endoscopic surveillance, coordinating genetic testing and counselling, recognising malignant transformation risk, and managing benign anorectal pathology. The fellow applies advanced understanding of gastrointestinal mucosal biology, paediatric colorectal physiology, endoscopic techniques, and oncogenesis. Collaboration with surgeons, geneticists, and oncologists is essential. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates expertise in identifying, diagnosing, and managing intestinal polyps, hereditary polyposis syndromes, and anorectal conditions. Integrates knowledge of genetics, mucosal pathology, and endoscopic intervention.<br>**Communicator** – Explains complex diagnostic and surveillance plans to families with clarity and sensitivity, particularly regarding hereditary cancer risk.<br>**Collaborator** – Works closely with colorectal surgeons, pathologists, oncologists, and genetic counsellors.<br>**Leader** – Organises and leads polyp surveillance programs and multidisciplinary team meetings.<br>**Scholar** – Applies evidence-based guidelines for surveillance intervals, genetic testing, and management of polyposis syndromes.<br>**Health Advocate** – Promotes early detection, screening of at-risk family members, and nutritional and psychosocial support.<br>**Professional** – Maintains confidentiality and provides ethical guidance in the context of genetic disorders and malignancy. |
| **Observable Tasks** | - **Polyps and Polyposis Syndromes:**<br>• Evaluate children with rectal bleeding, prolapse, or anaemia; interpret stool tests and colonoscopy findings.<br>• Perform diagnostic and therapeutic endoscopy with **polypectomy** under supervision; recognise indications, contraindications, and complications.<br>• Distinguish between sporadic juvenile polyps and polyposis syndromes (e.g., familial adenomatous polyposis, Peutz–Jeghers syndrome, juvenile polyposis, Cowden syndrome).<br>• Arrange and interpret genetic testing; coordinate counselling and cascade screening of family members. |

| Component | Description |
|---|---|
| | • Develop and follow surveillance schedules based on genotype and phenotype.<br>• Recognise and initiate management for malignant transformation or dysplasia; liaise with oncology for further management.<br>- **Intestinal Tumours:**<br>• Identify and investigate potential small-bowel or colonic malignancies (e.g., lymphoma, adenocarcinoma); arrange biopsy, imaging, and multidisciplinary review.<br>• Understand endoscopic and imaging features suggestive of malignancy; refer appropriately.<br>- **Anorectal Disorders:**<br>• Diagnose and manage benign anorectal conditions (fissures, fistulae, rectal prolapse, haemorrhoids, proctitis).<br>• Differentiate primary anorectal disease from systemic causes (IBD, infection, trauma, sexual abuse).<br>• Initiate topical, medical, or behavioural treatments and know surgical referral criteria.<br>- **Surveillance and Documentation:**<br>• Maintain accurate records of polypectomy, histology, and follow-up intervals.<br>• Participate in quality assurance of endoscopic surveillance programs. |
| **Assessment Methods** | - **Mini-CEX:** Evaluation during outpatient management of rectal bleeding, polyp, or anorectal disorder.<br>- **DOPS:** Assessment during endoscopy and therapeutic polypectomy.<br>- **CbD:** Review of genetic syndromes, family counselling, and tumour management.<br>- **Portfolio/ Logbook:** Documentation of endoscopic procedures, genetic counselling, and follow-up care.<br>- **MSF:** Evaluation of collaboration with surgeons, oncologists, and pathologists.<br>- **Chart Audit:** Verification of adherence to surveillance protocols and documentation quality. |
| **Supervision Level (1–4)** | **Level 1:** Observes and assists in diagnostic colonoscopy and anorectal examinations.<br>**Level 2:** Performs simple polypectomy and manages benign anorectal conditions under **direct supervision**.<br>**Level 3:** Conducts routine surveillance endoscopy and coordinates genetic evaluation with **indirect supervision**.<br>**Level 4:** Functions **independently** in diagnosis, management, and multidisciplinary coordination of polyposis syndromes, intestinal |

| Component | Description |
|---|---|
| | tumours, and complex anorectal disorders. Leads surveillance planning and provides guidance to junior trainees. Achieved by fellowship completion. |

**EPA 7: Manage Nutritional Assessment and Support for Children with Acute, Chronic, and Complex Nutritional Needs**

| Component | Description |
|---|---|
| **Description/ Scope** | This EPA focuses on the **comprehensive nutritional assessment and management** of infants, children, and adolescents with **acute, chronic, and complex nutritional needs**. It includes identifying **malnutrition, obesity, micronutrient deficiencies, feeding disorders, refeeding risk, and altered energy requirements** due to acute or chronic illness. The fellow integrates knowledge of growth physiology, metabolic rate, digestion, and absorption to develop individualized nutrition care plans. It also encompasses prescription and monitoring of **enteral and parenteral nutrition**, as well as collaboration with dietitians, nurses, and the rest of the multidisciplinary nutrition team to optimize clinical outcomes. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates advanced knowledge of nutritional physiology, energy balance, and metabolism across the paediatric age spectrum; manages nutritional support in acute and chronic illness.<br>**Communicator** – Discusses nutritional assessments, interventions, and feeding options effectively with families and the multidisciplinary team.<br>**Collaborator** – Works closely with dietitians, speech and language therapists, and other allied health professionals as part of a multidisciplinary team approach.<br>**Leader** – Coordinates nutritional support services and contributes to quality assurance in hospital or community nutrition programs.<br>**Scholar** – Applies evidence-based approaches in nutritional therapy and critical appraisal of emerging research.<br>**Health Advocate** – Promotes optimal growth, breastfeeding, and nutritional equity; prevents and addresses malnutrition and obesity.<br>**Professional** – Demonstrates empathy and ethical consideration in decisions related to nutritional support and artificial feeding. |
| **Observable Tasks** | - **Nutritional Assessment:**<br>• Perform detailed **dietary history**, feeding assessment, and anthropometric measurements (weight, height, BMI, head circumference, skinfolds, mid-arm circumference).<br>• Assess **growth trajectories** and interpret growth charts and Z-scores.<br>• Evaluates micronutrient deficiencies and the risk of refeeding syndrome.<br>- **Acute and Chronic Conditions:**<br>• Identify malnutrition in acute illness (e.g., sepsis, IBD) and chronic diseases (e.g., CF, CLD). |

| Component | Description |
|---|---|
| | • Assess energy expenditure and tailor caloric/protein requirements using predictive equations and stress factors.<br>- **Nutritional Support:**<br>• Prescribe and monitor **enteral nutrition** (nasogastric, nasojejunal, gastrostomy or jejunostomy feeding); choose appropriate formula and delivery method.<br>• Identify indications for **PN**; collaborate with nutrition support teams to initiate and monitor PN safely.<br>• Recognise and manage **refeeding syndrome**, including electrolyte monitoring and stepwise refeeding.<br>• Transition patients between enteral and parenteral routes safely.<br>- **Specific Populations:**<br>• Provide nutritional support to children with neurodisability, congenital GI disorders, or post-surgical needs (stomas, short bowel).<br>• Address **obesity** and overweight using behavioural, dietary, and activity-based interventions.<br>- **Counselling and Education:**<br>• Explain nutrition plans and feeding options to parents, caregivers, and older children.<br>• Promote breastfeeding and guide complementary feeding practices.<br>- **Monitoring:**<br>• Regularly reassess nutritional status, growth, and biochemical markers; adjust therapy accordingly. |
| **Assessment Methods** | - **Mini-CEX:** Evaluation of clinical encounters focusing on nutritional assessment and counselling.<br>- **DOPS:** Supervision during anthropometric measurements, nasogastric tube placement, or PN prescription.<br>- **CbD:** Assessment of complex nutritional decision-making (e.g., refeeding syndrome, chronic malnutrition).<br>- **Portfolio/ Logbook:** Record of nutritional assessments and support plans, including enteral and parenteral nutrition cases.<br>- **MSF:** Feedback from whole multidisciplinary team on teamwork and communication.<br>- **Chart Audit:** Evaluation of adherence to nutritional support protocols and monitoring documentation. |
| **Supervision Level (1–4)** | **Level 1:** Observes and assists in performing nutritional assessments and basic feeding plans.<br>**Level 2:** Performs nutritional assessments and formulates initial nutrition plans under **direct supervision**.<br>**Level 3:** Independently manages most nutritional support cases (enteral |

| Component | Description |
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| | and basic PN) with **indirect supervision**.<br>**Level 4:** Fully entrusted to assess, prescribe, and coordinate complex nutritional management independently, including high-risk cases (refeeding, chronic malnutrition, obesity), and to lead multidisciplinary discussions. Achieved by fellowship completion. |

**EPA 8: Manage Intestinal Failure and Coordinate Intestinal Rehabilitation (IR) Programs**

| Component | Description |
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| **Description/ Scope** | This EPA encompasses the **evaluation, management, and long-term coordination of children with reversible and irreversible intestinal failure (IF)** — defined as reduced gut function requiring **PN** for growth and hydration — and participation in **intestinal rehabilitation (IR) programs**. It includes both **acute and chronic IF**, arising from causes such as congenital enteropathies, short bowel syndrome, motility disorders (e.g., paediatric intestinal pseudo-obstruction (PIPO)), and severe mucosal disease. The fellow applies expertise in **nutritional, medical, and surgical aspects** of care, **prevention of complications** (e.g., intestinal failure-associated liver disease (IFALD), sepsis, small intestinal bacterial overgrowth), and **family education** for home PN and long-term support. Coordination with dietitians, surgeons, pharmacists, and specialized nursing teams is essential. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates understanding of intestinal adaptation, enteral and parenteral nutrition, and management of IF complications.<br>**Communicator** – Provides clear, empathetic education to families about PN management, infection prevention, and long-term care at home.<br>**Collaborator** – Works within multidisciplinary intestinal rehabilitation teams (surgeons, dietitians, pharmacists, psychologists, nurses).<br>**Leader** – Coordinates IF programs, organizes follow-up schedules, and contributes to safety and quality improvement initiatives.<br>**Scholar** – Applies and disseminates evidence-based protocols for intestinal adaptation, PN cycling, and IFALD prevention.<br>**Health Advocate** – Promotes access to home PN services, psychosocial support, and appropriate transition to adult intestinal rehabilitation centres.<br>**Professional** – Demonstrates ethical responsibility in complex decisions related to long-term PN and transplantation referral. |
| **Observable Tasks** | - **Assessment and Diagnosis:**<br>• Identify the aetiology and classification of IF (congenital enteropathy, short bowel syndrome, motility disorder).<br>• Evaluate residual bowel length, anatomy, and function; perform relevant investigations (imaging, endoscopy, biochemical monitoring).<br>- **Initiation and Optimization of Nutrition Support:**<br>• Assess indications for PN; design and prescribe individualized PN regimens (macronutrients, micronutrients, electrolytes, and fluid balance).<br>• Gradually introduce and advance enteral nutrition to promote |

| Component | Description |
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| | intestinal adaptation.<br>• Adjust PN composition based on growth, biochemical markers, and tolerance.<br>- **Complication Management:**<br>• Recognize and manage PN-related complications: catheter sepsis, thrombosis, metabolic bone disease, micronutrient deficiencies, and IFALD.<br>• Implement prevention strategies — e.g., ethanol or taurolidine locks for catheter sepsis, lipid optimization and cycling PN for IFALD.<br>- **Multidisciplinary Coordination:**<br>• Collaborate with surgeons regarding timing and type of reconstructive procedures (e.g., bowel lengthening, stoma closure).<br>• Liaise with dietitians to optimize enteral feeding plans and monitor tolerance.<br>• Engage pharmacists for PN formulation and quality assurance.<br>- **Family and Home Care:**<br>• Educate caregivers on PN administration, aseptic technique, catheter care, and early signs of complications.<br>• Assess readiness for discharge on home PN; coordinate family training and community support.<br>- **Intestinal Transplant Referral:**<br>• Identify criteria for intestinal (± liver) transplantation and coordinate referral to specialized centres.<br>- **Follow-up:**<br>• Participate in multidisciplinary IF clinic follow-up; monitor growth, nutrition, and biochemical markers. |
| **Assessment Methods** | - **Mini-CEX:** Assessment during inpatient management of IF or multidisciplinary clinic.<br>- **CbD:** Review of decision-making in PN prescription, complication management, or transplant referral.<br>- **DOPS:** Observation during PN initiation, catheter management, or feeding tube care.<br>- **Portfolio/ Logbook:** Documentation of IF cases, PN prescriptions, complications, and follow-up outcomes.<br>- **MSF:** Feedback from dietitians, pharmacists, surgeons, and nursing teams.<br>- **Morbidity and Mortality Review:** Reflective learning on IF-related complications. |
| **Supervision Level (1–4)** | **Level 1:** Observes IF management and multidisciplinary rounds.<br>**Level 2:** Participates in PN prescription and patient monitoring under |

| Component | Description |
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| | **direct supervision**.<br>**Level 3:** Independently manages most IF cases, including PN adjustment and complication prevention, under **indirect supervision**.<br>**Level 4:** Fully entrusted to lead multidisciplinary IF and IR care independently, including complex home PN coordination and transplant referral. Expected by fellowship completion. |

**EPA 9: Perform and Interpret Diagnostic and Therapeutic Procedures Including Gastrointestinal Endoscopy, Liver Biopsy, Motility Studies, and Know about Radiological Investigations**

| Component | Description |
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| **Description/ Scope** | This EPA encompasses the **independent performance, interpretation, and management** of diagnostic and therapeutic procedures central to paediatric gastroenterology, hepatology, and nutrition (PGHN). It includes **upper and lower gastrointestinal endoscopy**, **biopsy acquisition and interpretation**, **percutaneous endoscopic gastrostomy (PEG) placement**, **motility testing** (pH-metry, impedance, manometry), and collaboration with radiology for **imaging-based investigations** (ultrasound, CT, MRI, contrast studies). The fellow must demonstrate procedural competence, patient safety, pre- and post-procedure management, and accurate interpretation of findings in the context of paediatric physiology and disease. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Mastery of procedural indications, contraindications, technique, and interpretation across the procedural spectrum; integrates findings into diagnostic and therapeutic decision-making.<br>**Communicator** – Ensures informed consent, explains risks, benefits and alternatives, and ensures clear communication with families and the healthcare team.<br>**Collaborator** – Works closely with anaesthesiologists, endoscopy nurses, radiologists, and pathologists.<br>**Leader** – Upholds procedural safety, infection control, and endoscopy unit efficiency; contributes to quality assurance and training.<br>**Scholar** – Applies evidence-based guidelines for paediatric endoscopy, liver biopsy, sedation, and histopathologic interpretation; contributes to procedural audits and teaching.<br>**Health Advocate** – Promotes safe access to essential diagnostic procedures and minimizes unnecessary invasive testing.<br>**Professional** – Demonstrates ethical and safe conduct, situation awareness, respects confidentiality, and maintains composure during technical challenges or complications. |
| **Observable Tasks** | - **Pre-Procedure:**<br>• Evaluate indications and contraindications for endoscopy, liver biopsy, or motility studies.<br>• Obtain informed consent from patient and caregivers, explaining risks (bleeding, perforation, infection, sedation/ general anaesthesia).<br>• Perform pre-procedure assessment (airway, comorbidities, coagulation profile). |

| Component | Description |
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| | - **Endoscopic Procedures:**<br>• Perform diagnostic **upper GI endoscopy** in children and adolescents, reaching duodenum; perform **ileo-colonoscopy** to the terminal ileum.<br>• Obtain biopsies at appropriate sites (oesophagus, stomach, duodenum, ileum, colon) for histopathology.<br>• Conduct **therapeutic interventions**: polypectomy, PEG(-J) placement, foreign body removal; have knowledge about variceal banding/sclerotherapy, non-variceal haemostatic techniques and gastrointestinal stricture dilation.<br>• Manage procedural complications (bleeding, perforation) promptly and appropriately, know about anaesthesiologic events.<br>- **Liver Biopsy:**<br>• Understand indications (e.g., unexplained transaminase elevation, cholestasis, chronic liver disease (CLD)).<br>• Know about, assist with or perform percutaneous liver biopsy under image guidance; manage post-biopsy observation and complications.<br>• Interpret histology in collaboration with a pathologist.<br>- **Motility Studies:**<br>• Conduct and interpret **oesophageal pH-metry and impedance monitoring** for GERD assessment.<br>• Understand indications and basic interpretation of **oesophageal, anorectal, and colonic manometry**.<br>- **Radiological Investigations:**<br>• Identify appropriate imaging modality (ultrasound, contrast study, MRI, CT) based on clinical context.<br>• Collaborate with radiologists to interpret findings relevant to GI, hepatobiliary, and pancreatic pathology.<br>- **Post-Procedure:**<br>• Document procedures accurately, provide post-procedure instructions, and communicate results to patients and caregivers and referring physicians.<br>• Participate in endoscopy quality audits and maintain procedural logs. |
| **Assessment Methods** | - **DOPS:** Assessment during endoscopy, PEG placement, liver biopsy, or motility testing.<br>- **Mini-CEX:** Evaluation of pre- and post-procedure patient interaction and informed consent.<br>- **CbD:** Review of diagnostic and management decisions based on procedural findings.<br>- **Simulation/ Skills Lab:** Endoscopic and PEG insertion simulations for competency development. |

| Component | Description |
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| | - **Portfolio/ Logbook:** Documentation of procedure numbers including evidence of achieving competency thresholds and key performance indicators, outcomes, and reflective learning.<br>- **MSF:** Feedback from endoscopy nurses, anaesthesiologists, and radiologists.<br>- **Audit/ Quality Review:** Participation in unit safety and quality improvement processes. |
| **Supervision Level (1–4)** | **Level 1:** Observes procedures and assists in patient preparation and follow-up.<br>**Level 2:** Performs diagnostic procedures (e.g., endoscopy, liver biopsy, pH study) under **direct supervision**.<br>**Level 3:** Independently performs diagnostic and selected therapeutic procedures (e.g., PEG placement, polypectomy) under **indirect supervision**.<br>**Level 4:** Fully entrusted to independently perform and interpret diagnostic and therapeutic GI procedures, manage complications, and participate in teaching and procedural governance. Expected by fellowship completion. |

**EPA 10: Diagnose and Manage Acute and Chronic Liver Disease in Children**

| Component | Description |
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| **Description/ Scope** | This EPA encompasses the **evaluation, diagnosis, and management of acute and chronic liver diseases** in infants, children, and adolescents. It includes **abnormal liver test interpretation**, **acute liver failure (ALF)**, **viral hepatitis**, **autoimmune and metabolic liver diseases**, **portal hypertension, advanced chronic liver disease**, and **metabolic dysfunction-associated steatotic liver disease (MASLD)**. Fellows are expected to integrate biochemical, immunologic, genetic, and imaging findings to develop evidence-based management plans, prevent complications, and coordinate long-term care. This EPA also involves collaboration with **transplant hepatology teams** for advanced disease management. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates advanced understanding of hepatic anatomy, physiology, and pathophysiology of acute and chronic liver diseases.<br>**Communicator** – Explains complex liver disease mechanisms, prognosis, and management plans clearly to families.<br>**Collaborator** – Works with hepatologists, transplant teams, infectious disease specialists, radiologists and dietitians.<br>**Leader** – Organizes multidisciplinary care for liver disease patients and contributes to clinical governance in hepatology units.<br>**Scholar** – Interprets recent literature on biomarkers, imaging, antiviral therapy, and autoimmune liver disease management.<br>**Health Advocate** – Promotes vaccination (HAV, HBV), screening for metabolic and autoimmune disorders, and nutritional optimization.<br>**Professional** – Demonstrates compassion and ethical decision-making in cases involving chronic illness, transplantation, and end-of-life care. |
| **Observable Tasks** | - **Initial Evaluation:**<br>• Obtain a detailed medical, drug, and family history with attention to risk factors (perinatal, metabolic, infectious, autoimmune, toxic).<br>• Perform focused physical examination assessing for hepatomegaly, splenomegaly, ascites, encephalopathy and jaundice.<br>- **Laboratory and Imaging Interpretation:**<br>• Interpret **liver function tests** (AST, ALT, bilirubin, ALP, GGT), **synthetic markers** (albumin, glycemia, fibrinogen, INR) and markers for liver failure (factor V, ammonia, lactic acid).<br>• Select and interpret appropriate diagnostic investigations: viral serology, autoimmune markers (ANA, SMA, LKM), metabolic screening (e.g., ceruloplasmin, α1-antitrypsin, ammonia), and genetic tests. |

| Component | Description |
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| | • Collaborate with radiology for ultrasound, Doppler, and elastography.<br>- **ALF:**<br>• Recognize clinical features and critical lab thresholds (coagulopathy, encephalopathy).<br>• Initiate stabilization: airway protection, correction of hypoglycaemia, vitamin K, management of raised intracranial pressure.<br>• Investigate aetiology (infection, drug toxicity, metabolic causes).<br>• Coordinate transfer to tertiary liver unit, collaborate with intensive care unit and assess for transplant candidacy.<br>- **CLD:**<br>• Diagnose and manage autoimmune hepatitis, sclerosing cholangitis, metabolic diseases (e.g., Wilson's, α1-antitrypsin deficiency, CF-related liver disease), and viral hepatitis.<br>• Manage complications: portal hypertension, ascites, variceal bleeding, hepatic encephalopathy.<br>• Optimize nutrition, vitamin supplementation, and vaccination.<br>- **Portal Hypertension:**<br>• Diagnose via clinical, laboratory, and imaging findings; manage complications (non-selective beta-blockers, variceal ligation, ascites management).<br>- **MASLD:**<br>• Diagnose using clinical, biochemical, and imaging parameters; manage via lifestyle modification and treatment of comorbidities.<br>- **Follow-up and Transition:**<br>• Monitor growth, bone health, and psychosocial wellbeing; coordinate transition to adult hepatology. |
| **Assessment Methods** | - **Mini-CEX:** Evaluation during inpatient or outpatient hepatology consultation.<br>- **CbD:** Review of diagnostic reasoning and management of acute or chronic liver disease.<br>- **DOPS:** Observation during liver biopsy or variceal banding.<br>- **Portfolio/ Logbook:** Documentation of acute and chronic liver cases managed, including complications and outcomes.<br>- **MSF:** Input from nursing, dietetic, and surgical colleagues on collaboration and communication.<br>- **Morbidity and Mortality Review:** Participation in ALF or CLD case reviews for reflective learning. |
| **Supervision Level (1–4)** | **Level 1:** Observes hepatology evaluations and assists in investigation planning.<br>**Level 2:** Performs clinical assessment and basic management under |

| Component | Description |
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| | **direct supervision**.<br>**Level 3:** Independently manages common hepatic disorders and participates in ALF care under **indirect supervision**.<br>**Level 4:** Fully entrusted to diagnose, manage, and coordinate care for children with acute and chronic liver disease, including initiation of transplant evaluation. Expected by fellowship completion. |

**EPA 11: Evaluate and Manage Children with Cholestasis and Other Hepatobiliary Disorders**

| Component | Description |
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| **Description/ Scope** | This EPA involves the **evaluation, diagnosis, and management of cholestatic liver diseases and hepatobiliary disorders** in infants, children, and adolescents. Conditions include **biliary atresia, progressive familial intrahepatic cholestasis (PFIC), Alagille syndrome, biliopancreatic malformations,** and other genetic or metabolic causes of cholestasis. Fellows are expected to integrate clinical, biochemical, imaging, and histopathologic data to determine aetiology, initiate appropriate medical management, coordinate surgical interventions (e.g., Kasai portoenterostomy), and plan long-term care including transplant referral when necessary. The EPA emphasizes **prevention strategies** (e.g., stool cards), **early recognition, multidisciplinary collaboration, and family counselling.** |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates advanced knowledge of hepatobiliary anatomy, bile formation, and pathophysiology of cholestatic diseases; applies diagnostic algorithms to identify aetiology and guide management.<br>**Communicator** – Explains complex diagnoses, investigations, and treatment options with clarity and empathy to families, especially regarding surgical interventions or transplantation.<br>**Collaborator** – Works effectively with hepatobiliary surgeons, radiologists, geneticists, pathologists, dietitians, and caregivers.<br>**Leader** – Coordinates diagnostic pathways and multidisciplinary case discussions for infants with cholestasis.<br>**Scholar** – Applies current evidence on genetic testing, biomarkers, and new therapeutic agents (e.g., bile acid transport modulators).<br>**Health Advocate** – Promotes early diagnosis and referral to specialized liver units; ensures timely vaccination and nutritional support.<br>**Professional** – Demonstrates sensitivity, cultural competence, and ethical judgment in complex clinical discussions. |
| **Observable Tasks** | - **Initial Assessment:**<br>• Identify signs of cholestasis (jaundice, pale stools, dark urine, pruritus, hepatosplenomegaly, growth failure).<br>• Distinguish conjugated from unconjugated hyperbilirubinemia; order appropriate initial investigations.<br>- **Diagnostic Evaluation:**<br>• Interpret liver function and cholestasis-specific tests (direct and indirect bilirubin, GGT, serum bile acids).<br>• Order and interpret **abdominal ultrasound** for biliary tree assessment |

| Component | Description |
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| | and Doppler studies for hepatic vasculature.<br>• Identify indications for **hepatobiliary scintigraphy (HIDA scan)**, **MRCP**, and **intraoperative cholangiography**.<br>• Evaluate histology from **liver biopsy** to confirm diagnosis and assess fibrosis.<br>• Initiate **genetic and metabolic testing** when indicated (e.g., PFIC, Alagille syndrome, bile acid synthesis defects).<br>- **Management:**<br>• Coordinate urgent surgical referral for **biliary atresia** and assist in pre- and post-operative management following **Kasai portoenterostomy**.<br>• Manage medical complications: pruritus, malabsorption, fat-soluble vitamin deficiency, cholangitis.<br>• Prescribe appropriate **ursodeoxycholic acid**, **cholestyramine**, **rifampicin**, or **bile acid modulators** as indicated.<br>• Provide nutritional support (medium-chain triglycerides, vitamin supplementation, caloric optimization) in collaboration with dietitians.<br>• Monitor for progression to CLD and signs of portal hypertension.<br>- **Follow-up and Referral:**<br>• Schedule regular follow-up with biochemical and growth monitoring.<br>• Identify criteria for **liver transplant referral** (failed bile drainage, intractable pruritus, growth failure, end-stage liver disease).<br>• Facilitate family counselling and genetic testing for recurrence risk. |
| **Assessment Methods** | - **Mini-CEX:** Assessment of clinical reasoning and communication during cholestasis evaluations.<br>- **CbD:** Review of investigation strategy and management decisions.<br>- **DOPS:** Observation during liver biopsy preparation, interpretation, or cholangiography discussions.<br>- **Portfolio/ Logbook:** Record of cholestasis cases, including biliary atresia and PFIC management.<br>- **MSF:** Evaluation of collaboration with hepatobiliary surgeons, geneticists, and radiologists.<br>- **Audit/ Reflective Practice:** Review of outcomes and timing of referrals for surgical intervention. |
| **Supervision Level (1–4)** | **Level 1:** Observes and assists in evaluation and management of neonatal cholestasis.<br>**Level 2:** Performs diagnostic assessment and initiates basic management under **direct supervision**.<br>**Level 3:** Independently manages typical cases of cholestasis and coordinates investigations with **indirect supervision**.<br>**Level 4:** Fully entrusted to lead the multidisciplinary evaluation and |

| Component | Description |
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| | management of complex cholestatic and hepatobiliary disorders, including pre- and post-Kasai management and transplant referral. Expected by fellowship completion. |

**EPA 12: Manage Liver Transplantation Process**

| Component | Description |
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| **Description/ Scope** | This EPA covers the **comprehensive management of paediatric liver transplantation**, including **evaluation, perioperative coordination, and long-term post-transplant care**. It involves identifying indications for transplantation, participating in pre-transplant assessment, understanding organ allocation processes, managing immunosuppressive therapy, and recognizing and treating transplant-related complications (e.g., rejection, infection, biliary or vascular problems). Fellows are expected to collaborate within the multidisciplinary transplant team (hepatologists, surgeons, immunologists, pharmacists, dietitians, and psychologists) to ensure continuity of care from pre-transplant evaluation through to long-term follow-up and transition to adult services. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Integrates in-depth understanding of transplant immunology, pharmacology, and surgical principles; manages complications and optimizes long-term outcomes.<br>**Communicator** – Provides clear, compassionate explanations to families regarding transplant indication, procedure, risks, and lifelong follow-up.<br>**Collaborator** – Functions as a key member of the multidisciplinary transplant team, liaising with surgeons, intensivists, pharmacists, and social workers.<br>**Leader** – Coordinates pre- and post-transplant pathways and contributes to transplant program quality improvement.<br>**Scholar** – Applies evidence-based guidelines for immunosuppression, infection prophylaxis, and rejection surveillance; contributes to clinical research or audit.<br>**Health Advocate** – Ensures equitable access to transplantation, adherence to vaccination protocols, and long-term psychosocial support.<br>**Professional** – Demonstrates ethical integrity, confidentiality, and professionalism in decisions around organ allocation, consent, and end-of-life issues. |
| **Observable Tasks** | - **Pre-Transplant Phase:**<br>• Identify indications for transplantation (ALF, biliary atresia post-Kasai failure, metabolic and cholestatic liver diseases, end-stage cirrhosis).<br>• Assess transplant eligibility (medical, psychosocial, and nutritional).<br>• Participate in **pre-transplant evaluation**: serology, imaging, cardiopulmonary assessment, nutritional optimization, psychosocial evaluation.<br>• Counsel families on risks, benefits, and post-transplant lifestyle |

| Component | Description |
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| | implications.<br>• Collaborate with national transplant registry and organ allocation services.<br>- **Perioperative Management:**<br>• Participate in perioperative planning with surgeons, anaesthesiologists, and intensivists.<br>• Manage immediate post-operative complications (bleeding, primary graft dysfunction, vascular thrombosis, biliary leaks).<br>• Monitor liver function, coagulation, electrolytes, and renal function closely.<br>- **Post-Transplant Management:**<br>• Prescribe and monitor **immunosuppressive regimens** (tacrolimus, ciclosporin, mycophenolate, corticosteroids); interpret drug levels and adjust doses appropriately.<br>• Diagnose and treat **acute and chronic rejection** using biochemical, histological, and imaging findings.<br>• Prevent and manage **infections** (CMV, EBV, opportunistic infections) through prophylaxis and early detection.<br>• Identify and treat metabolic and renal complications of immunosuppression.<br>• Manage nutrition, growth, vaccination, and psychosocial wellbeing.<br>- **Long-Term Care:**<br>• Conduct structured follow-up in transplant clinic, monitoring graft function and long-term complications (post-transplant lymphoproliferative disorder (PTLD), renal dysfunction, metabolic syndrome).<br>• Coordinate transition to adult liver transplant services.<br>- **Team Participation and Advocacy:**<br>• Attend multidisciplinary transplant meetings; contribute to case presentations and outcome reviews.<br>• Advocate for vaccination, medication adherence, and lifestyle modification in transplanted children. |
| **Assessment Methods** | - **Mini-CEX:** Evaluation during pre- or post-transplant clinic consultations.<br>- **CbD:** Assessment of clinical reasoning in immunosuppression management or rejection episodes.<br>- **DOPS:** Observation of post-transplant procedures (biopsy, central line insertion, ascites puncture).<br>- **Portfolio/ Logbook:** Record of pre-, peri-, and post-transplant patients managed, including complications and outcomes.<br>- **MSF:** Input from transplant surgeons, nurses, pharmacists, and |

| Component | Description |
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| | coordinators on teamwork and communication.<br>- **Audit/ Quality Review:** Participation in transplant morbidity and mortality meetings or outcome audits. |
| **Supervision Level (1–4)** | **Level 1:** Observes pre- and post-transplant care and participates in discussions.<br>**Level 2:** Manages stable pre- and post-transplant patients under **direct supervision**.<br>**Level 3:** Independently manages common transplant issues (drug adjustments, routine complications) with **indirect supervision**.<br>**Level 4:** Fully entrusted to coordinate comprehensive transplant care — from assessment through long-term follow-up — including management of immunosuppression and acute complications, and active participation in multidisciplinary team leadership. Expected by fellowship completion. |

**EPA 13: Assess and Manage Pancreatic Disorders in Children**

| Component | Description |
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| **Description/ Scope** | This EPA covers the **evaluation, diagnosis, and management of pancreatic disorders** in infants, children, and adolescents, including **acute and chronic pancreatitis, PEI, congenital anomalies, CF–related pancreatic disease**, and **pancreatic tumours**. The fellow is expected to integrate advanced knowledge of pancreatic anatomy, physiology, and pathophysiology with clinical, biochemical, and imaging findings. Management includes the acute stabilization of pancreatitis, nutritional optimization, management of pain and exocrine insufficiency, and coordination of multidisciplinary care with endocrinology, surgery, genetics, and nutrition teams. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Demonstrates deep understanding of pancreatic structure, enzyme physiology, and disease mechanisms (inflammatory, genetic, obstructive). Applies evidence-based approaches to diagnosis and management.<br>**Communicator** – Explains diagnostic findings, management plans, and genetic implications clearly to families.<br>**Collaborator** – Works with radiologists, surgeons, geneticists, endocrinologists, and dietitians in multidisciplinary care.<br>**Leader** – Coordinates pancreatic disease clinics and contributes to quality improvement initiatives for pancreatitis management.<br>**Scholar** – Appraises and applies current literature on acute pancreatitis management, pancreatic enzyme replacement, and emerging genetic causes.<br>**Health Advocate** – Promotes early recognition of recurrent or hereditary pancreatitis, and nutritional monitoring.<br>**Professional** – Demonstrates empathy, professionalism, and ethical integrity in managing chronic pain, genetic testing, and long-term follow-up. |
| **Observable Tasks** | - **Assessment and Diagnosis:**<br>• Obtain detailed history of abdominal pain, vomiting, family history of pancreatitis or CF, medication exposure, and trauma.<br>• Conduct physical examination focused on hydration, tenderness, and nutritional status.<br>- **Acute Pancreatitis:**<br>• Diagnose based on at least two of three criteria (abdominal pain, serum amylase/lipase ≥3× ULN, or imaging evidence).<br>• Assess severity and identify complications (SIRS, necrosis, pseudocyst, organ failure). |

| Component | Description |
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| | • Manage initial stabilization: IV fluids, analgesia, and nutritional support (early enteral nutrition when tolerated).<br>• Identify and treat underlying causes (biliary stones, drugs, trauma, infection, metabolic, structural, genetic).<br>- **Chronic Pancreatitis:**<br>• Recognize features (recurrent attacks, calcifications, pancreatic duct anomalies, exocrine pancreatic insufficiency).<br>• Manage pain, monitor for diabetes, and assess for malabsorption and nutritional deficiencies.<br>• Coordinate pancreatic enzyme replacement therapy (PERT) and fat-soluble vitamin supplementation.<br>• Liaise with pain management and psychology teams for chronic pain assessment and management.<br>- **PEI:**<br>• Diagnose using faecal elastase, coefficient of fat absorption, and clinical signs (steatorrhea, poor growth).<br>• Prescribe PERT dosing based on weight and fat intake; monitor efficacy and adherence.<br>- **CF and Genetic Disorders:**<br>• Identify and manage pancreatic involvement in CF and hereditary pancreatitis (e.g., PRSS1, SPINK1, CFTR, CTRC mutations).<br>• Counsel families on genetic testing and recurrence risk.<br>- **Congenital and Structural Disorders:**<br>• Recognize and coordinate advanced endoscopy/ surgical management for choledochal cysts, pancreas divisum, annular pancreas, and traumatic injury.<br>- **Follow-up:**<br>• Monitor growth, nutrition, glycaemic status, and vitamin levels.<br>• Arrange periodic imaging and manage complications such as pseudocysts or pancreatic insufficiency. |
| **Assessment Methods** | - **Mini-CEX:** Evaluation during inpatient or outpatient assessment of pancreatitis or exocrine insufficiency.<br>- **CbD:** Assessment of reasoning in recurrent or hereditary pancreatitis.<br>- **DOPS:** Observation of endoscopic retrograde cholangiopancreatography (ERCP) discussions, or enzyme counselling.<br>- **Portfolio/ Logbook:** Documentation of pancreatitis and pancreatic insufficiency cases managed, with follow-up outcomes.<br>- **MSF:** Input from dietitians, endocrinologists, and nursing staff on collaboration and communication. |

| Component | Description |
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| | - **Morbidity and Mortality Review:** Reflection on management of severe or complicated pancreatitis cases. |
| **Supervision Level (1–4)** | **Level 1:** Observes assessment and management of acute pancreatitis and pancreatic insufficiency.<br>**Level 2:** Manages uncomplicated pancreatitis and PERT initiation under **direct supervision**.<br>**Level 3:** Independently manages most pancreatic disorders, interprets imaging and lab results, and coordinates multidisciplinary input under **indirect supervision**.<br>**Level 4:** Fully entrusted to diagnose, manage, and coordinate care for all pancreatic conditions independently, including recurrent or hereditary pancreatitis and complex nutritional issues. Expected by fellowship completion. |

**EPA 14: Coordinate Multidisciplinary and Transitional Care for Complex and Chronically Ill PGHN Patients**

| Component | Description |
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| **Description/ Scope** | This EPA covers the **coordination of multidisciplinary and transitional care** for children and adolescents with **complex and chronic gastrointestinal, hepatological, pancreatic, and nutritional disorders** requiring long-term management. Fellows are expected to lead integrated care pathways, facilitate communication among healthcare professionals, ensure psychosocial support, and work collaboratively with adult services to ensure effective healthcare **transition**. This includes patients with long term PGHN conditions. The fellow should demonstrate competence in team leadership, patient advocacy, adolescent health and continuity of care across inpatient, outpatient, and community settings. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Applies broad and integrated knowledge of PGHN conditions to coordinate holistic, patient-centred management across settings.<br>**Communicator** – Facilitates effective, family-centred communication and ensures shared decision-making among multidisciplinary team members and families.<br>**Collaborator** – Works with dietitians, psychologists, speech and language therapists, surgeons, nurses, social workers, physiotherapists, and adult care providers.<br>**Leader** – Organizes and leads multidisciplinary case conferences, develops care plans, and manages transitions of care.<br>**Scholar** – Applies and teaches best practices for multidisciplinary management, patient education, and transition readiness.<br>**Health Advocate** – Promotes equitable access to care, psychosocial resources, and smooth transition into adult services.<br>**Professional** – Demonstrates accountability, empathy, and ethical conduct in coordinating complex, family-sensitive care. |
| **Observable Tasks** | - **Multidisciplinary Coordination:**<br>• Lead and participate in multidisciplinary team meetings for complex PGHN patients (e.g., IF, liver transplant follow-up, IBD, feeding disorders).<br>• Develop and document individualized, comprehensive care plans with the help of a transition coordinator including medical, nutritional, psychological, and social domains.<br>• Facilitate communication between inpatient, outpatient, and community-based services.<br>- **Transition of Care:** |

| Component | Description |
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| | • Identify adolescents approaching transition age and start preparation for transition early.<br>• Develop structured transition plans with the help of a transition coordinator in collaboration with adult gastroenterology, hepatology, and nutrition teams.<br>• Educate patients and families about chronic disease self-management, medication adherence, and adult healthcare expectations.<br>- **Psychosocial and Educational Support:**<br>• Recognize psychological distress, school difficulties, and social challenges; coordinate input from psychologists, social workers, and educators.<br>• Provide family-centred counselling to promote resilience and adherence.<br>- **Chronic Disease Management:**<br>• Monitor growth, development, and quality of life in children with complex PGHN diseases.<br>• Address nutritional, surgical, and pharmacologic aspects collaboratively.<br>• Identify and manage barriers to care (transportation, language, socioeconomic constraints).<br>- **Leadership and Advocacy:**<br>• Serve as a liaison between paediatric and adult teams; ensure transfer of accurate, comprehensive medical summaries.<br>• Promote education of healthcare staff regarding transition processes and multidisciplinary coordination. |
| **Assessment Methods** | - **Mini-CEX:** Evaluation during multidisciplinary clinic participation or family counselling.<br>- **CbD:** Assessment of decision-making and transition planning for complex cases.<br>- **MSF:** Evaluation by allied health professionals, nurses, and families regarding teamwork and leadership.<br>- **Portfolio/ Reflective Practice:** Documentation of multidisciplinary cases, transition plans, and self-reflection on communication and leadership.<br>- **DOPS:** Assessment during multidisciplinary meetings, care conferences, or transition clinics.<br>- **Quality Improvement Project:** Participation in or leadership of an initiative improving care coordination or transition processes. |
| **Supervision Level (1–4)** | **Level 1:** Observes multidisciplinary case discussions and participates as a team member. |

| Component | Description |
|---|---|
| | **Level 2:** Contributes to care planning under **direct supervision**, participating in discussions with allied professionals and families.<br>**Level 3:** Independently coordinates with the help of a transition coordinator multidisciplinary management and participates in transition clinics under **indirect supervision**.<br>**Level 4:** Fully entrusted to lead multidisciplinary coordination and transition planning independently with the help of a transition coordinator, ensuring continuity of care between paediatric and adult services. Expected by fellowship completion. |

**EPA 15: Demonstrate Leadership, Scholarship, and Advocacy within the PGHN Discipline**

| Component | Description |
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| **Description/ Scope** | This EPA focuses on the fellow's ability to **demonstrate leadership, scholarship, and advocacy** in the field of PGHN. It encompasses participation in quality improvement initiatives, ethical and professional conduct, teaching and mentoring of trainees, contribution to clinical or translational research, and promotion of equitable, evidence-based care. Fellows are expected to act as role models in professionalism, communication, and team collaboration, contributing to the advancement of the PGHN discipline within their institution and the broader medical community. |
| **Key Competencies (CanMEDS)** | **Medical Expert** – Integrates clinical expertise and evidence-based practice to improve quality of care.<br>**Communicator** – Engages effectively with colleagues, learners, and the public to advocate for children with PGHN diseases.<br>**Collaborator** – Works effectively with peers, administrators, and policymakers in developing and implementing service improvements.<br>**Leader** – Demonstrates leadership in clinical teams, education, and quality initiatives; manages resources efficiently.<br>**Scholar** – Participates in or leads research, teaching, and continuous professional development; critically appraises literature.<br>**Health Advocate** – Promotes public health, patient safety, and access to specialized care, nutrition programs, and preventive strategies.<br>**Professional** – Upholds ethical practice, self-awareness, accountability, and integrity in all professional activities. |
| **Observable Tasks** | - **Leadership:**<br>• Lead or co-lead multidisciplinary meetings, ward rounds, or clinical improvement projects.<br>• Develop and implement quality improvement or patient safety initiatives in the PGHN unit (e.g., improving nutritional screening, infection prevention, or procedural safety).<br>• Participate in department management, service development, or national PGHN networks.<br>- **Scholarship:**<br>• Engage in teaching activities for medical students, residents, nurses, and allied health professionals.<br>• Develop and deliver formal teaching sessions, journal clubs, and case-based seminars.<br>• Conduct or contribute to clinical or translational research in PGHN; prepare abstracts, manuscripts, or conference presentations. |

| Component | Description |
|---|---|
| | • Critically appraise current literature and apply it to clinical practice.<br>• Demonstrate lifelong learning and reflective practice.<br>- **Advocacy:**<br>• Promote awareness of PGHN diseases among healthcare professionals and the community.<br>• Advocate for equitable access to diagnostic and nutritional services, including support for families with chronic illness.<br>• Engage with health policy or guideline development relevant to PGHN.<br>- **Professionalism:**<br>• Model ethical behaviour, teamwork, and cultural humility.<br>• Provide mentorship and feedback to junior colleagues and allied staff.<br>• Reflect on personal performance and integrate feedback for growth. |
| **Assessment Methods** | - **Direct Observation:** Evaluation during leadership or teaching activities.<br>- **Mini-CEX/ Teaching Observation:** Assessment of educational encounters with learners.<br>- **Portfolio/ Reflective Practice:** Documentation of leadership roles, teaching sessions, QI or research projects, and reflections.<br>- **CbD:** Review of ethical or professional challenges.<br>- **MSF:** Feedback from supervisors, peers, learners, and allied health professionals.<br>- **Research or QI Output Evaluation:** Assessment of scholarly productivity (presentations, posters, publications, or implemented quality improvement changes). |
| **Supervision Level (1–4)** | **Level 1:** Participates in quality improvement, education, and advocacy activities as an observer or assistant.<br>**Level 2:** Contributes actively to teaching and quality improvement initiatives under **direct supervision**.<br>**Level 3:** Leads educational or quality improvement projects and mentors junior learners under **indirect supervision**.<br>**Level 4:** Fully entrusted to independently lead and sustain initiatives in leadership, scholarship, and advocacy, contributing to program development and the PGHN community. Expected by fellowship completion. |

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Table 3: Key Capabilities and Assessment Methods – Gastroenterology

| | Mini-CEX (Mini clinical evaluation exercise) | CbD (Case-based discussion) | DOPS (Directly observed procedural skills) | LEADER (Clinical leadership assessment skills) | HAT (Handover assessment tool) | DOC (Discussion of correspondence) | MSF (Multi-source feedback) |
|---|---|---|---|---|---|---|---|
| Conducts a detailed clinical assessment of a patient presenting with symptoms indicating gastrointestinal disease, selects the appropriate investigations in specific clinical situations, constructs a management plan and recognises various avenues of treatment. | x | x | | x | | x | x |
| Demonstrates confident management of a range of gastroenterology conditions that may cause nutritional compromise, including diseases resulting from changes in intestinal | x | x | | x | | | x |

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| absorption; disordered function of the liver and pancreas; disordered immunity/autoimmune disease; and infective gastrointestinal disease. | | | | | | | |
| Manages the causes of upper and lower gastrointestinal bleeding, referring appropriately for the investigational techniques required to make a diagnosis and identifies the appropriate medical and surgical treatments. | x | x | | x | | | x |
| Identifies the key features of functional abdominal pain, the methods of clinical assessment and its longer-term management, including liaising with other professionals, such as general paediatricians, clinical psychologists, child and adolescent mental health professionals and pain teams. | x | x | | x | | | x |

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| Identifies motility problems across the age spectrum, including children and young people with neurodisability and coordinates their care with local paediatric services. | x | x | | | x | | x |
| Carries out a thorough clinical assessment of disorders of the upper gastrointestinal tract. | x | x | | x | x | | x |
| Receives certification in gastroscopy through recognised and regulated process.* | x | x | x | | x | | |
| Evidence of progression towards achieving competence in diagnostic ileo-colonoscopy (gastroenterology trainees).** | x | x | x | | x | | |

*At completion of training, the trainee should have achieved competence to perform gastroscopy independently and thereby certification, according to appropriate current standards with use of competence assessment tools to document progress and proficiency.

**At completion of training, the trainee should be able to demonstrate progression towards achieving competency in diagnostic ileo-colonoscopy according to appropriate current standards (key performance indicators caecal intubation rates ≥90%, terminal ileal intubation rates ≥85%), with use of competence assessment tools to document progress and proficiency.

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Table 4: Key Capabilities and Assessment Methods – Hepatology

| Key Capabilities | Mini-CEX (Mini clinical evaluation exercise) | CbD (Case-based discussion) | DOPS (Directly observed procedural skills) | LEADER (Clinical leadership assessment skills) | HAT (Handover assessment tool) | DOC (Discussion of correspondence) | MSF (Multi-source feedback) |
|---|---|---|---|---|---|---|---|
| Recognises the indications for liver transplantation and knows the process of transplant assessment for children and young people requiring transplant as part of a wider MDT. | x | x | | x | | | x |
| Has knowledge about the management of children and young people in the peri- and post-operative periods of liver transplant. | x | x | | x | | | x |
| Follows up on children and young people post-transplant and has knowledge about transplant-related complications (rejection, post-transplant | x | x | | x | | | x |

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| lymphoproliferative disorder [PTLD], graft-versus-host disease [GvHD] and vascular and biliary complications). | | | | | | | |
| Has knowledge about managing children and young people with acute liver failure and anticipates and identifies early complications. | x | x | | x | | | x |
| Has knowledge about how to initiate first-line treatment for children and young people with acute liver failure while arranging referral to a paediatric liver transplant unit. | x | x | | | x | | x |
| Recognises the progression of acute liver failure and when liver transplantation is indicated and contraindicated. | | x | | x | | | x |
| Works effectively as part of an MDT and demonstrates leadership skills in the | x | x | | x | x | | x |

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| diagnosis and management of children and young people with chronic and end-stage liver disease. | | | | | | | |
| Has knowledge about the causes of cirrhosis and chronic liver diseases. | x | x | | x | | | |
| Has knowledge about the complications of chronic liver disease, including portal hypertension. | x | x | | x | | | |

Table 5: Key Capabilities and Assessment Methods - Nutrition

| Key Capabilities | Mini-CEX (Mini clinical evaluation exercise) | CbD (Case-based discussion) | DOPS (Directly observed procedural skills) | LEADER (Clinical leadership assessment skills) | HAT (Handover assessment tool) | DOC (Discussion of correspondence) | MSF (Multi-source feedback) |
|---|---|---|---|---|---|---|---|
| Has knowledge about assessesment, diagnosis and management of patients with intestinal failure as part of an MDT, as well as management of complications. | x | X | | x | | | x |
| Works with a nutritional support team to establish patients on home parenteral nutrition and has knowledge about the advancement of enteral nutrition and weaning off parenteral nutrition. | x | x | | x | | | x |
| Works as part of a nutritional support team in assessing and managing patients who require | x | x | | | x | | x |

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| complex nutritional support in disease conditions, such as IBD, critical illness, liver disease, cardiac disease, cystic fibrosis, feeding disorders and neurodevelopmental disability. | | | | | | | |
| Has knowledge about an individualised nutritional treatment plan in conjunction with dietetic colleagues (including dietary exclusions and substitutions) and monitors specific diseases (e.g., coeliac disease and multiple food allergies). | x | x | | | x | | x |

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# Training Objectives for UEMS Specialists Pertaining to the Care of Adolescents and Young Adults with Chronic Disorders

Version September 2022

## Context

Worldwide, the specific health needs of adolescents and young adults (AYAs) defined as individuals aged 10 to 24 are increasingly recognized. This phase of exploration and of shaping of one's identity drives both opportunities and risks, such as improved self-confidence, health enhancing behaviours, or poor therapeutic adherence, lack of long-term vision, which potentially interfere with treatment. Both specialists and primary care practitioners (e.g. in-practice paediatricians, family physicians, school doctors) can play a pivotal role in tailoring their approach to the specific needs of AYAs. This training package has been developed by members of the UEMS Multidisciplinary Joint Committee in Adolescent Medicine and Health (Chair, Prof. P.-A. Michaud, Lausanne, Switzerland), an initiative launched by the European Academy of Pediatrics. The content has been carefully discussed and reviewed by the MJC members, as well as an international group of experts working in the field and belonging to the Euteach training program (www.euteach.com).

The present document lists a set of practical, clinically oriented, holistic objectives that should allow all European specialists and primary care providers (paediatricians and family doctors) to respond better to the special health care needs of AYAs. They are competency-based and integrate knowledge, attitude and skills. In this respect, they are inspired by the CanMEDS model, as well as the "EPA" (Entrustable Professional Activities) approach. They can be freely adapted to the specific health care approaches and topics of various UEMS specialties (including paediatricians) and family doctors. Additionally, they should be applied considering the variety of cultural and legal frames of European countries. In the near future, it is foreseen to develop an accompanying tutorial (content, slides and videos) to assist trainers in implementing and developing teaching sessions.

## The health care provider initiates and conducts the consultation with an AYA patient in a developmentally appropriate way (considering the patient's puberty stage, age as well as cognitive & affective level)

✓ Offers a setting that respects privacy and guarantees a trustful, empathetic and respectful relationship with the patient.

✓ Explains confidentiality and makes sure to get time alone with the patient for an appropriate part of the consultation. Agrees with the AYA what to disclose or not to

disclose to the parent/guardians by the end of the consultation.

✓ Uses developmentally appropriate communication skills: adapts language and wording to the age/cognition, verifies that the patient understands the information.

✓ Clarifies the reason for the consultation and its goal and process. Gives the parents/guardians time to voice their worries.

✓ Is attentive to cues for undisclosed problems ("hidden agenda").

✓ Assesses the adolescent's capacity in autonomous decision making (competence).

✓ Involves the parents/guardians in the evaluation, treatment and further measures, balancing the importance of the patient's privacy and increasing autonomy on one hand, and the communication within the family on the other hand.

✓ Pays attention to the needs of AYAs minority groups, low socio-economic groups, homeless, refugees, LHBTI. Collaborates with trained interpreter when meeting AYA & family of foreign origin/cultural context.

**The health care provider assesses and responds to the patient's lifestyle/behaviour in a non-judgmental way, paying extra attention to areas prone to be problematic in the age group and the AYA's resources** *(The HEADSSS acronym provides useful guidance in this regards)*

✓ Assesses the patient's cognitive and affective development and daily functioning

✓ Identifies AYA's personal and environmental resources/protective factors, including the presence of trusted adult(s).

✓ Discusses daily leisure, diet, sports and social activities.

✓ Assesses school/academic performance, screens for learning difficulties and other conditions (developmental/neurocognitive) leading to poor academic outcomes.

✓ Screens for overt and covert symptoms of depression and/or anxiety in exploring mood, behaviour and expectations. Identifies self-harm, suicidal ideation and former or planned suicide attempts, as well as any victimization or violence.

✓ Explores the value of substance use from the patient's viewpoint, the patient's use/misuse of drugs, the associated risk factors, the perceived range of consequences and the preparedness for change.

✓ Discusses screen/internet/social media misuse and its health consequences.

✓ Respectfully explores sexuality and reproductive life, including questions of gender identity and sexual orientation. Responds appropriately to common situations.

✓ Assesses safe/unsafe sexual behaviour and risk for sexually transmitted infection and treats or refers for treatment; identifies need for contraception and responds empathetically to a suspected or verified pregnancy (pregnancy test, referral).

✓ Opens up for disclosure of subjection to violence and involvement in criminal activity.

## The health care provider performs a physical examination considering the patient's growth and development

✓ Explains the process of any physical examination and the reasons for it.

✓ Adapts the examination to the AYA's complaints/symptoms, physical/sports activity, social and professional background.

✓ Follows a sequence that respects patient comfort and intimacy.

✓ Evaluates and comments the patient's pubertal stage (e.g., Tanner stage).

✓ Assesses systems that change particularly during puberty (skeletal, sight, skin etc.)

✓ Investigates body shape's representations and self-image within the cultural and social context

## The health care provider provides appropriate care to an AYA living with a chronic condition and facilitates transition and adaptation to adult health care settings

✓ Assesses the impact of chronic condition on patient's daily functioning.

✓ Fosters an inter-professional approach and collaborates with the appropriate resources and people to assist the patient in coping with the chronic condition and life.

✓ Promotes optimal adolescent development: minimizes the impact of the chronic condition on education and social life together with interdisciplinary team members.

✓ Promotes self-confidence and capacity in managing health and illness.

✓ Beyond the care of the chronic condition itself, addresses the basic health care needs of the patient; (HEADSSS, immunization, complaints regarding general health).

✓ Participates in the transition process from paediatric to adult health care settings: preferred age for transfer, adolescent's expectations, available support during transition (e.g. clinical nurse, social worker and psychologist) and joint consultation with both paediatric and adult health care provider. Actively involves the AYA in all decisions regarding transition.

### Training tool

Teachers and mentors who want to set-up training sessions (bedside, small groups. Lectures) can access to a series of concrete training tools which have been specifically developed by EuTEACH faculties (www.euteach.com) to cover the UEMS training objectives. They can be particularly useful to professionals who are not familiar with the field of adolescent medicine and health. They are *freely accessible* at the following link.

In addition, the Euteach website offers a set of educational illustrations as how to organize and deliver effective and interactive training:

https://www.unil.ch/euteach/home/menuinst/how-to-teach/interactive-teaching-methods.html