



AMERICAN COLLEGE OF GASTROENTEROLOGY

ENDOSCOPY UNIT ORIENTATION MANUAL

Endoscopy Manual

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Foreword

Dear Readers,

It is with great pleasure that we introduce this comprehensive manual for the orientation of lay personnel, office desk staff, and ancillary support staff in your endoscopy unit. In the ever-evolving landscape of medical care, the roles of all healthcare team members, both clinical and non-clinical, are vital to the smooth operation of a medical facility. This manual equips all endoscopy unit staff with a resource that will allow them to navigate the world of Gastrointestinal Endoscopy confidently.

Gastrointestinal Endoscopy encompasses a set of diagnostic and therapeutic procedures that allow medical professionals to visually examine the digestive tract, detect abnormalities and perform real-time critical interventions. The smooth operation of a Endoscopy Unit involves several moving parts, which begin with managing appointments, handling paperwork, obtaining consent, preparing the patient in the unit for a procedure, carrying out the endoscopic procedure safely and efficiently, infection control and equipment sterilization, and finally procedural aftercare and follow-up. All contributions by staff in the Endoscopy Unit directly impact the overall patient experience and the success of these procedures. The role of each member of the Endoscopy Unit team is of key importance.

This manual has been designed to provide a comprehensive understanding of Gastrointestinal Endoscopy, procedures, equipment, process, and the roles of different team members. It has been written in clear and accessible language for the benefit of both clinical and non-clinical staff. It is meant to complement existing institutional policies and orientation processes. We hope that it will be an essential resource for integration into your staff onboarding approach.

We are excited to present you with this manual on behalf of the American College of Gastroenterology. We believe it will be a valuable asset in your journey toward excellence in Gastrointestinal Endoscopy care.

With Sincere Regards,

Drs. Nikila Ravindran, Tauseef Ali, and Dayna Early
Co-Editors, ACG Endoscopy Unit Orientation Manual

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ENDOSCOPY UNIT ORIENTATION MANUAL

Disclaimer: This orientation manual is for general guidance and does not replace any local institutional policies and protocols.



SECTION 1: PRE-ENDOSCOPY

A. Introduction

To arrange and proceed with any endoscopic procedure, multiple topics should be discussed between the gastroenterology team and the patient. Patients may discuss part of the pre-procedural details with the physician or advanced practice provider when they are seen in clinic, but other questions may arise afterwards or need further clarification. Thus, it is crucial that the clinical and non-clinical staff are knowledgeable of these aspects including, but not limited to:

1. How are procedure(s) scheduled?
2. What is the procedure? What is the purpose, benefits, and risks of performing the endoscopic evaluation?
3. What should the patient expect in terms of sedation/anesthesia and recovery?
4. What medications should be stopped prior to the procedures?
5. How should the patient take the bowel cleansing preparation for colonoscopy?
6. How should the patient arrive to and leave from the endoscopy unit?
7. What measures are taken to prevent infections (especially in the COVID-19 postpandemic era)?
8. What should the patient do if a procedure needs to be canceled?
9. How and when are the results of the procedure delivered?

By providing this information, the gastroenterology team can achieve a smooth transition from the Pre-Procedural phase to the Endoscopy phase, avoiding potential logistical/procedural complications while providing a high-quality exam.

In the following section, we provide an overview of these questions.

B. Endoscopy Procedure Scheduling

1. Endoscopy Procedure Scheduling

There are several things to consider when scheduling patients for endoscopic procedures including procedure time, procedure preparation, appropriate resources and equipment, time it takes to complete the procedure, and procedure urgency. Providers must also consider patient's overall health, clinical status, and sedation requirements when determining the appropriateness and urgency of procedures.

Many Endoscopy Units utilize block schedules. When creating a block schedule, it is important to consider:

- The number of endoscopy rooms available per endoscopist
- Availability of resources (Endoscopy Unit staff, equipment, anesthesia teams)
- Total procedure time (both amount of time per procedure and time required for room turnover)

Efficient Endoscopy Units will schedule procedures into all available blocks.



2. Challenges in Endoscopy Procedure Scheduling

There are several challenges in Procedure Scheduling. Some of these include the management of patient wait lists, prioritizing urgent procedures, same day of procedure cancellations, and Endoscopy Unit staffing (Table 1). The patient's clinical status may also change so that they are no longer well enough to safely undergo the planned procedure. Additionally, medications may need to be temporarily held or adjusted prior to a procedure, restricting the ability to schedule a procedure with short notice. Management of blood thinners is discussed in more detail in Part H of this section.

3. Patient Instructions

The delivery of information to the patient is extremely important in Endoscopy Procedure Scheduling. Patients should be informed of their arrival time, procedure preparation instructions and the Endoscopy Unit visitor policy (Table 2). They should also be informed that they will need transportation to and from

the procedure since they cannot drive after sedation. It is helpful to utilize a standardized set of procedure questions to ensure that patients are scheduled at the correct location with the appropriate medication adjustments.

Suggestions for these questions include:

1. Are you taking any blood thinner?
2. Do you use supplemental oxygen?
3. Do you have a pacemaker?
4. Do you have constipation (for patients undergoing colonoscopy)?

Optimizing the workflow for endoscopy procedure scheduling helps to ensure that patients are being scheduled for their procedure within the recommended time frame and that there are sufficient resources available to perform this procedure. Patient safety is always the primary concern!

Table 1: Challenges in Endoscopy Procedure Scheduling
Patient wait lists
Use of blood thinning medications
Bumping routine cases for urgent cases
Change in patient's clinical status
Last minute cancellations

Table 2: Procedure Scheduling – Patient Information
Arrival time
Procedure preparation instructions
Visitor policy
Any required pre-procedure testing
Need for transportation

C. Informed Consent

Informed consent is medicolegal evidence that the patient understands the indication, nature, alternatives, risks and benefits of the proposed procedure. A consent form should include the type of procedure, name of Endoscopist performing the procedure and patient identifiers. The standard consent forms are drafted based upon local institutional policies and state laws. Abbreviations should be avoided to fill these forms. It is important to make sure that the patient receives adequate time to read the consent form and all their questions are answered to their satisfaction. Informed consent is obtained in clear language that the patient is able to read and understand. In several clinical scenarios it can also be signed by the proxy (power of attorney or substitute decision maker) of the patient who is authorized to sign on their behalf. Consent can be obtained either in the physician offices prior to the patient arriving in the Endoscopy Unit or during the day of procedure at the Endoscopy Center. Regardless, prior to initiating endoscopy, utmost care should be taken to verify properly executed informed consent for the specified procedure.

One of the most important sections of information included in consent forms is the potential risks associated with a procedure. Risks are secondary to either the endoscopy procedure itself or procedure related sedation/anesthesia. Pre-printed

standard consent forms usually contain information regarding common endoscopy-related complications such as tooth injury, bleeding, perforation, infection, chances of missed abnormalities and failure to completely treat a lesion. Anesthesia-related complications include aspiration pneumonia, respiratory failure, cardiac arrest and a small risk of death. Some of the risks can be early or delayed. These may require repeat endoscopic procedures, surgery or hospitalization. The rate of complications depends upon the type of endoscopy. Furthermore, some Endoscopy-based Procedures have unique risk profiles such as a risk of pancreatitis post Endoscopic Retrograde Cholangiopancreatography (ERCP) for biliary or pancreatic interventions. The latter procedure also has a higher failure rate compared to other forms of endoscopy. It is expected that during the consent process, discussion between the endoscopist and patient should include but is not limited to the information mentioned above.

D. Explanation of Procedures, Sedation, Recovery Time, and Infection Control Procedures to Patients

An Endoscopy involves passing a flexible tube called an endoscope either through the mouth or anus depending upon the type of procedure. It has a camera for visualization and a channel through

which various instruments can be passed to perform interventions such as biopsy of tissue, resection of tissue abnormalities, dilation (stretching) of narrowed regions in the body, removal of foreign objects, control of bleeding, and stent placement (placement of a tube in a narrowed area to keep it open). Esophagogastroduodenoscopy (EGD) and Colonoscopy evaluate the upper and lower gastrointestinal tract (GI) respectively. Small Bowel Enteroscopy utilizes specialized long endoscopes with attached overtubes to reach into the deep part of the mid-gut and can be performed either through the mouth or anus depending upon the target lesion. Endoscopic Ultrasound involves an echoendoscope (endoscope with an attached ultrasound probe) which is used to evaluate either submucosal gastrointestinal lesions (abnormalities below the surface of the bowel tissue) or extra-intestinal lesions (abnormalities close to but outside the digestive tract). Extraintestinal lesions can include abnormalities that arise from the pancreas or biliary tract (bile duct system). Endoscopic Retrograde Cholangiopancreatography (ERCP) is performed with a special side viewing endoscope (called a duodenoscope) to access bile or pancreatic ducts for diagnostic and therapeutic treatment interventions that can often be done at the same time.

Endoscopic Procedures are usually performed on sedated patients. Sedation can be moderate or deep depending upon the type of procedure and preference of the endoscopist. Conscious (moderate) sedation is a lighter form of sedation that is administered by a nurse directed by the gastroenterologist while performing endoscopy. Deep sedation is a more potent form of sedation administered by an anesthesia provider, allowing the

endoscopist to focus on a more challenging procedure. Certain procedures and clinical situations warrant general anesthesia which involves intubating the patient (inserting a breathing tube down to the trachea to support the lungs) and mechanical ventilation. Procedures requiring general anesthetic are usually performed exclusively in the hospital setting.

Recovery time from the Endoscopic Procedure depends upon the type of intervention and anesthesia administered for the procedure. For most standard Endoscopic Procedures, it takes about 30 minutes for patients to recover and become ready for discharge from the Endoscopy Center. Longer recovery periods are expected for patients with significant comorbidities (complex medical problems), patients undergoing advanced therapeutic procedures, and patients requiring general anesthesia. Furthermore, some outpatients require post-procedure admission to the hospital for observation and additional care depending on their clinical outcomes.

Infection control in an endoscopy setting is imperative. Patients are a potential source of infection to both endoscopy staff as well as other patients. Standard precautions by endoscopy personnel such as hand hygiene and wearing Personal Protective Equipment (PPE) help avoid exposure to body fluids which are potentially infectious. Transmission of infection from patient to patient is prevented by carefully adhering to cleaning, disinfection, and sterilization of medical equipment, especially with reprocessing of endoscopes. Infection control measures also include disinfection of environment surfaces and engineering controls such as ventilation of rooms. Standard detailed operating procedures exist at every Endoscopy Unit for strict infection control.

E. Transportation to and from the Endoscopy Unit



Patients will be given sedation during their Endoscopic Procedure (typically either propofol, fentanyl, midazolam, or general anesthesia). These sedatives will make the patient groggy, slow their reflexes, and impair their judgement. This can take up to 12 hours post procedure to fully resolve. As such, patients are prohibited legally from driving on the day of their procedure. They should have a designated “responsible adult” (18 years or older) to drive or accompany them home post procedure, and they need to provide the name of this designated adult at the time of check-in pre-procedure at the endoscopy unit. If they do not have a responsible adult to drive or accompany them, then their procedure will likely be cancelled and rescheduled for another day. The responsible adult is usually a friend or family member well known to the patient. The responsible adult should also remain in the endoscopy unit during the patient’s entire visit (approximately 2-3 hours), so that they will be available once the patient is ready for discharge. At the time of discharge, the patient and responsible adult will meet with the endoscopist post procedure to discuss procedure results and ask questions as needed.

Patients may not be allowed to take public transportation, taxicab, shared ride service, or even walk home without being in the company of a responsible adult.

F. Expectations regarding Receipt of Results



The physician will be able to inform the patient of the endoscopy result as soon as the patient is awake from sedation. This information will

also be given to the person(s) accompanying the patient (upon the patient’s consent preoperatively), since the patient might forget everything that has been said and many patients do not recollect having the test at all. The patient will also receive a copy of the endoscopy report to take home.

In the case where a sample of tissue has been taken during the procedure, the results may take up to 7-10 days to return since samples are sent to a pathologist for examination to make a diagnosis. The pathologist will send a report to the corresponding endoscopist. Once received, the physician will contact the patient with the results via the electronic medical record or by phone. If the patient does not receive results within 7-10 days, then he or she may be asked to contact the physician’s office to inquire about the results. More information will be discussed by the endoscopist with the referring physician later pertaining to the overall management plan.

G. Patient Communication and Procedure Cancellation

Fortunately, we live in the Age of Technology and communication is rarely an issue. Nonetheless, patients should be advised that there are correct ways to inform the Endoscopy Unit if a procedure needs to be cancelled.

1

Calling the Endoscopy Unit or Physician’s Office

2

Using a medical chart HIPAA authorized physician-to-patient messaging system

The patient should cancel the procedure by: Cancellations should be performed in a timely manner, ideally with at least one week's notice prior to the procedure, giving the Endoscopy Unit the chance to reorganize the procedure schedule properly.

Other possible ways patients may want to reach the Endoscopy Unit **should be discouraged** as it can lead to gaps in communication. Examples of this include:

- | | |
|---|---|
| <p>1</p> <p>Text messages directly to physician or staff cellphones</p> | <p>2</p> <p>E-mails to personal accounts</p> |
| <p>3</p> <p>Contacting staff from other departments</p> | <p>4</p> <p>Leaving a short voice message</p> |

Why is proper cancellation of a procedure by a patient important?

Endoscopy schedules are quite busy. If one patient cancels their procedure within an adequate time frame, then it will potentially give the opportunity to another patient on the waitlist to use that scheduled time to undergo a procedure. This is especially relevant in the gastroenterology world, as some procedures may need to be scheduled more urgently and on shorter notice. A cancellation may allow such patients to have their health issues taken care of quickly!

H. Endoscopy Preparation Instructions

1. Bowel Preparation

Endoscopic Procedures of the lower GI tract (Colonoscopy, Flexible Sigmoidoscopy and Lower Endoscopic Ultrasound) require a bowel preparation. This is essential so that the inside lining of the colon is visible and not obscured by stool during the procedure.

Diet modifications

Patients will often be asked to reduce their fiber intake for several days prior to the procedure. The day before the procedure, patients are instructed to drink clear liquids only. Examples of clear liquids include water, apple juice, black coffee, Gatorade, popsicles, jello, and chicken broth.

Laxatives

Most commonly patients will be given instructions for a "split prep." This means that they will take laxatives the evening prior to the procedure and the morning of the procedure. The Bowel Preparation can be mildly uncomfortable (causing abdominal cramping and loose stools) but is extremely important.

The patient needs to finish their bowel preparation several hours before the procedure. The patient should not eat or drink anything at all ("Nil per os" or NPO) for several hours prior to the procedure so that their stomach is empty by the time the procedure is started. This is important for anyone undergoing sedation to reduce the risk of aspiration (having stomach contents go into the lungs by mistake, thus causing breathing issues). The time for the patient to be NPO depends upon the procedure and the type of sedation used (moderate or deep sedation versus general anesthesia).

Written preparation instructions should be provided to patients at the time of procedure scheduling. These instructions include information such as what dietary changes to make, when to stop eating solid food and start a clear liquid diet, and what medication adjustments they need to make.

2. Blood Thinners

Blood thinners, also called anticoagulants or anti-thrombotics, are medications that reduce the chance of developing blood clots. Because these medications increase the risk of bleeding, they may need to be stopped prior to endoscopy. The provider will determine whether this is needed based on the patient's history (clotting risk), the risk of bleeding with the procedure that they will be undergoing (high risk for bleeding versus low risk) and any anticipated interventions.

3. Medications for Diabetes (high blood sugar)

If a patient takes medications for diabetes, they may need to reduce the dose of these medications or stop them completely while they are on a clear liquid diet or NPO. These changes are made to avoid dropping their blood sugar too low. These medications can often be resumed at their normal doses after the procedure once the patient has returned to regular eating and drinking.

I. Infection Control

1. Hand Hygiene

Well-established protocols have been designed to decrease the risk of transmission of preventable infections in the Endoscopy Unit. As Endoscopic Procedures are not sterile (meaning that there is exposure to oral secretions or feces), stringent hand washing protocols (such as sterile cleansing or "scrubbing in") are not used. However, it is very

important to follow proper hand hygiene every time you make contact with a patient. This means cleaning your hands before entering the room, after seeing the patient, or when you leave the room. Adequate cleaning methods include glycerated alcohol, hand sanitizer, and proper hand washing with soap and water.

A. Glycerinated Alcohol



B. Hand Sanitizer



C. Hand Washing with Soap & Water



2. Personal Protective Equipment (PPE)



As part of the team involved in patient care, there are some protective measures you should take to prevent infection, which will depend on the setting in which you will be

performing your duties. It is very important that you notify the team if you develop any symptoms such as cough, shortness of breath, fever, or runny nose, as an ongoing infection may require a medical leave to decrease the risk of spread to patients and other team members.

In general, all staff should consider wearing a surgical mask covering the nose and mouth. This mask should have an adequate fit at the nasal bridge region.

If you are inside the endoscopy room, other protective disposable gear will be needed as there is risk of exposure to the patient's secretions such as saliva, vomit and feces.

This equipment includes:

A. Gloves



B. Surgical Gown



C. Surgical Cap



D. Shoe Covers



E. Eye Protection/Glasses



SECTION 2: ENDOSCOPY

A. Introduction

Welcome to the GI Lab! Gastroenterology is a specialized area of medicine where doctors look into body openings using flexible, lighted cameras called endoscopes. Upper Endoscopy and Colonoscopy are the two most common procedures, although many other specialty procedures exist as well. Upper Endoscopy can be used to diagnose and treat a number of conditions and symptoms. Colonoscopy is instrumental in the prevention of colon cancer, as well as in the diagnosis of other colonic diseases.

These procedures usually involve sedation, fasting, bowel cleansing, and interaction with several key personnel, as mentioned in the previous section. Although a Gastroenterologist may perform the procedure, everyone is working to achieve the same goals. This starts with the person who first answers the phone call from a patient to the person who escorts them to their family in the waiting room or to their car at the end. We understand that patients have anxiety about invasive procedures, the unknown or unfamiliar type of work we do, anesthesia, and the personal nature of the body parts we explore. Whether you are a new receptionist or an experienced GI Nurse, it is worth reinforcing that the entire staff is working together as a team to ensure a safe, efficient, thorough exam that is as comfortable and as pleasant an experience as this can be.

B. Introduction to the Endoscopy Unit

The patient experience starts even before they enter the building. Everything the patient sees, hears, or feels is part of that experience and leaves an impression on them and their family. It is important to ensure that the patient feels safe, heard, and cared for by each member of the team as they transition from one area of the practice to another. Remember, one bad interaction can spoil the entire patient experience.

1. Front Office Staff/Registration

These team members will have the first opportunity to make an impression on the patient and set the stage for their experience. Even before arriving, the person who answers the phone represents the entire practice. A warm, friendly smile greeting the patient makes them feel welcome. Front Office Staff ensure that all pre-registration materials and insurance forms are complete. Front Office Staff notify the next team member on the clinic or procedure side when the patient is ready. Front Office Staff may also help with coordinating drivers, discharges, and follow-up appointments.

2. Waiting Room Staff/Volunteers

These team members ensure the waiting area is clean and comfortable. Patients have access to reading materials, television, and Wi-Fi. Waiting room staff may also check with families to offer coffee or beverages while they wait.



3. Pre-Procedure Room

Nursing team members greet the patient in the waiting area and escort them to a room in the endoscopy area. The patient is assisted into a gown and a physical assessment takes place. An intravenous (IV) catheter is placed to allow the patient to receive sedation during the procedure. Medications are recorded, and the allergies and patient history are reviewed. Patients and family will have the opportunity to ask questions in a private and secure setting.

4. Procedure Room

The patient is escorted to the Procedure Room. All team members follow universal precautions, the Society of Gastroenterology Nurses and Associates (SGNA) guidelines and Occupational Health and Safety Administration (OSHA) regulations, while ensuring that the patient is safe and comfortable. The patient is greeted by Nursing Staff, the Anesthesia Provider, and the Physician. Any questions the patient may have prior to the procedure are addressed. A signed consent form is obtained prior to any procedure. Vital signs are monitored throughout the procedure. Utmost care is taken to document all events throughout the procedure, label all specimens, and provide a high-quality exam while maintaining optimal patient safety.

5. Recovery Room

The patient returns to the recovery room via a stretcher. They are accompanied by Nursing or Anesthesia Team members. Vital signs continue to be monitored and post-op documentation is completed. The patient and their family are informed of findings, follow-up appointments are made, new prescriptions are sent to the pharmacy, and any additional tests are ordered/scheduled at this time. The patient and their family are again afforded the opportunity to ask any questions. Once discharge criteria are met, the patient is escorted to their vehicle with a driver. All patients are given emergency contact information to enable them to seek prompt healthcare access related to procedure questions or complications if needed, along with written discharge instructions. As noted in Section 1E, patients receiving anesthesia need an adult to accompany them home.

6. Medical Device Reprocessing/Scope Cleaning Room

Medical equipment is transported to the processing room and the procedure room is cleaned for the next case. It is important that all team members adhere to strict cleaning/processing regulations to ensure equipment is safe for each patient. These team members must be able to follow detailed steps regarding rigorous inspection, cleaning, drying, and storage. Team members wear PPE, move from dirty to clean, and document scope processing and handling in a rigid manner. Periodic competency testing and assessment of adequacy of scope cleaning are typically done.

C. Endoscopy Unit Workflow

Patients check in at the registration desk or reception. Any forms, insurance information, or necessary verification is done there. The Front Office Staff inform the Pre-Procedure Staff that the patient is ready.

The Pre-Procedure Staff bring the patient back to the Preoperative Care section, ask the patient to wear a gown, take a brief medical history and vital signs, and obtain intravenous access ("start an IV"). Any issues of concern are communicated promptly to the Endoscopist and Anesthesia Provider.

Prior to the patient entering the Endoscopy Room, the GI Technician ensures that the appropriate equipment is set up and functioning properly for the patient's procedure. The patient is wheeled into the Endoscopy Room by the designated staff and the patient is connected to oxygen and various monitors. The Endoscopist may meet the patient in the Pre-Procedure area or in the Endoscopy Room, taking an additional focused history along

with obtaining informed consent for the planned procedure. Following informed consent, the patient is positioned on their left side. Before any medication is administered, the entire team pauses to perform what is called a time-out which allows for confirmation that the correct patient is present, the correct procedure is being performed, and also allows for additional time to discuss any concerns such as bleeding risk or allergies. The Gastroenterologist, Anesthesiologist, GI Tech, and GI Nurse work in synchrony to ensure the patient is safe and comfortable during the duration of the procedure.

During the procedure, the Endoscopist performs the endoscopic procedure. The Anesthesiologist maintains the patient's comfort, airway, and vital signs. The Endoscopy Nurse monitors the patient's vital signs and comfort level throughout the procedure and administers additional medication if undergoing conscious sedation. The GI Technician works closely with the Endoscopist to perform biopsies, polypectomies or other endoscopic techniques. At the end of the procedure, the Endoscopy Room Nurse and Endoscopist confirm that any biospecimens collected are appropriately labeled and sent to the laboratory. Additionally, the GI Nurse will ensure the medications are properly disposed of.

The patient moves to the postop area and is monitored fully until stable for discharge. All report writing and printing is done by the Endoscopist while the patient is waking up post procedure. The Medical Device Reprocessing Technician ensures that the scopes are handled appropriately, disinfected according to guidelines, and the room is fully cleaned for the next case during this recovery time. The Endoscopist reviews the findings, provides reports and discharge instructions, and makes any follow up plans with the patient before they leave.

D. Introduction to the Various Personnel in the Endoscopy Unit and Their Roles & Responsibilities

The following individuals work as a cohesive team to ensure patients receive the highest quality care. Many other roles may be present, and division of labor may be even more defined in a larger setting, for example a hospital.

1. Administrative Assistant/Unit Clerk/Patient Registration

The Unit Clerk is one of the most important team members of the Endoscopy Unit as they represent the entire team, and often are the first in-person contact with the patient upon arrival. The primary responsibilities of the Unit Clerk are to provide personalized, prompt attention to the patients and family members, help verify their demographic and procedure information, and ensure that they are treated with dignity and respect.



Patient Registration – A Deeper Dive

- A. Helps patients check in by confirming patient name, insurance information, and correct procedure details with the endoscopy schedule.
- B. Serves as a billing/financial liaison between the facility/institution, insurance company, and the patient.
- C. Responsible for answering phones, communicating with other team members, patients and family members in person, via telephone and/or via email.
- D. Communicate with pre-operative area regarding arrival time of the patients, special needs/assistance required by the patients, and regularly update the patient families with wait times and procedure status.
- E. Assists in maintaining records and systems.
- F. Composes, types, and transcribes correspondence, forms, reports, and other written communications as required. Communicates with others in person, telephone, and/or email.
- G. May receive and screen visitors and handles general inquiries.
- H. Establishes and maintains filing systems. Orders and stocks supplies.
- I. Conforms to all applicable Health Insurance Portability and Accountability Act (HIPAA) billing compliance and safety guidelines.
- J. Expected to attend all Endoscopy team meetings and actively participate/give feedback to help continuously improve outcomes and patient experience.
- K. Complete special projects as requested by Endoscopy Director or Endoscopy Charge Nurse.
- L. May be asked to assist in confirmation and reminder calls to the patients.

2. Pre-Procedure Staff Nurse/Attendant

The Pre-Procedure Nurse is an essential member of the Endoscopy team as they help get the patient ready for the procedure and help answer procedure-related questions. The primary responsibility of the Pre-Procedure Nurse is to take relevant history, place an intravenous line, attach all appropriate monitors to the patient, and assess the patient's status as of that moment. This is a critical step of the patient's care as this intake process ensures that the patient is healthy and ready for the procedure. During this evaluation, any concerns which arise from the patient or the pre-procedure staff are communicated to the Anesthesiologist and Endoscopist to review and ensure that the patient is ready and safe for the procedure. Issues which may arise include: inadequate colon preparation, patient not fasting, not having a ride, vital sign abnormalities, or new cardiopulmonary symptoms which may make postponing the procedure more appropriate.



Pre-Procedure Personnel – A Deeper Dive

- A. Wears scrubs, gowns, gloves, masks, and protective eyewear as per institution policy.
- B. Admits patient to the Endoscopy Unit.
- C. Checks patients' electronic medical record (EMR) for completeness of orders, pre-procedure labs and relevant testing.
- D. Implements and monitors patient care plans.

- E. Monitors, records, and communicates the patient's condition as appropriate. This includes assuring the patient is fasting, has taken their bowel preparation, has a ride, and that there are no major changes in health that might prevent the procedure from proceeding.
- F. Serves as a primary coordinator of all disciplines for well-coordinated patient care.
- G. Notes and carries out physician and nursing orders.
- H. May help obtain procedure consent from the patient and ensure proper understanding of the procedure.
- I. Applies the existing body of evidence-based practice and scientific knowledge in health care to nursing practice, ensuring that nursing care is delivered based on patient's age-specific and clinical needs as described in the department's scope of service.
- J. Works in a constant state of alertness and safe manner.
- K. Conforms to all applicable HIPAA billing compliance and safety guidelines.
- L. Expected to attend all Endoscopy team meetings and actively participate/give feedback to help continuously improve outcomes and patient experience.
- M. Complete special projects as requested by Endoscopy Director or Endoscopy Charge Nurse.
- N. May be asked to assist in confirmation and reminder calls to the patients.

3. Endoscopy Room Nurse

The Endoscopy Intra-procedure Nurse is an integral member of the healthcare team and in the procedure room setting. They work in cooperation with the Anesthesiologist, Endoscopist, Technician, pre-procedure team and post-operative team to provide the best quality care to the patient. This includes patient advocacy. It is important to remember that various team members may seem

to have different priorities at times. The GI Nurse is instrumental in maintaining quality care despite many different perspectives at work. The primary responsibility of the intra-procedure nurse is to help deliver safe, direct patient care during all phases of the procedure.



Endoscopy Nurse – A Deeper Dive

- A. Wears scrubs, gowns, gloves, masks, and protective eyewear as per institution policy.
- B. Checks placement of IV line and functionality.
- C. Checks for appropriate history & physical documentation in the EMR by the Endoscopist and the Anesthesiologist.
- D. Reviews demographic information and confirms the correct procedure and consent before taking the patient to the intra-procedure area.
- E. Monitors, records, and communicates patient condition as appropriate.
- F. Helps attach monitors including telemetry, blood pressure monitors, and oxygen mask to the patient.
- G. Assists with the time-out procedure and helps ensure that it is done correctly before the start of the procedure.
- H. Keeps track of tissue biopsies, location, and relevant testing being sent out to pathology. At the end of the procedure,

helps ensure a proper recall has been done of all the pathology samples taken during the procedure.

- I. Assists the Endoscopy Technician with changing patient positions (as needed), handling procedural tools and specimen bottles.
- J. Transports the patient to post-procedure/recovery area alongside the Anesthesiologist
- K. Conforms to all applicable HIPAA, billing compliance and safety guidelines.
- L. Expected to attend all Endoscopy team meetings and actively participate/give feedback to help continuously improve outcomes and patient experience.
- M. Complete special projects as requested by Endoscopy Director or Endoscopy Charge Nurse.
- N. Works in a constant state of alertness and safe manner.

4. Endoscopist (Physician)

The Endoscopist serves a critical role as a key team leader, and agrees to maintain the existing culture of cooperation, quality, cleanliness, civil behavior, mutual respect, patient privacy, and overall excellence of care per institutional standards. The Endoscopist physically performs the procedure, with direct assistance from the GI Tech and GI Nurse.



The Endoscopist – A Deeper Dive

- A. Responsible for evaluation of the patient in the pre-procedure area.
- B. Ensures appropriate documentation including History & Physical and order placement.
- C. Reviews risks, benefits, and purpose of the procedure and obtaining consent.
- D. Maintains appropriate accreditation as per national and institutional standards.
- E. Communicates with the Anesthesiologist to develop an appropriate plan for anesthetic.
- F. Participates in the timeout before initiation of the procedure.
- G. Performs the procedure in a safe manner that meets all the quality indicators.
- H. Responsible for documenting the events of the endoscopic procedure in the report writing and EMR charting areas.
- I. Discharges the patient with records and a discussion of the findings, their implications, and expected follow-up.
- J. Participates in quality improvement, data tracking, and outcomes.
- K. Leads the patient care team in emergencies.
- L. Self-report any complications, infections, negative outcomes, or any potentially adverse result.

5. Anesthesiologist/Anesthesia Provider/CRNA (Certified Registered Nurse Anesthetist)

Responsible for the assessment of a patient's perioperative condition including thorough history and physical examination (assessment of patient airway, vital signs, review of patient's previous medical conditions and anesthetic history, and relevant lab results and medication). The Anesthesiologist determines the patient's candidacy for anesthesia and maintains both safety and comfort. The Anesthesia Staff ensures that all anesthesia supplies and equipment are in proper working order and fully stocked. The Anesthesiologist (MD or CRNA) administers the

anesthesia, monitors the patient throughout the procedure, and is responsible for their appropriate recovery. However, sometimes a patient undergoes conscious sedation ("twilight anesthesia") administered by the Endoscopist or GI nurse.

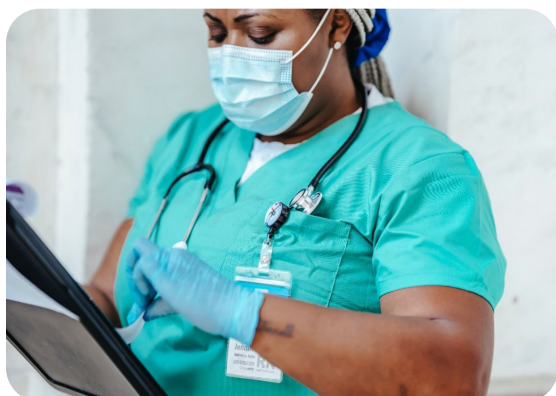


Anesthesiologist/CRNA – A Deeper Dive

- A. Responsible for reviewing and assuring pre-operative labs are optimized.
- B. Develops and executes anesthetic plan in conjunction with the Endoscopist.
- C. Maintains hemodynamic stability during the procedure.
- D. Assures proper ventilation and maintenance of oxygen saturation and airway during the procedure and post-procedure recovery. Responsible for ensuring safety and comfort of the patients during the perioperative period.
- E. Monitors administration of proper medications for adequate sedation.
- F. Takes a lead in emergencies, for example supervising all activities during a code blue or cardiopulmonary arrest.
- G. Responsible for ensuring safe and full recovery of the patient without complications.
- H. Postprocedure management of patient after anesthesia, ensuring comfort and stability for proper patient discharge
- I. Expected to attend appropriate Quality Improvement (QI or QA) and patient safety meetings.

6. Recovery Room Team

The Recovery Room/Post-procedure Nurse is an integral member of the Endoscopy Unit. They work in cooperation with the Anesthesiologist, CRNA, Endoscopist, and Procedure Nurse to provide the best quality care to the patient. Issues that may arise include adverse reactions to sedatives, pain, nausea, or abnormal vital signs. The primary responsibility of the Post-procedure Nurse is to ensure that the patient has recovered completely without complications and understands the procedural details.



Recovery Room Team – A Deeper Dive

- A. Receives the patient in post-procedure area from the Intra-procedure Nurse and Anesthesiologist/CRNA.
- B. Helps transfer the monitors and receives detailed sign-out from the Intra-procedure Nurse regarding the details of the procedure, relevant events and medications administered.
- C. Assesses patient and assures good hemodynamic vital signs and airway status.
- D. Communicates with the Anesthesiologist/CRNA and Endoscopist in case of unexpected complications or new acute Post-Procedure concerns.
- E. Assesses and coordinates patient's discharge planning needs with the members of the healthcare team.

- F. Ensures that the patient or a family member has received the procedural details from the Endoscopist.
- G. Gives discharge instructions and paperwork to the family member and the patient.

7. GI or Endoscopy Technician/Medical Device Reprocessing Technician

The Endoscopy Technician is a key member of the healthcare team who assists with all endoscopic procedures and works in tandem with the Endoscopist to assure safe procedure completion without complications. The GI Technician works closely with the Endoscopist to perform biopsies, polypectomies or other endoscopic techniques. The GI Technician may assist with patient positioning, abdominal pressure, and has the primary responsibility for maintaining the proper condition of the endoscopes. This includes reprocessing the scopes in a safe manner for ongoing use between patients. Medical devices require special processing to ensure that they are sterile prior to use on the next patient. Each endoscopic device requires its own type of reprocessing, and the Medical Device Reprocessing Technician ensures all endoscopes are ready for use for the next procedure.



**Medical Device Reprocessing Technician –
A Deeper Dive**

- A. Anticipates and plans individualized care for the patient for all routine endoscopic procedures and anticipates patient and provider needs.
- B. Manages the accessory table and/or endoscopic equipment and assists the Provider Endoscopist on all types of procedures utilizing the principles of surgical asepsis, infection control, and universal precautions.
- C. Maintains an orderly and organized work environment and takes responsibility for the maintenance and care of all equipment.
- D. Prioritizes effectively, implements problem solving skills and performs in a coordinated manner when delivering care in high stress environments.
- E. Demonstrates expertise in the operation and function of instrumentation and equipment for routine endoscopic procedures.
- F. Maintains endoscopes and other instruments, demonstrating understanding of appropriate cleaning, high level disinfection methods, and serves as a resource and mentor to less experienced staff on equipment and instrumentation.
- G. Responsible for patient transport when required, light housekeeping when required, monitoring of laundry, sharp disposal containers, and waste disposal needs, and other services as day-to-day operations demand.

This constitutes an introduction to what activities take place in an Endoscopy Unit, the overall workflow, and the role of each key participant. You will of course have formal training, hands on training, and direct supervision during your training phase, and potentially periodic competency training. Good luck, welcome to the Endoscopy Unit, and we hope you take pride in doing meaningful and important work!



SECTION 3: PROCEDURES AND EQUIPMENT

A. Introduction

In the Endoscopy Unit, a variety of equipment is used for endoscopic procedures. Many of these are common for all procedures. These include monitors that will track the patient's breathing, heart rate, telemetry, blood pressure and temperature during the procedure.

The patient will typically receive oxygen support via nasal cannula. The Physician and Staff will use a variety of equipment to perform the Endoscopic Procedures and will work with a team to accomplish this including an Anesthesia Provider, Nurse, and an Endoscopy Technician.

The equipment used in the Endoscopy Room includes endoscopic equipment, primarily the scope, but also a computer unit that helps the physician create a report and permits capture of endoscopic images, and a base

processing unit and light source that power the scope directly. There is also a monitor in the procedure room that the team uses to see the live video images from inside the GI tract for diagnosis and treatment.

In this section, we will cover general information regarding endoscopic procedures, equipment and ancillaries (tools used during an endoscopy) so that you can better understand the procedures undertaken and better inform our patients as you interact with them. As a team member, this will help you provide compassionate and high-quality care.

Please note that all equipment is cleaned based on a specific protocol after each procedure to ensure safety for all patients.

B. Procedures

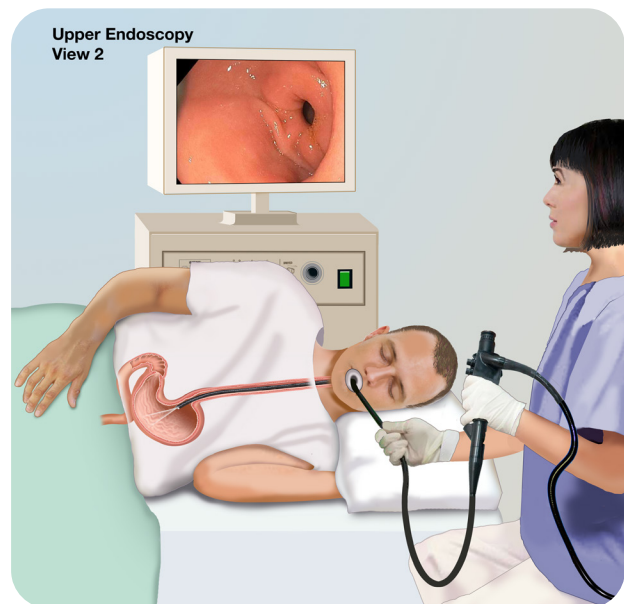
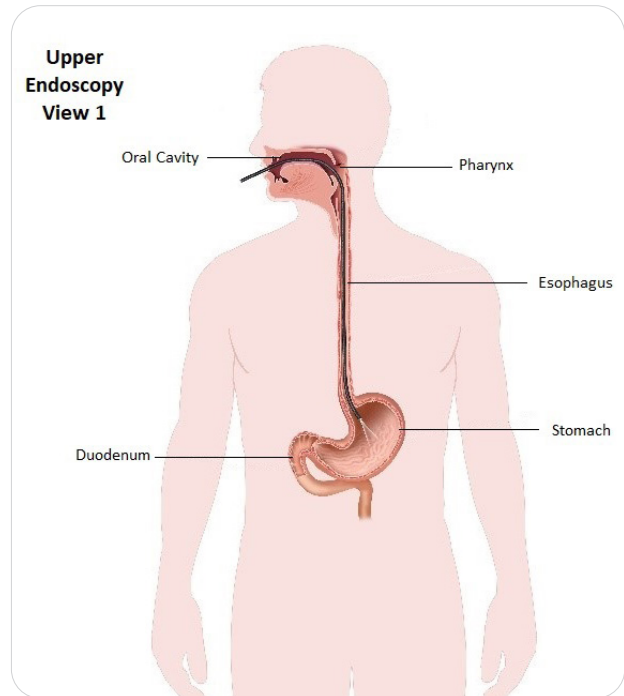
1. Upper GI Endoscopy or EGD (Esophagogastroduodenoscopy)

- A. For an upper endoscopy, the Endoscopist uses a small flexible tube called the endoscope, that has a light and high-definition (HD) camera to visualize the upper digestive tract. This allows visualization from the mouth to the duodenum, the portion of small intestine just beyond the stomach. During this exam, the Physician can evaluate and treat a variety of ailments including heartburn and reflux changes, ulcers, bleeding, gastritis and strictures.

Typical indications for this procedure include:

1. Heartburn or gastroesophageal reflux disease (GERD)
2. Dysphagia or trouble swallowing
3. Abdominal pain
4. Bleeding (throwing up blood, anemia)
5. Preoperative and post-operative exams such as in patients preparing for or who have undergone bariatric surgery or hernia surgery
6. Nausea and vomiting
7. Placing a feeding tube such as a percutaneous endoscopic gastrostomy (PEG) tube
8. Examination of tumors or cancers in the upper GI system

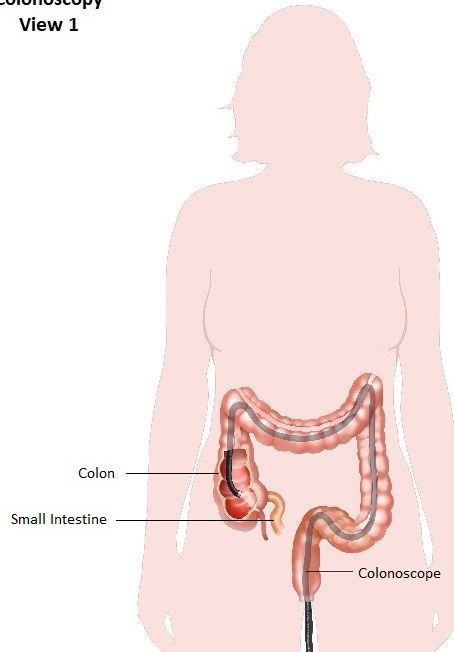
- B. The upper endoscopy exam typically takes about 15-20 minutes from start to finish (entry to Endoscopy Room and exit to Recovery Room). The time during which the endoscope is in the patient is typically 5-10 minutes.



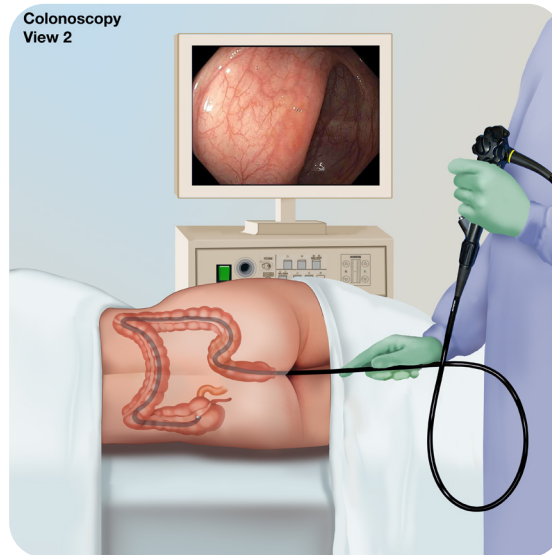
- I. The patient will be sedated by an Anesthesia Provider for patient comfort and safety. Generally, an Endoscopy Technician and a Nurse will also be in the room to help with the procedure.
- II. A small bite block will be placed into the patient's mouth to hold it open for the procedure. The endoscope does not interfere with the patient's breathing.
- III. The endoscope is a small flexible tube (about the size of your little finger) which is guided through the mouth, into the esophagus, into the stomach, and finally the duodenum
- IV. The endoscope has a HD image camera on the tip of the scope. There is also a channel or tube in the scope for suction to remove secretions. There typically is also a channel to flush water through to wash areas for better visualization. Through the channels the team is also able to take small samples or tissue biopsies, or pass other tools to help treat strictures in the esophagus, control bleeding or treat complications of reflux. These ancillary tools are described below.
- V. The patient should not experience significant discomfort during or after the procedure. When the procedure is completed, sedation is stopped, and the patient will awaken after a short time of recovery.

2. Lower GI Endoscopy or Colonoscopy

Colonoscopy
View 1



Colonoscopy
View 2



COLONOSCOPE TIP



- A. Colonoscopy or Lower GI Endoscopy is when a Physician Endoscopist uses a flexible small tube called a Colonoscope, that has a light and HD camera, to visualize the lower digestive tract from the anus to the start of the colon (called the cecum), and sometimes the last portion of the small intestine. During this exam, the Physician can evaluate and treat a variety of ailments including colitis, bleeding, polyps, and cancers.

Typical indications for this procedure include:

1. Diarrhea or constipation
 2. Colon cancer screening
 3. Treatment of colon polyps
 4. Bleeding evaluation or treatment (blood per rectum or hematochezia)
 5. Exams for patients with inflammatory bowel disease (IBD) such as Crohn's disease or ulcerative colitis
 6. Treatment of colon strictures
 7. Tumors or cancers in the colon and rectum
- B. The Colonoscopy exam typically takes about 30-40 minutes from start to finish (entry to Endoscopy Room and exit to Recovery Room).
- I. The patient will be sedated by an Anesthesia Provider for patient comfort and safety. Generally, an Endoscopy Technician and a Nurse will also be in the room to help with the procedure.
 - II. The Colonoscope is a small flexible tube (about the size of your index finger) that will be guided through the anus, into the colon, and finally the cecum. The ileum (area of the small bowel that connects to the colon) can also be entered during this exam when needed.
 - III. The endoscope has a HD image camera

on the tip of the scope. There is also a channel or tube in the scope for suction to remove secretions. There typically is also a channel to flush water through to wash areas for better visualization. Through the suction channel, the team is also able to take small samples or tissue biopsies, or pass other tools to help treat and remove polyps, control bleeding or inject medications or therapy. These ancillary tools are described below.

The patient should not note significant discomfort during or after the procedure. When the procedure is completed, sedation is stopped and the patient will awaken after a short time of recovery. The patient may expel gas after the procedure, which is normal.

3. Push Enteroscopy or Small Bowel Endoscopy

- A. A Small Bowel Endoscopy is when an Endoscopist uses a small tube (called the Small Bowel Endoscope or Enteroscope) that has a light and HD camera, to visualize the upper digestive tract from the mouth through the stomach and into the small intestine. Visualization of the deep small bowel can be aided by a Double Balloon Endoscope which uses two small balloons on the scope to help propel the scope further into the small intestine. The small intestine is up to 20 feet long. Sometimes this procedure will be done with the aid of X-Ray to help the Physician advance the scope during the procedure. These procedures may be done at an Outpatient Endoscopy Center but often will be done at the Hospital Endoscopy Unit. During this exam the physician can evaluate and treat a variety of ailments such as bleeding and anemia.

Typical indications for this procedure include:

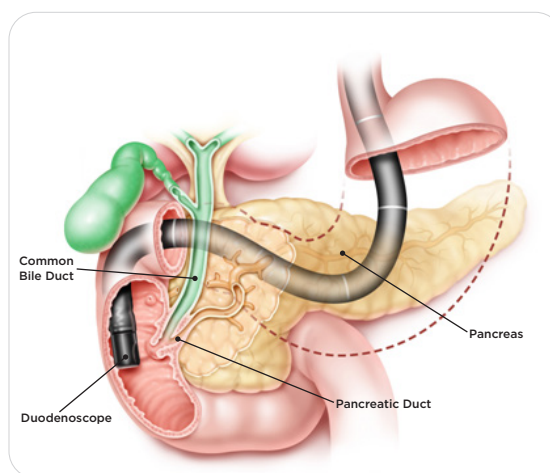
1. Anemia or loss of blood
2. Nutritional or digestion and absorption issues
3. Crohn's disease
4. Bleeding per rectum or hematochezia
5. Placement of a feeding tube into the small intestine
6. Treatment of colon strictures
7. Tumors or cancers in the small intestine

B. The Small Bowel Endoscopy exam typically takes about 30-60 minutes from start to finish (entry to Endoscopy Room and exit to Recovery Room).

- I. The patient will be sedated by an Anesthesia Provider for patient comfort and safety. Generally, an Endoscopy Technician and a Nurse will also be in the room to help with the procedure.
- II. A small bite block will be placed into the patient's mouth to hold it open for the procedure. The endoscope does not interfere with the patient's breathing.
- III. The endoscope is a small flexible tube (about the size of your little finger). It will then be guided through the mouth, into the esophagus, into the stomach, and finally the small intestine
- IV. The endoscope has a HD image camera on the tip of the scope. There is also a channel or tube in the scope for suction to remove secretions. There typically is also a channel to flush water through to wash areas for better visualization. Through the channels, the team can take small samples or tissue biopsies, or pass other tools to help control bleeding. These ancillary tools are described below.

- V. The patient should not note significant discomfort during or after the procedure. When the procedure is completed, sedation is stopped and the patient will awaken after a short time of recovery.

4. Endoscopic Retrograde Cholangiopancreatography (ERCP)



- A. Endoscopic Retrograde Cholangiopancreatography (ERCP) is an endoscopic procedure used to evaluate issues with the liver, bile ducts, gallbladder and pancreas. The Endoscopist uses a small tube called a duodenoscope (endoscope with a side-viewing camera), that has a light and HD camera. As part of normal human anatomy, there are small tubes or ducts that drain fluids from the liver and pancreas into an area of the small intestine (duodenum) through an opening called the ampulla. The duodenoscope offers a different view than a standard scope because the viewing section is on the side of the duodenoscope tip, which helps with access to the ampulla. Using ERCP, the Physician can treat a variety of ailments such as jaundice, bile duct stones and pancreatitis.

Typical indications for this procedure include:

1. Jaundice or yellowing of the skin from gallstones
 2. Elevated liver tests
 3. Abdominal pain from pancreatitis
 4. Preoperative and post-operative exams for patient with prior liver, gallbladder, or pancreatic surgery
 5. Tumors or cancers in the biliary system or pancreas
 6. Placement of stents (see below) to alleviate strictures in the bile duct
- B. The ERCP exam typically takes about 30-60 minutes, but can take longer from start to finish (entry to Endoscopy Room and exit to Recovery Room).
- I. The patient will be sedated by an Anesthesia Provider for patient comfort and safety. Generally, an Endoscopy Technician and a Nurse will also be in the room to help with the procedure. X-Rays are taken to facilitate ERCP. ERCPs are typically done in a Hospital Endoscopy Unit.
 - II. A small bite block will be placed into the patient's mouth to hold it open for the procedure. The duodenoscope does not interfere with the patient's breathing.
 - III. The duodenoscope, which is a small flexible tube (about the size of your little finger), will then be guided through the mouth, into the esophagus, into the stomach and finally to the duodenum and the ampulla. The ampulla, bile duct and/or pancreatic duct are cannulated using equipment guided through the instrument channel of the duodenoscope.
 - IV. The endoscope has a HD image camera on the tip of the scope. There is also a channel or tube in the scope for suction to remove secretions. There typically is also a channel to flush water through to wash areas for better visualization. Through the channels, the team may also be able to take small tissue or fluid samples or tissue biopsies or pass other tools to help treat the bile duct stones and indications listed above. Small catheters will be placed through the working channel of the endoscope and inserted in the ducts draining the liver, gallbladder, and pancreas. Contrast or dye is then injected to visualize the ducts under x-ray. This channel will then aid in therapy of issues found with a variety of ancillary tools including stents, balloons to dilate strictures and sampling devices such as forceps or brushes. These ancillary tools are described below.
 - V. The patient should not note significant discomfort during or after the procedure. When the procedure is completed, sedation is stopped and the patient will awaken after a short time of recovery. ERCP procedures can be associated with a higher risk of complications than other endoscopic procedures as they are associated with post procedure pancreatitis.



X-Ray/Fluoroscopic Image of ERCP

5. Upper GI Endoscopic Ultrasound (EUS)

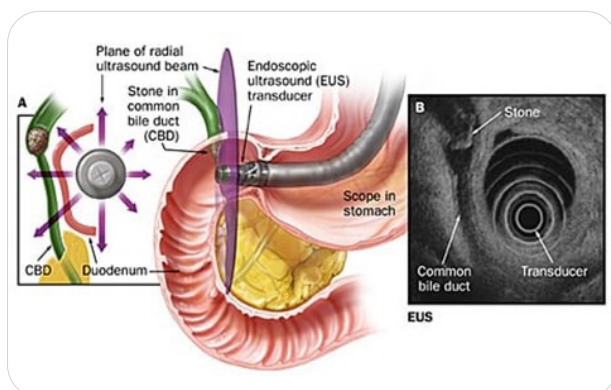


Image credit: Suburan Gastroenterology, Ltd.

A. An Upper Endoscopic Ultrasound is a procedure where a Physician Endoscopist uses a small tube called the echoendoscope (which has a light, HD camera and ultrasound device) to visualize the upper digestive tract from the mouth to the first portion of the duodenum, just beyond the stomach. The ultrasound device allows imaging of the layers of the wall in the upper GI tract, and also adjacent organs around the intestines such as lymph nodes, pancreas, liver, gallbladder, bile ducts, spleen, aorta, and heart. During this exam, the Physician can evaluate and treat a variety of ailments that can occur in the intestines and surrounding (extra-intestinal) organs.

Typical indications for this procedure include:

1. Pancreatitis
2. Esophageal, gastric or pancreatic cancer
3. Abdominal pain from pancreatic diseases
4. Gallstones and jaundice
5. Submucosal tumors (growth below the inside lining of the intestines)
6. Cysts or cystic growths in the pancreas

B. The Upper Endoscopic Ultrasound exam typically takes about 20-60 minutes from start to finish (entry to Endoscopy Room and exit to Recovery Room).

- I. The patient will be sedated by an Anesthesia Specialist for patient comfort and safety. Generally, an Endoscopy Technician and a Nurse will also be in the room to help with the procedure.
- II. A small bite block will be placed into the patient's mouth to hold it open for the procedure. The endoscope does not interfere with the patient's breathing.
- III. The echoendoscope, a small flexible tube (about the size of your little finger), will then be guided through the mouth, into the esophagus, into the stomach, and finally the duodenum.
- IV. The echoendoscope has a HD image camera on the tip of the scope. There is also a channel or tube in the scope for suction to remove secretions. The ultrasound tip at the end of the scope helps visualize areas of interest as noted above. There is typically also a channel to flush water through to wash areas in the upper digestive tract for better visualization. Through the channels, the team may also be able to take small samples of fluid or tissue by passing a fine biopsy needle into lesions noted under ultrasound guidance (Fine Needle Aspiration (FNA) and/or Fine Needle Biopsy (FNB)).
- V. The patient should not experience significant discomfort during or after the procedure. When the procedure is completed, sedation is stopped and the patient will awaken after a short time of recovery.

6. Lower GI Endoscopic Ultrasound or Rectal Ultrasound

A Lower GI Endoscopic Ultrasound is when a Physician Endoscopist uses a small tube called the echoendoscope, that has a light, HD camera and ultrasound device, to visualize the lower digestive tract in the regions of the anus, rectum and lower/distal colon. The ultrasound device allows imaging of the layers of the wall in the lower GI tract, and also adjacent organs around the intestines (extra-intestinal organs) such as lymph nodes, prostate, seminal vesicles, uterus and vagina. During this exam the physician can evaluate and treat a variety of ailments that can occur in the intestines and these surrounding organs. It is primarily used in fecal incontinence evaluations. The Lower GI Ultrasound can evaluate the anal sphincter directly (muscle that controls continence of stool or closure of the anus). It can also be used to look at lesions or masses in the rectal area including cancer.

Typical indications for this procedure include:

1. Fecal incontinence
2. Rectal cancer or mass

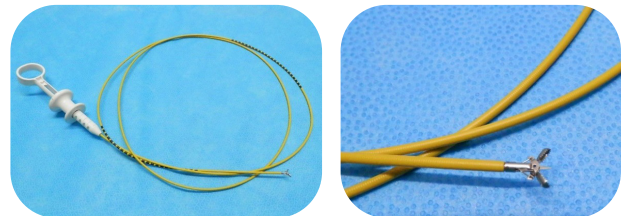
C. Ancillary Equipment used with Endoscopes:



Ancillary equipment or accessories in the Endoscopy Unit are tools (other than the endoscope) used during Endoscopic Procedures to help with evaluation and treatment of health conditions occurring anywhere in the GI tract.

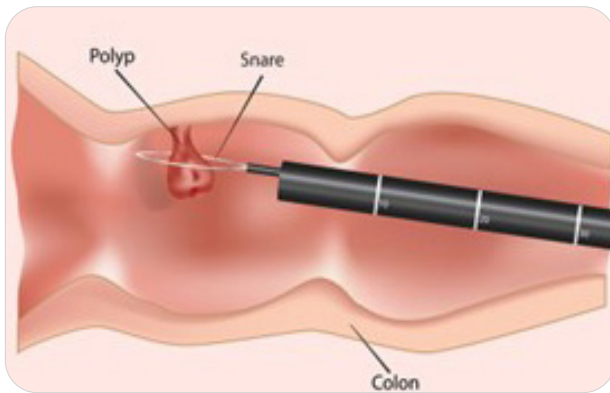
These tools can be used in nearly of all the Endoscopic Procedures listed above due to the common design of the endoscopes used. The treatment team, led by the Endoscopist, will use the ancillary equipment as needed and frequently multiple accessories will be used in one procedure. The vast majority of these will be placed through the scope instrument channel, although some are used alongside the endoscope or with x-ray guidance. Most tools are designed to be placed through the channel at the top of the scope, and then advanced through the scope and out the channel on the tip of the scope and into the intestinal tract. A handle on the end of the accessory is then used by the Endoscopist or Technician to perform the action of the accessory required, such as biopsy, injection or balloon inflation as examples. The accessories are generally disposable and are not reused on more than one patient. The accessories are small catheters or wire-based devices. Some can use electrocautery for added effect (seen with biopsies, snares and thermal catheters as examples).

1. Biopsy Forceps



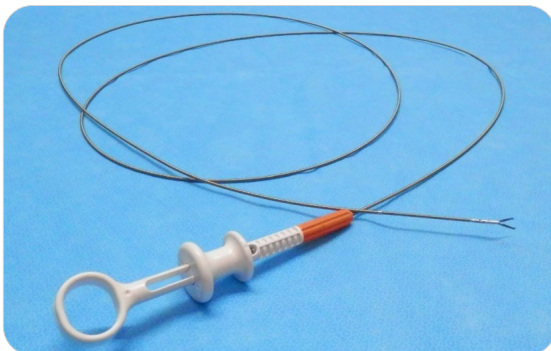
Biopsies forceps are small wire-based catheters, designed to be placed through a working channel of an endoscope. The tip of the catheter has a small serrated cup tip that can be used for sampling or biopsy of the mucosal surface. This can generally grasp about a 2 mm piece of tissue. Once a sample is taken, the forceps are closed, removed from the scope and the tissue is then sent to pathology.

2. Snare



Snares are small thin wire loop wire-based catheters, that are used to surround a polyp or tissue, to remove a larger mucosal sample in its entirety (en bloc). After passage through the scope, the snare is opened and placed around the tissue of interest and is then closed tightly around the tissue. This will then cut through the tissue. The snare can be used either with or without cautery (electric heat to help with cutting or limit bleeding). Snares are most used for colon polyp removal and come in multiple different shapes and sizes.

3. Clips

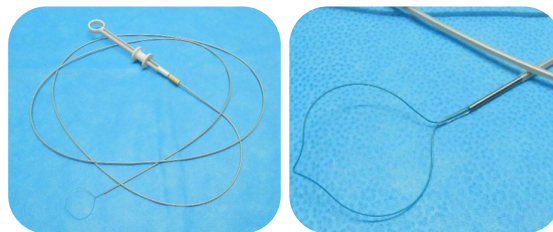


A. These are small wire-based catheters with a metallic clip. The tip of the catheter has two opposing arms that open and close. The catheter tip can be opened using the handle on the end of the accessory outside the endoscope and can then be

closed on tissue and released from the catheter. The clip will then remain closed on tissue in the patient's body. Clips are used to close mucosal defects and control bleeding. The clip generally falls off the tissue within a couple of weeks and gets released in bowel movements, but may occasionally stay longer.

B. Most clips are magnetic resonance (MR) Conditional. This refers to having an MRI exam (X-ray test with MR scanner) after the clip is used. Once placed in the patient, the patient may have a specific type of MRI safely and an information card is given to the patient. Generally, it is not recommended that the patient have an MRI exam within two weeks of clip placement unless it is an emergency. If an emergency MR procedure is considered, then the radiology team should be made aware of the clip placement.

4. Endoloop



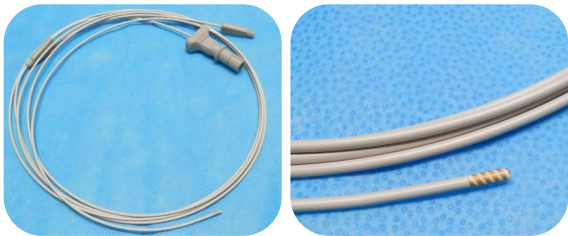
This is a small catheter with a nylon loop that is used to loop around a polyp base. The loop will ligate or close around the tissue, acting like a tourniquet, to prevent bleeding. Endoloops (also called ligation loops) are often used to treat large polyps that have a high risk of bleeding when they are removed during the endoscopic procedure. Once an endoloop is placed, the polyp is then removed above the endoloop with a snare, and the endoloop loop is left in place. The endoloop will fall off naturally as the area heals.

5. General Accessories for Gastrointestinal Bleeding

Bleeding can occur anywhere in the gastrointestinal tract and can be from mucosal breakdown or ulceration, blood vessels near the mucosal surface such as esophageal varices, after endoscopic therapy for polyps or strictures, or after various endoscopic interventions where the mucosa is altered. There is a variety of accessories that can be used to alleviate GI bleeding. The type of accessories used in a case depends on the individual case and the expert assessment of the Endoscopy Team.

I. Electrocautery Catheters:

These are small wire based catheters that can deliver electric current focused on the bleeding site and tissue. This will cauterize the area to control bleeding.



II. Epinephrine:

Using a small needle catheter, diluted epinephrine (usually 1/10,000 dilution) can be injected directly into a bleeding location in the digestive tract. Epinephrine is a medicine that causes blood vessels to transiently constrict, thus stopping bleeding.

III. Hemostatic Agents:

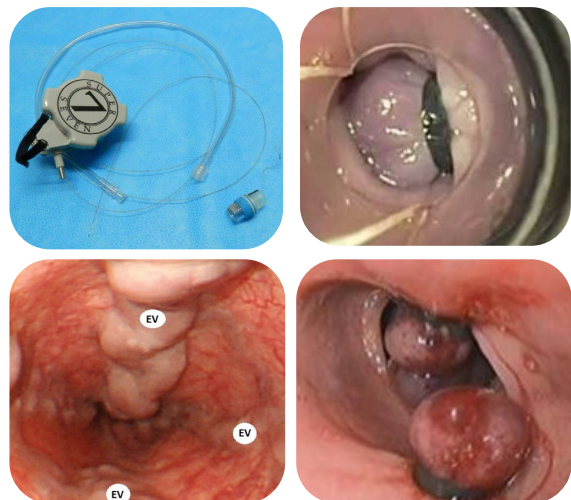
Using a small plastic catheter, hemostatic agents can be sprayed onto a bleeding site. It is an inert powder that helps the blood coagulate temporarily. The effects of hemostatic agents last about 12-24 hours.

Hemostatic agents have no human or animal proteins or botanicals and contains no known allergens.



IV. Band Ligation:

Band ligators are attachments mounted on the end of an endoscope (for the treatment of esophageal varices) or a banding device (for the treatment of internal hemorrhoids). Occasionally, band ligators are also used as ligation devices for polyp removal (similar to endoloops). Band ligators are made of a latex free elastic material. The bands are placed at the base of the esophageal varices (EV) (dilated veins in the esophagus that can bleed) or internal hemorrhoids (dilated veins in the rectum that can bleed) to cut off the blood flow in the vessel. The vessel will then clot and the band eventually falls off naturally.



V. Thermal Therapy Devices:

These are used to stop bleeding or cauterize tissue in situations such as the endoscopic treatment of a polyp, cancer, premalignant conditions of the esophagus (Barrett esophagus) or arteriovenous malformations.

A. Argon Plasma Coagulation (APC):

This is a catheter-based therapy through the scope. Argon gas is applied through a catheter with secondary application of an electric current to cauterize tissue in the digestive tract.



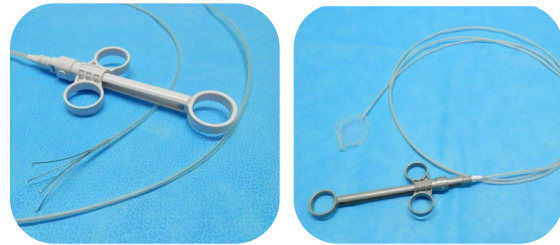
B. Contact Electrocautery and Ablation Therapy

This can be done through the endoscope with various types and sizes of catheters. The catheter tip is touched to the tissue or vessel in the mucosa and the electrocautery is applied to coagulate the tissue. This can be used for bleeding control, treatment of polyps, and treatment of Barrett's esophagus, as examples.

6. Retrieval Devices

These are catheter-based accessories that can be used to grab, hold, or trap foreign bodies in the intestinal tract (such as coins, swallowed items, food stuck in esophagus) or to help capture large

polyps that have been removed and cannot be aspirated through the endoscope for pathology review. Retrieval devices come the form of graspers, retractable net devices in (the Roth Net for example), endoscopic cap devices, and a variety of catheter-based tools.

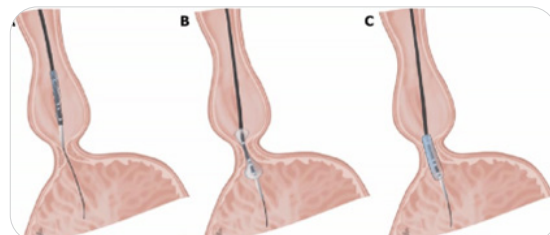
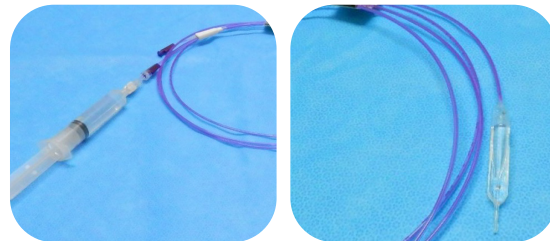


7. Dilation device

These are devices used to open or stretch strictures in various organs in the gastrointestinal system.

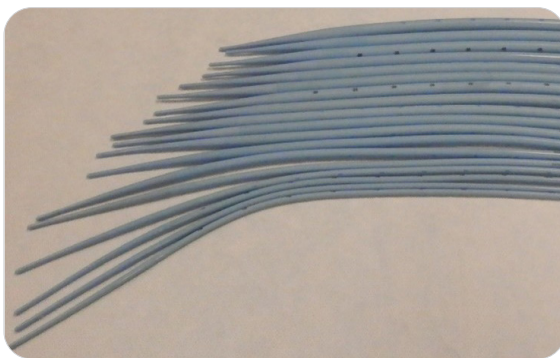
I. Balloons

These are small wire-based catheters with a balloon on the end of the device. The catheter is placed through the scope and then can be inflated to different sizes to stretch strictures (scarred tissue that narrows the esophagus, bile ducts, or intestines) or areas of tumor growth. Sometimes it takes multiple procedures over time to help alleviate symptoms.



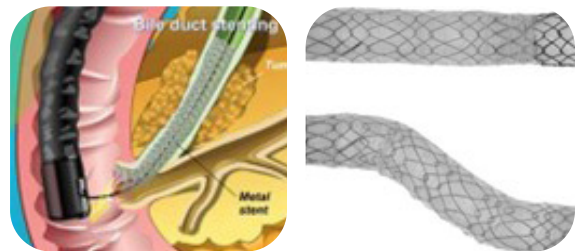
II. Bougies

These are used for dilating the esophagus. They are flexible catheters (with the appearance of a candle, hence the name bougie from the French word) that are placed through the mouth (similar to an endoscope) and slid down the esophagus into the stomach to dilate or stretch the esophagus. This can be done at the time of an endoscopy with or without the aid of X-Rays or Fluoroscopy for guidance. Usually, several bougies of increasing size (width or diameter) are serially placed down to expand the region of narrowing gradually and safely in the esophagus.



8. Stents

These are catheters that have tubular detachable devices at their ends. The tubular detachable device is open on both ends and allows flow of fluids through them once they are placed across a blockage or a stricture.



Types of Stents

I. Small Plastic Stents

These are used in the small ducts of the biliary system, pancreatic duct, and liver to help open up flow of bile through a stricture from scarring or cancer. These are left in place for a period of time and need to be replaced or removed periodically. They are used primarily in ERCP procedures.

II. Small Metal Stents

These are used in the small ducts of the biliary system and pancreas to open up flow of bile through a stricture from scarring or cancer. These can be permanent or replaceable depending on the design. They are used primarily in ERCP procedures.

III. Large Metal Stents

Large metal stents can be used in the esophagus, duodenum, or colon and are detachable, wire-based stents that are placed across strictures during endoscopy in these organs. Large metal stents are typically for strictures that are due to cancer.

SECTION 4: POST ENDOSCOPY

A. Introduction

After an Endoscopic Procedure has been completed, the patient will be taken by a member of the Endoscopy Team to the Recovery Room. In this room, the patient's vital signs (e.g. heart rate, blood pressure, oxygen level) will be monitored along with interval assessments of how awake they are. Patients will typically spend at least 30-45 minutes after their procedure in this area until the sedative medication has worn off. The time of recovery depends on a variety of factors including the type of procedure, the procedure length, and the sedative medication that the patient received. While infrequent, the Gastroenterologist may also advise at times that a patient may require admission to the hospital for overnight observation.

B. Patient Recovery Immediately After an Endoscopic Procedure

Symptoms that patients may describe after an Endoscopic Procedure include:

- Grogginess or a feeling of being tired
- Bloating
- Nausea
- Sore throat
- Abdominal discomfort

These symptoms will typically resolve over the span of a few to several hours. Depending on the type of procedure, the Gastroenterologist may allow patients to have something to eat or drink in the Recovery Room.

You should notify the Endoscopist and Anesthesia Provider if patients have concerning symptoms such as the following:

- Vomiting up blood
- Fevers and chills
- Rectal bleeding
- Severe chest or abdominal pain
- Trouble breathing

Such symptoms will often require further workup in the Recovery Room.

C. Patient Discharge Home From the Recovery Room

After a patient is alert and stable, the Recovery Room staff will perform an evaluation including an assessment of vital signs and clinical status to determine fitness for discharge home. The Endoscopist will typically discuss the procedure results with the patient and/or provide a printout of findings that should be reviewed with the patient. Then, discharge instructions on diet, new post procedure medications or changes to existing medications, and symptoms for the patient to monitor post discharge will be provided to the patient. These will be reviewed with the patient by the Endoscopist or Recovery Room Team. Patients should be advised to rest once home, and most can drive and return to work the next day.



Once a patient is ready for discharge, they can be escorted by the recovery room team to their friend or family member (a “responsible adult”) who can safely take them home.

D. GI Endoscope Reprocessing

1. Goals of Endoscope Reprocessing

The goal of endoscope reprocessing is high-level disinfection (HLD). This level of cleaning is designed to destroy living microorganisms, such as bacteria, fungi, prions and viruses. However, HLD does not kill bacteria which are in spore form (bacteria which are hibernating and not actively infectious). Such bacteria can only be destroyed by sterilization. Sterilization is the highest level of disinfection and is typically achieved with heat.

Sterilization has traditionally thought to be unnecessary for flexible gastrointestinal endoscopes since such endoscopes:

- A. Do not enter sterile spaces within the human body and
- B. Would be damaged by the level of heat required for sterilization.

2. Steps Involved in Endoscope Reprocessing

Proper endoscope reprocessing involves the following steps: manual cleaning, HLD, rinsing, drying and proper storage.

I. Manual cleaning

This is the first and most important step in reprocessing. In order to accomplish this, the endoscope must be manually cleaned with a detergent solution and brushes (Figure 1). To achieve optimal efficacy, this should be done immediately after the procedure is completed before organic material can dry within the channels of the endoscope. Manual cleaning is important to decrease the risk of biofilm formation. Biofilms are like a suit of armor that bacteria form around themselves, which makes it much more challenging to remove them from the surfaces of the endoscope.

II. High Level Disinfection (HLD)

This is the standardized process of cleaning the endoscope with detergents and other chemicals. A variety of methods for HLD are available and this is typically achieved by using an automated endoscope reprocessor (Figure 2).

The specific steps vary by endoscope and reprocessor manufacturer. Please refer to FDA approved instructions for details of this step.

III. Rinsing

This step in reprocessing involves flushing large volumes of water through the channels of the endoscope. This step is typically accomplished by the automated endoscope reprocessor.

IV. Drying and Storage

Removing moisture from the endoscope after reprocessing is critical to avoid growth of microorganisms within the channels of the endoscope during storage. The initial step of drying is flushing the channels of the endoscope with 70% alcohol to help to remove moisture and prevent growth of microorganisms. After the endoscope has been dried, it should hang in an upright position. Specialized storage cabinets with forced air flow are used for this in many Endoscopy Units to decrease risk of contamination with microorganisms during storage

V. Special Considerations

Endoscopes with an elevator channel (duodenoscopes and linear echoendoscopes) are particularly prone to bacterial contamination due to their mechanical complexity. Such endoscopes pose challenges when it comes to manual cleaning. As a result, these endoscopes have been linked to several outbreaks of difficult to treat bacterial infections. Thorough manual cleaning by experienced staff and following of manufacturer and FDA recommendations for reprocessing is critical when cleaning these scopes.

High quality endoscope reprocessing is critical to the safety of a GI endoscopy unit. It is of upmost importance that manufacturer and FDA recommendations be strictly followed by well trained staff to avoid reprocessing failures and endoscope associated infections.



Figure 1: Cleaning a scope immediately after use with cleaning solution



Figure 2: Automated Endoscope Reprocessing Machine

SECTION 5: DISCHARGE

A. Introduction

Once a patient has been deemed safe for discharge home from the Recovery Room, they will be asked to change back into their own clothes. The Physician or Recovery Room Team will then go over the Procedure Report and Post Discharge Care Plan with the patient. The patient is discharged home with printed discharge instructions that include when to resume home medications, when to return to normal activity, and information on whom to contact should they have any questions about their procedure or medical care after returning home. The patient should be accompanied home by a “responsible adult” (family member, friend or caregiver).

B. Post Discharge Care Plan

The elements of the Post Discharge Care Plan are outlined below.

1. Brief Discharge Note

- Name of Endoscopy Facility & Contact Information for Endoscopy Unit and/or Physician Endoscopist’s Office
- Patient Identifiers (e.g., Name, Age, Date of Birth, Sex)
- Date of Procedure
- Name of Endoscopist
- Name of Referring Physician

2. Procedure Summary

- Name of Endoscopic Procedure that was performed
- Type of Anesthesia given – Conscious Sedation versus General Anesthetic
- Key Findings – Anatomical Description and/or diagram of major and minor findings, using standard terminology and descriptors
- Interventions that were performed, if applicable (e.g., biopsy, polypectomy, resection, stenting, dilatation, FNA/FNAB)
 - * Number and location of biopsies and/or polyps
 - * Excision/resection methods (e.g., snare ± cautery, hot biopsy, piecemeal versus en bloc resection, etc.)
- Description of adverse events (intra-procedural and/or post-procedure)

3. Management Plan

- Disposition:
Location where patient is being discharged to – Home, Referring Facility, Nursing Home/Long Term Care, Hospital (admission to hospital or return of patient to hospital for ongoing care)
- Instructions regarding medication prescriptions – new medications, discontinued medications and alterations to existing medication doses (if applicable)
- Specific instructions about restarting anti-coagulation medications (if applicable)
- Plan for communicating histopathology results (if applicable)



- Description of the Discharge Plan and Immediate Follow-up Plan, including details regarding additional tests and/or referrals that are required
- Follow-up plan to be determined once the final histopathology report is available
- Follow up to be arranged with Referring Physician or Endoscopist for further care

4. Description of Common Post Procedure Side Effects & Potential Complications

- Discomfort and/or tenderness at the IV site
- Bloating and/or abdominal cramping from insufflation of air during the procedure
- Light bleeding and/or streaks of blood in stool on the day of the procedure and for a few days after the procedure
- Dehydration/Headache/Light-headedness and/or drowsiness (if sedation and/or analgesia was administered)

5. Description of Severe Post Procedure Symptoms requiring Urgent Medical Attention

If the patient experiences any of the symptoms below, they must contact the Endoscopy Unit or Physician Endoscopist's Office, or go to the nearest Emergency Department

- Rectal bleeding other than minor spotting (bloody, black, or tarry stools) within 2 weeks of the procedure
- Fever or chills
- Severe abdominal pain or bloating that does not pass
- Chest pain
- Throat swelling or vomiting of blood
- Shortness of breath

6. Final Instructions regarding Post Procedure Activity

For 12-24 hours post procedure, the patient should **NOT**:

- Drive a vehicle and/or operate machinery
- Use power tools or appliances
- Consume alcohol or other sedative drugs
- Make significant decisions
- Engage in heavy exercise

BONUS SECTION:

ERGONOMICS FOR TECHS

While an endoscopy unit can be a fun and rewarding place to work, it puts more physical demands on workers than would a “desk job.” These demands may lead to workplace related musculoskeletal diseases (WRMD) which can limit your ability to perform your job. Fortunately, there are several ways that you can help protect yourself and your colleagues and minimize your risk of injury. The study of this optimizing of the interface between the workplace and the worker is known as ergonomics. Below, we list several WRMD one may sustain in an endoscopy unit along with protective measures you can employ to prevent them.

WORKPLACE INJURY	PREVENTIVE STRATEGY
Neck/back injury from moving patient	Repositioning devices, multi-person team for movement, abdominal binder to decrease need for turning patient
Tripping injury	Cover wires, place wire path out of movement path
Slip/fall from wet floor	Use non-skid tiles, immediately dry spills
Head injury from monitor	Pad corners of monitor, monitor on adjustable boom, monitor away from path of movement
Neck/back/shoulder injury from wearing lead gown	Use light lead, use two-piece lead (vest and skirt)
Finger/wrist/hand injury from lifts	Limit lift time, abdominal binder to decrease need for lift, good lift technique
Falls while ambulating groggy patient	Use wheelchair, 2-person assistance

Though not specifically listed above, educational initiatives, including periodic refresher training, around these risks is helpful.

Finally, we suggest that the endoscopy team performs an “ergonomics time out” prior to each procedure. During this time out, all participants can ensure that the room is optimally configured to minimize injury risk and that any necessary equipment needed is present.





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