

Manual For Endoscopy Learning Zone (ELZ) ESPGHAN

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1. Background

Endoscopy training in Pediatric Gastroenterology has evolved in the last couple of years from the traditional model of “learning by doing” towards the skillful application of evidence-based educational principles, supported by ESPGHAN during their meetings and endoscopy summer schools. Endoscopy training should ideally be provided by individuals with the requisite skills and behaviors to teach endoscopy effectively and efficiently, including an awareness of principles of adult education, best practices in procedural skills education, and appropriate use of beneficial educational strategies such as feedback (1-3) Technical developments in endoscopes and devices and the introduction of completely new and complex procedures characterize the field of digestive endoscopy. Therefore, endoscopists seek educational opportunities, through lectures, seminars, workshops or fellowships, to obtain and maintain relevant knowledge and technical skills, and ultimately, to gain competencies relevant to their clinical work in endoscopy.

An Endoscopy Learning Zone as a workshop can work as an excellent learning tool to start the process to train technical skills in pediatric diagnostic and therapeutic endoscopy.

This manual describes general aspects of organizing and implementing an ELZ during the annual ESPGHAN meeting but also for separately organized workshops or hands-on-courses on a national or international level.

2. Definition of ELZ

The Endoscopy Learning Zone is a training session for Beginners and for Advanced Trainees in Pediatric Endoscopy, independent of age and stage of Training. The sessions may last from several minutes to hours. It usually emphasizes problem solving, practical demonstration and hands-on training and requires an active involvement of the participants.

3. Aims of ELZ

The aims of the Endoscopy Learning Zone (ELZ) during ESPGHAN annual meetings or during Hands-on Endoscopy Workshops are:

- Arouse interest in Pediatric Endoscopy and GI-procedures in trainees
- Trainees get dedicated time and dialogue with experienced and internationally-recognized Endoscopists (Tutors) and senior ESPGHAN members
- Trainees can experience the newest procedural techniques, incl. therapeutic endoscopies in pediatric gastroenterology
- Trainees learn to set-up for procedure: appropriate placement of the patient, trainee's hands, and video monitor during procedure etc.
- Trainees are instructed in a structured formalized way for these procedures (may vary):

Beginners:

- Upper Endoscopy
- Colonoscopy

Advanced Trainees:

- Foreign body removal
- Polypectomy
- Oesophageal varices banding
- Control Gastric varices bleeding / Control gastric and duodenal bleeding
- Oesophageal balloon/ Savary-Gilliard Bougie dilatation
- Gastrostomy/ Gastrojejunostomy placement (different methods)
- Capsule endoscopy

4. Tutors

There is increasing recognition that any kind of endoscopy training should ideally be provided by persons with the requisite skills and behaviors to teach endoscopy effectively and efficiently, including an awareness of principles of adult education, best practices in procedural skills education, and appropriate use of beneficial educational strategies such as feedback (22, 23, 24). The ability to teach endoscopy is an important skill set that it can be enhanced with instruction. Formal “train the endoscopy trainer” courses have been developed to increase trainers’ awareness with regard to educational approaches that have been directly applied to endoscopy teaching. These courses are now mandatory for adult gastroenterology endoscopy trainers in the United Kingdom (25, 26) and are increasingly being implemented across other jurisdictions such as Canada (27) and the United States (28).

5. Organization and time frame

5.1. PLANNING

What? TOPIC

Choose Stations for ELZ

Who? Target Group/ Participants

Decide on number of stations for Beginners/ Advanced Trainees

Organizing Body

ESPGHAN ELZ Responsible with Conference Organizations

Endoscopy departments, hospitals, healthcare providers, etc.

Teaching Team

The Teaching team should comprise experts in the field who have teaching skills

Supporting Team

E.g. hospital staff, technicians, representatives of industry support the teaching team with clinical infrastructure, technical equipment or endoscopy- related equipment

Organizational staff (secretary, congress organization) provides support for registration, catering etc.

When? Date and Duration

Dependent on Conference Program, if during ESPGHAN annual meeting
Type and length of ELZ/ Endoscopy course and number of participants

Where? Venue and Space

5.2. FINANCES

Expenses fixed costs are calculated irrespective of the number of participants and cover all required facilities as well as required staff
Variable costs are calculated per delegate, covering for example a certain amount for registration, travelling, accommodation

Teachers should be ESPGHAN Members

Income Income can come from fees or from sponsorship

5.3. PREPARATION

Participants Announcements and advertising

ELZ is announced in print and electronic media through ESPGHAN or organizing institution

Prerequisite of participants

Qualification, knowledge, experience, etc. should be announced in the announcements and invitations

Number of participants

Number of participants should be limited in order to provide efficient practical training and assessment of learning objectives. Number

depends on; Type and numbers of ELZ, number of teaching staff and venue and equipment resources

Teaching & Supporting Team

Teaching team will be invited and assigned to the different stations

Venue

Depending on number of participants and planned stations:

Number, type and size of room(s): incl. teaching room, preparation room, storage

Furniture: tables, chairs, trolleys, endoscopic equipment

Technical support: electricity, water, light, etc.

Health & safety aspects

Audio visuals aid

Catering & Accommodation

Equipment & Supporting Material

Endoscopic/ medical equipment

Technical equipment: microphones, beamer, clock, etc.

Personal protective equipment

Teaching aids: handouts, electronic presentation techniques, maps, posters, videos, flipchart

Time schedule Work out a detailed program and schedule with assigned tutors to stations

Keep 2 Jokers as stand by Tutors

Calculate time needed for preparation and setup as well as time for clearing up after the event

5.4. DELIVERY

Time keeping and group management are important for the group dynamic

Technical aspects, teamwork, hygiene and safety issues as well as troubleshooting are essential for a successful ELZ session

5.5. ASSESSMENT

Assessment of learning outcomes is standard for structured recognized training courses and specialist education. It should be obligatory for every ELZ/Hands-on-course

Teachers define the assessment before ELZ. The assessment needs to be announced as it might require some learning by participants

Credit points are granted through ESPGHAN

5.6. EVALUATION

Formal and structured feedback is essential in order to evaluate the events from different point of views (participants, organizers and teaching team).

Evaluation forms are prepared by the organizers

6. Description of Stations and Learning objectives

A. EQUIPMENT SKILLS for Beginners

This station should focus on technical aspects of endoscopic procedures. It may also cover aspects of patient care relevant to the respective technique, health and safety issues for patients and staff (e.g. for diathermia, handling of sharp instruments, personnel protection measures, etc.) and hygiene aspects (e.g. disposal, reprocessing)

Learning objectives:

- Demonstrate understanding of use of equipment (construction, safe use, practice during procedure)
- Demonstrate understanding of theory (theory-practice-transfer)
- Demonstrate understanding of advantages, risks, limitations and possible complications of equipment
- Demonstrate understanding of possible alternatives, knowledge of trouble shooting and treatment of complications
- Choose the appropriate equipment
- Be aware of their competencies and limitations

B. UPPER ENDOSCOPY for Beginners (4,5,6,7)

Learning objectives:

- Technical knowledge of an Endoscope incl. different sizes
- Use of the correct Endoscope size in the child
- Correct handling of an endoscope
- Correct placement of the patient
- Correct placement of the Endoscopist
- Correct placement of the tower and video monitor
- Check the Instruments before starting Endoscopy
- Perform an upper Endoscopy on a model
- Use of set language in endoscopy- advance, withdraw, clockface, etc...
- Correctively describe findings in the final endoscopy report

C. COLONOSCOPY for Beginners

Learning objectives:

- Technical knowledge of a Colonoscope incl. different sizes
- Use of the correct Endoscope size in the child
- Correct handling of an endoscope
- Correct placement of the patient
- Correct placement of the Endoscopist
- Correct placement of the tower and video monitor
- Check the Instruments before starting Endoscopy
- Perform a Colonoscopy on a model
- Use of set language in endoscopy- advance, withdraw, clockface, etc...
- Correctively describe findings in the final endoscopy report

D. COLONOSCOPY for Advanced Trainees

Learning objectives:

- Recognition of loops and review of types of loop encountered
- Use of scope guide to identify and resolve loops
- Techniques to avoid looping
- Techniques for delooping
- Terminal ileum intubation techniques
- Perform a Colonoscopy on a model
- Use of set language in endoscopy- advance, withdraw, clockface, etc...
- Mini “train-the-trainer” package on guiding/supporting junior endoscopists (make one delegate train and the other act as trainer)
- Know the ESPGHAN guidelines on endoscopy

E. FOREIGN BODY REMOVAL for Advanced Trainees (8-12)

Learning objectives:

- Know indications and time point for endoscopic FB removal
- Train the use of different types of instruments for FB removal
- Know and practice techniques for removal of button batteries, magnets, sharp objects, large objects, coins, food bolus etc. (overcap, overtube etc. included)

F. POLYPECTOMY (13, 14)

Learning objectives:

- Know the different techniques of polypectomy (Snare hot & cold, Piecemeal polypectomy, Endoscopic mucosal resection, Endoscopic submucosal dissection, Underwater endoscopic mucosal resection)
- Marking the snare for polypectomy
- Knowing the electrosurgical unit and the correct power settings and current application for polypectomy in children
- Knowing different techniques and instruments for collecting removed polyps
- Knowing how to face complications (i.e. perforation, bleeding)
- Practice polypectomies on pig-models

G. OESOPHAGEAL VARICES BANDING (15)

Learning objectives:

- Know the indications and limitations of endoscopic oesophageal varices banding
- Preparation for banding- patient and equipment
- Knowing about indications for sclerotherapy for variceal therapy in very small children
- Practice variceal banding on pig-models

H. CONTROL GASTRIC/ DUODENAL BLEEDING (16, 17)

Learning objectives:

- Know methods and techniques for controlling bleeding gastric varices (Hämoclip, overtube clip, Sclerotherapy, Hemospray, Glue injection)
- Know how to stop duodenal lesions (ulcer)
- Know the indications and limitations of endoscopic therapy for gastric varices
- Know how to prepare and inject the N-butyl-2-cyanoacrylate in the gastric varices
- Practice glue therapy, variceal banding, hemospray therapy on pig-model

I. OESOPHAGEAL BALLOON and SAVARY-GILLIARD DILATATION (18,19)

Learning objectives:

- Know indications for oesophageal balloon/ Savary-Gilliard dilatation
- Know rules for dilatation (diameter, rules of 3...)
- Know how to correctly handle the balloon device/ the Savary-Gilliard technique
- Practice safe balloon and Savary-Gilliard dilatation on animal model

J. GASTROSTOMY-JEJUNAL TUBE PLACEMENT (different methods) (20)

Learning objectives:

- Know indications and contraindications for gastrostomy and endoscopic jejunal tube placement
- Know the possible complications and how to treat them
- Discuss advantage/ disadvantage of the different techniques
- Practice on a model: direct Gastrojejunostomy tube placement and Jejunostomy tube insertion through existing gastrostomy

K. CAPSULE ENDOSCOPY (21)

Learning objectives:

- Know indications for capsule endoscopy
- Know limitations of capsule endoscopy
- Know possible complications of capsule endoscopy
- Know how to set up the procedure
- Recognize specific video-endoscopic features (video)

L. Gastrointestinal Ultrasonography

In recent years, ultrasonography has become an important diagnostic tool in monitoring patients with Crohn's disease. A variety of trials have shown that gastrointestinal ultrasonography (GIUS) of the large and small bowel in patients with Crohn's disease and ulcerative colitis has at least the same diagnostic significance as other imaging tools such as MRI. In addition, several trials have recently been published on the role of intestinal ultrasound to monitor ulcerative colitis. The advantage of ultrasonography over other imaging modalities is that it is readily available and inexpensive, and results are highly reproducible. The treatment targets in inflammatory bowel diseases (IBD) are evolving and experts emphasize the need for objective monitoring of disease activity like the Stride recommendations (Peyrin-Biroulet L et al. 2015). In this context, GIUS was described in a recent publication as an "underused resource with potential paradigm- changing application" (Bryant RV et al. 2018). Since GIUS allows the accurate localization and characterization of inflammatory infiltration of the bowel wall layers and of peri-gut abnormalities, its use should not be limited to diagnostic purposes, but may be of great value in disease monitoring and therapy management in the "treat-to-target" era. Furthermore, GIUS is well recognized by international guidelines (Maaser C et al. 2018), although there is a lack of standardization and a general agreement with regard to the definition of the GIUS parameters so far. However, up to now there are only few European countries where ultrasound is performed by gastroenterologists themselves. (Compendium of Gastrointestinal Ultrasonography in IBD-TRUST and abbvie)

7. Needed Materials

7.1. To be supplied in general

- Paper towels
- Gowns
- Plastic gloves
- Shoe-protections
- Hand sanitizers
- Big waste bins
- Silicon Spray
- Water

7.2. UPPER ENDOSCOPY for Beginners

- Tower & 1 Gastroscope
- plastic model (Upper GI)

7.3. COLONOSCOPY for Beginners

- 1 Tower & 1 Colonoscope (lower)
- plastic model (Lower GI)
- Scope Guide (via Olympus/ Pentax/ Fuji?)

7.4. COLONOSCOPY for Advanced Trainees

- 1 Tower & 1 Colonoscope (lower)
- plastic model (Lower GI)
- Scope Guide (via Olympus/ Pentax/ Fuji?)

7.5. FOREIGN BODY REMOVAL for Advanced Trainees

- 1 Tower & 1 Gastroscope
- Plastic model (Upper GI)
- grippers, clamps, snare, basket

7.6. POLYPECTOMY

- 1 Tower & 1 Gastroscope
- Electric cautheter,
- Clips (when perforations occurs)
- Injection needles
- Polypectomy snares (different sizes)
- Pig colon

7.7. OESOPHAGEAL VARICES BANDING

- 1 Tower & 1 Gastroscope
- Banding legator
- Material for banding (speedbands)
- Pig stomach

7.8. CONTROL GASTRIC/ DUODENAL BLEEDING

- 1 Tower & 1 Gastroscope
- Clips
- Hemospray
- Pig stomach

7.9. OESOPHAGEAL BALLOON and SAVARY-GILLIARD DILATATION

- 1 Tower & 1 Gastroscope
- Pig stomach
- Balloon dilators of 13.5mm, 15mm and 18mm size: 4 of each 3cm new CRE
- Disposable syringe and non-disposable dilating gun: 2 of each –Alliance gun or send in Steriflate
- Achalasia balloon 30mm and 35mm: 1 of each.
- Achalasia balloon pneumatic dilator – Need gun
- Set of Savary-Gilliard Dilators

7.10. GASTROSTOMY-JEJUNAL TUBE PLACEMENT (different methods)

- 1 station for gastrostomy placement (Direct Puncture PEG plus MIC GJ-tubes placement)
- Plastic model (Upper GI)
- PEG

7.11. CAPSULE ENDOSCOPY

- **Several companies:** Medtronic (Endoflip & IA)/ Capsovision

7.12. GASTROINTESTINAL ULTRASONOGRAPHY

- **To be discussed with AbbVie and / or other companies**

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9. Companies involved

ELZ - SPONSORS LIST

n/n	Company	Contact Person	Title	E-Mail	Items
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4	ERBE	Hansruedi Fischer	Mr.	Hansruedi.Fischer@erbe-med.com	stations
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15	Mositech Medizintechnik AG	Alain Hof	Mr.	alain.hof@mositech.ch	<p>Polyp-Catcher Roth nets Tripod forceps Rat tooth forceps Endoscopic clips</p> <p>Polyp snares: 10 (variety of 30mm, 50mm hexagonal and oblique)</p> <p>Injecting endoscopic needles: 10 Biopsy forceps for upper scopes and colonoscopes Achalasia balloon 30mm and 35mm</p>
16	Desopharmex	Tobias Richter	Mr.	tobias.richter@desopharmex.ch	<p>Polyp-Catcher Roth nets Tripod forceps Rat tooth forceps Endoscopic clips</p> <p>Polyp snares: 10 (variety of 30mm, 50mm hexagonal and oblique)</p> <p>Injecting endoscopic needles: Biopsy forceps for upper scopes and colonoscopes Achalasia balloon 30mm and 35mm</p>