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# 2

## Settings and Staff

### THE ENDOSCOPY UNIT

Pediatric gastrointestinal (GI) endoscopy can be performed in an inpatient or outpatient endoscopy unit, at the patient's bedside, and in the operating room.

The endoscopy unit is usually designated for elective procedures. Typically, it has five functional areas:

- The preprocedure area consists of two major spaces:
  - One is a dedicated waiting and reception area.
  - The other serves as a space where parental consent can be obtained, the patient can be undressed and examined, and intravenous (IV) access may be established.
- Procedure area with examining rooms
- Recovery area
- Staff area with a work station for units with more than three rooms
- Storage space and a section dedicated to cleaning and disinfections of endoscopes.

Except in children's hospitals, the volume of pediatric procedure is usually not enough to run a separate endoscopic GI unit. Frequently, pediatric GI procedures must be scheduled and performed in the endoscopy unit shared with adult gastroenterologists.

Endoscopy units that are shared between pediatric and adult gastroenterologists must have a nursing and ancillary supporting staff that is comfortable and trained to work with both children and adults. They must recognize the difference in the needs of the patients. Although some units that serve both adults and children may dedicate a special room for pediatric patients, it is far more flexible for all rooms to be equipped to work with both children and adults.

Most pediatric bedside endoscopy is done in intensive care units because of the critical state of the patients. Bedside pediatric endoscopy is typically limited to children with acute GI bleeding or complicated recovery after bone-marrow or solid organ transplantation, those who are in isolation, admitted to pediatric, neonatal intensive care units, or pediatric emergency department. It is usually a complex and labor-intensive procedure in critically ill patients, which requires

**1** full cooperation between skilled endoscopist, residents, endoscopy nurses, and attending pediatric physician or intensivist;

- 2** good functional conditions of all endoscopic equipment;
- 3** a well-organized and appropriately equipped mobile endoscopy station.

The mobile station should be loaded with a light source, electrosurgical unit, biopsy forceps, retractable needles, polypectomy snares, graspers, rubber bands, epinephrine, sclerosants, different sizes bite-guards, biopsy mounting sets, fixatives, culture media, cytology brushes, and slides. The bedside area should be spacious enough to accommodate the endoscopic station, a portable monitor, and equipment for general anesthesia. Two separate suction canisters should be available for endoscopy and oral or tracheal aspiration.

The position of the bed should be adjusted for the height of the endoscopist and special indication for the procedure; for example, reverse Trendelenburg position is advantageous for patients with acute GI bleeding to reduce the risk of aspiration and to improve visibility of the cardia and subcardia areas in children with stress ulcer, which is not uncommon after neuro- or cardiac surgery. A similar position may be useful for patients with GI bleeding due to portal hypertension and gastric varices. Endoscopic procedures in the neonatal intensive care unit should be performed under a warmer.

Pediatric GI endoscopy in the operating room is restricted to children with obscure GI bleeding, Peutz-Jeghers syndrome, or other circumstances, which require intraoperative enteroscopy or precise localization of the gastrointestinal lesions or assistance during surgery; for example, a placement of the string for retrograde bouginage of esophageal stricture. The endoscopy team should be familiar with the operating room environment and regulations.

### **PEDIATRIC ENDOSCOPY NURSE**

A well-trained nurse is the key to a successful pediatric endoscopy team. This individual should be skilled in many areas such as:

- 1** How to communicate with the parents and the child in order to decrease the degree of stress and anxiety before the procedure;
- 2** Knowing how to establish and secure IV access before and, if necessary, during the procedure;
- 3** Preparing of all monitoring devices including EKG leads, pulse oximeter sensors, blood pressure cuffs appropriate for the child's size, and life support equipment such as nasal cannulas, proper size oxygen masks, ambu-bags, and intubation tray;
- 4** Selecting and preparing appropriate endoscopic equipment for the procedure;

- 5 Knowing how to monitor patients during sedation, procedure, and recovery;
- 6 Knowing how to properly mount the biopsy specimens and preparation of the cytological slides;
- 7 Being skillful in mechanical and chemical cleansing of the equipment and disinfection of the working space;
- 8 Quality control maintenance.  
It is a great help to have such a nurse on call 24 hours a day.

### **DISINFECTIONS OF THE ENDOSCOPES AND ACCESSORIES**

Thorough mechanical cleaning of the endoscope and nondisposable instruments is an essential part of any procedure, but especially a bedside endoscopy. It is an important initial phase of disinfection and also quite an effective preventive measure against clogging of the air/water channel and future mechanical failure of very expensive endoscopes. The final cleaning of the instruments is usually performed with glutaraldehyde, which destroys viruses and bacteria within a few minutes. Endoscopes are allowed to soak typically for a 20-minute period, although high-risk situations including known or suspected mycobacterial infection may require longer periods of time. The chemical itself can exacerbate reactive airway disease, asthma, or dermatitis in predisposed patients or staff. For this reason, instruments are thoroughly rinsed in water and allowed to dry prior to their next use. Air/water and suction channels are further rinsed in a solution containing 70% alcohol and also require compressed air drying to prevent bacterial growth. Instruments should be hung and stored in a vertical position in a well-ventilated cupboard to ensure dryness and minimize chance of bacterial growth.

More detailed description of disinfection technique is presented in Chapter 3.

### **DOCUMENTATION**

Different types of photodocumentation are available during endoscopy. The films or Polaroid photographs of the findings seen at endoscopy have been replaced with digital photo printers in early 1990s. A real-time videotaping is the least practical but currently the cheapest method. It used to be popular for teaching purpose. Although a digital transformation of VHS recording into the laser disk with subsequent snapshot images is now feasible, it is going to be replaced soon with DVD recorders specifically designed for endoscopic procedures.

A modern digital file system allows the endoscopist to store and print quality digital prints on a regular paper, although such equipment is costly and not routinely available. It also allows

one to generate the report of just-completed procedures and supplement the medical chart with important descriptive and visual information.

### **FURTHER READING**

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