UPPER GASTROINTESTINAL SCREENING.

The GI tract is conventionally divided into upper (mouth to ileum) and lower (cecum to anus). From the point of view of GI bleeding, however, the demarcation between the upper and lower GI tract is the duodenojejunal (DJ) junction; bleeding above the DJ junction is called upper GI bleeding, and that below the DJ junction is called lower GI bleeding.

For the purposes of endoscopy, the upper GI tract includes the esophagus, stomach and duodenum (Oesophagogastroduodenoscopy [OGD], and the lower GI tract includes the anus, rectum, colon, and cecum (colonoscopy). The small intestine is relatively inaccessible to the routinely used single lumen endoscopy but if very necessary, can be assessed by double lumen endoscopy.

Screening means testing normal people or early stages of a disease before the symptoms and signs of a disease are obviously manifest.Screening enables earlier detection of the disease progression, when treatment is usually more effective.

SCREENING INDICATIONS.

- Dysphagia- difficulty swallowing
- Odynophagia - painful swallowing
- Persistent dyspepsia in patients.
- Heartburn, regurgitation or bitter/acid taste in the mouth
- Chest and abdominal pain
- Persistent nausea and vomiting
- Severe indigestion
- Hematemesis- vomiting blood.
- Melena stool- blood in the stool
- Unexplained anemia (low red blood cell count)
- Unexplained weight loss

Methods used for Screening

i. Upper Gastrointestinal (GI) Tract Contrast studies

Upper gastrointestinal tract radiography, also called an upper GI, is an x-ray examination of the esophagus, stomach and first part of the small intestine. Images are produced using a special form of x-ray after the patient has ingested an oral contrast material (Fluoroscopy).

Fluoroscopy makes it possible to see internal organs in motion. When the upper GI tract is coated with barium, the radiologist is able to view and assess the anatomy and function of the esophagus, stomach and duodenum (Barium meal)

Upper Gastrointestinal (UGI) Series

An upper gastrointestinal (UGI) series looks at the upper and middle sections of the gastrointestinal tract. The test uses barium contrast material, fluoroscopy, and X-ray. Before the test, the patient drinks a

mixture of barium (barium contrast material) and water. The barium is often combined with gas-making crystals. The radiologist watches the movement of the barium through your esophagus, stomach, and the first part of the small intestine (duodenum) on a video screen. Several X-ray pictures are taken at different times and from different views. A small bowel follow-through may be done immediately after an UGI to look at the rest of the small intestine.

An upper gastrointestinal (UGI) series is done to:

- Find the cause of gastrointestinal symptoms, such as trouble swallowing, vomiting, burping up food, belly pain or indigestion.
- Find narrow spots (strictures) in the upper intestinal tract, ulcers, tumors, polyps, or pyloric stenosis.
- Find inflamed areas of the intestine, malabsorption syndrome, or problems with the squeezing motion (peristalsis) that moves food through the intestines (motility disorders).
- Find swallowed objects.

The UGI series takes 30 to 40 minutes. The UGI series with a small bowel study takes 2 to 6 hours. In some cases, you may be asked to return after 24 hours to have more X-ray pictures taken.

Benefits

- It is a safe, noninvasive procedure.
- The results of the upper GI series usually lead to accurate evaluation of the esophagus, stomach and duodenum.
- Barium is not absorbed into the blood, allergic reactions are extremely rare.
- No radiation remains in a patient's body after an x-ray examination.
- X-rays usually have no side effects in the typical diagnostic range for this exam.

Risks

- There is always a slight chance of cancer from excessive exposure to radiation.
- Occasional patients may be allergic to the flavoring added to some brands of barium.
- There is a slight chance that some barium could be retained, leading to a blockage of the digestive system. Therefore, patients who have a known obstruction in the GI tract should not undergo this examination.
- Women should always inform their physician or x-ray technologist if there is any possibility that they are pregnant.

Limitations.

Mild irritation of the lining of the stomach or esophagus is difficult to detect, as well as ulcers smaller than 1/4 inch in diameter.

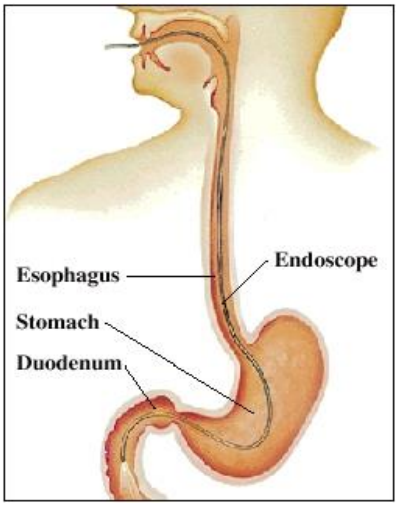
Biopsies of any abnormal areas cannot be performed with this test.

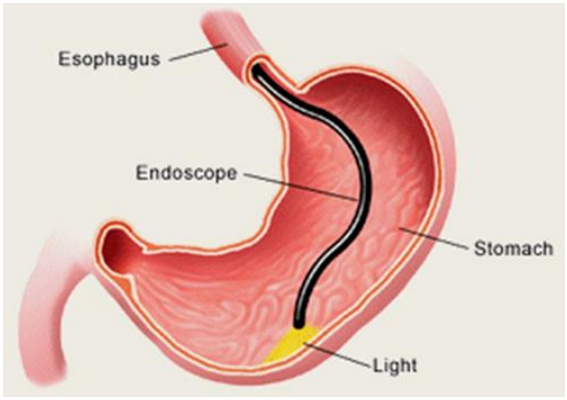
ii. <u>Upper Endoscopy/ Esophagogastroduodenoscopy</u> *(EGD/OGD).*

An upper endoscopy is a procedure that allows a doctor to examine the upper part of the gastrointestinal (GI) tract, including the esophagus, stomach, and duodenum. It is also called ***upperGI endoscopy.***

An endoscope (a thin, flexible tube with a light and a tiny camera on the end) is inserted into the mouth, down the throat, and into the esophagus to look for tumors or other health problems. The doctor views the images on a screen.

An upper endoscopy usually takes 10 to 15 minutes to complete.The upper intestinal tract must be empty for the procedure, so it is necessary NOT to eat or drink for at least 4-6 hours before the exam.





Upper GI endoscopy is useful in screening/diagnosis of the following conditions;

- Gastroesophageal reflux
- Oesophagitis (and its complications)
- Oesophageal varices
- Oesophageal cancer
- Gastric and duodenal ulcer
- Gastric cancer
- Coeliac disease

Advantages.

- It is minimally invasive.
- Is more accurate than X rays for detecting inflammation, ulcers, or tumors.
- It is used to diagnose early cancer and can frequently determine whether a growth is benign (not cancerous) or malignant (cancerous).
- Biopsies can be obtained which helps in the diagnosis of cancers or inflammatory lesions.
- It can be used to dilate strictures and /or stent them as well as to remove swallowed objects.
- Bleeding from ulcers or vessels can be treated by a number of endoscopic techniques.
- Endoscopic Mucosal Resection (EMR) - removal of early tumors of the esophagus or stomach.

Limitations.

Functional GI disorders are usually not well diagnosed by endoscopy since motion or secretion of the gastrointestinal tract is not easily inspected by EGD. Nonetheless, findings of excess fluid or poor motion of gut during endoscopy can be suggestive of disorders of function.

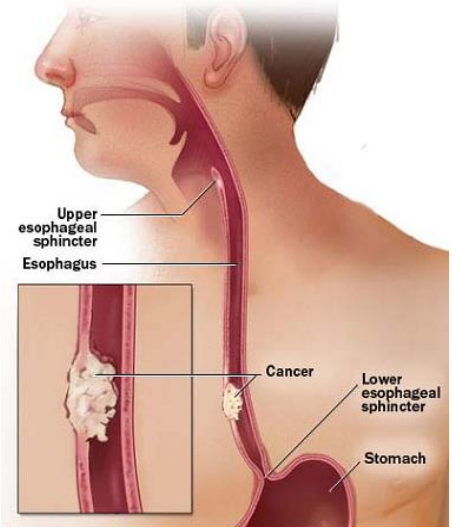
Irritable bowel syndrome and functional dyspepsia is not diagnosed with EGD, it may however be helpful in excluding other diseases that mimic these common disorders.

ESOPHAGEAL CANCER.

The esophagus is a hollow muscular tube that connects the mouth to the stomach. The esophagus transports swallowed food into the stomach.

Esophageal cancer can develop when cells in the soft tissues lining this tube begin to grow and divide abnormally, forming a tumor. Tumors typically start in the innermost layer of the esophagus and then spread outward. The spread of cancer from the esophagus to the lymph nodes and other organs is called metastasis.

Esophageal cancer is considered rare compared with cancers of the breast, lung, or prostate. Nevertheless, the number of diagnoses of esophageal cancer, has risen dramatically in the past few decades.



Risk factors.

Factors that increase the likelihood of one getting esophageal cancer include:-

- **Age** increases the risk for esophageal cancer. It is more common after the age of 50.
- Sex- about 3 times higher in **men**.
- Medical conditions such as:-

✓ Achalasia (rare disease that affects the muscles of the esophagus)
✓ Helicobacter pylori infection (associated with gastritis and peptic ulcer disease)
✓ Human papillomavirus (HPV) infection (may increase risk in high-incidence areas)
✓ Prior history of other head and neck cancers

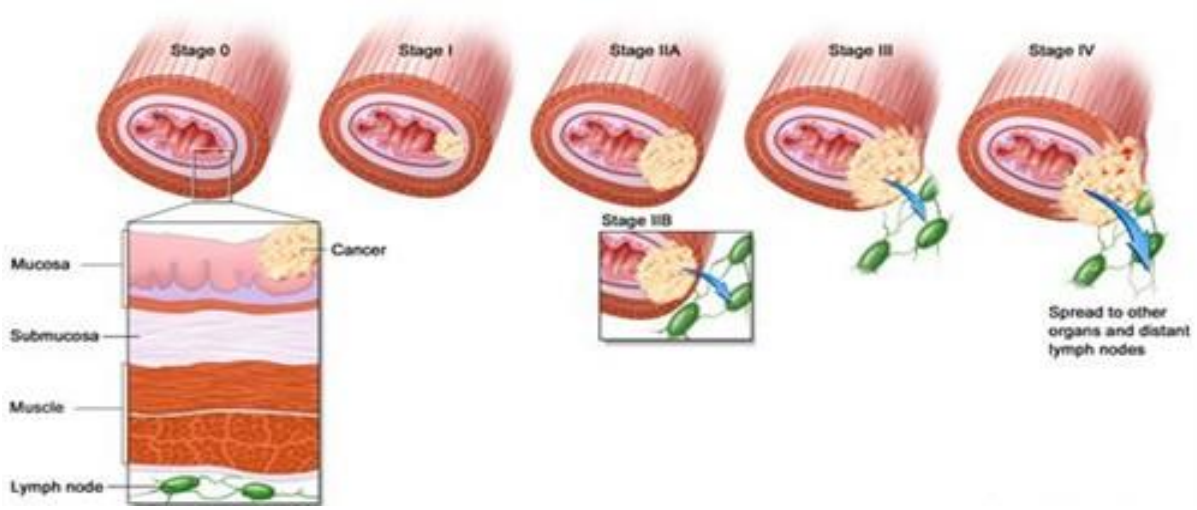
- Barrett's esophagus due to chronic gastroesophageal reflux disease (GERD)
- Nutritional deficiency associated with lack of fresh fruits and vegetables

- Regular consumption of very hot beverages
- Regular ingestion of fermented vegetables.
- Smoking and chewing tobacco and heavy drinking.
- Environmental risk factors for squamous cell carcinoma include exposure to asbestos, perchlorethylene (common dry cleaning solvent), and fuel-burning appliances (e.g., space heaters, fireplaces, stoves).
- Obesity.
- Genetic or hereditary conditions

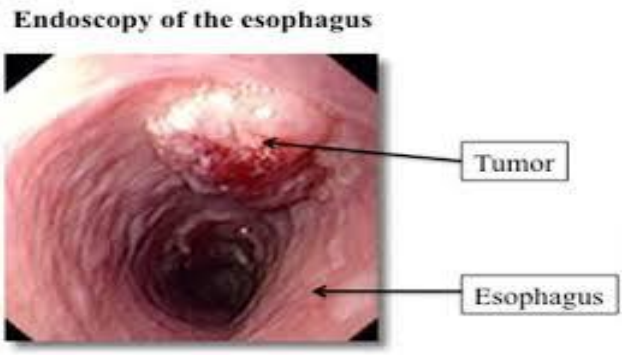
Symptoms.

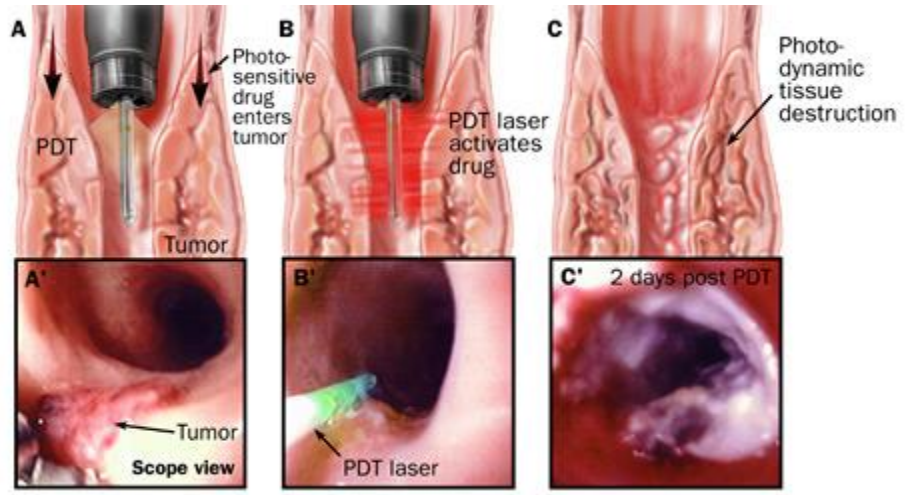
- Difficulty swallowing.
- Pain or discomfort in the chest.
- Weight loss and lack of appetite.
- Some patients with esophageal cancer experience other symptoms such as hoarseness, a persistent cough, hiccups, pneumonia, bone pain, and bleeding in the esophagus.

STAGING



Screening: This enables detection of the disease at a very early stage of progression, when treatment is easier and more effective.





TREATMENT.

TABLE 2: Treatment options and survival by stage in esophageal cancer

Stage[a]		Standard treatment	5-Year survival rate (%)
Stage 0	(Tis N0 M0)	Surgery	> 90
Stage I	(T1 N0 M0)	Surgery	> 70
Stage IIA	(T2–3 N0 M0)	Surgery, chemoradiation therapy, or combination	15–30
Stage IIB	(T2–3 N0 M0 or T1–2 N1 M0)	Surgery, chemoradiation therapy, or combination	10–30
Stage III	(T1–2 N2 M0; T3 N1 M0; or T4 Any N M0)	Chemoradiation therapy with or without surgery	10–25
Stage IV	(Any T Any N M1)	Radiation therapy ± intraluminal intubation and dilation ± chemotherapy	Rare

STOMACH/GASTRIC CANCER.

Stomach cancer is cancer that occurs in the stomach — the muscular sac located in the upper middle of your abdomen, just below your ribs for storage and initiating digestion of the ingested food.

Types of stomach cancer

The cells that form the tumor determine the type of stomach cancer. The type of cells in your stomach cancer helps determine your treatment options. Types of stomach cancer include:

- **Cancer that begins in the glandular cells (adenocarcinoma).** The glandular cells that line the inside of the stomach secrete a protective layer of mucus to shield the lining of the stomach from the acidic digestive juices. Adenocarcinoma accounts for the great majority of all stomach cancers.

- **Cancer that begins in immune system cells (lymphoma).** The walls of the stomach contain a small number of immune system cells that can develop cancer. Lymphoma in the stomach is rare.
- **Cancer that begins in hormone-producing cells (carcinoid cancer).** Hormone-producing cells can develop carcinoid cancer. Carcinoid cancer in the stomach is rare.
- **Cancer that begins in nervous system tissues.** A gastrointestinal stromal tumor (GIST) begins in specific nervous system cells found in the stomach.

Because the other types of stomach cancer are rare, when people use the term "stomach cancer" they generally are referring to adenocarcinoma.

Symptoms.

- Fatigue
- Feeling bloated after eating
- Feeling full after eating small amounts of food
- Heartburn that is severe and persistent
- Indigestion that is severe and unrelenting
- Nausea that is persistent and unexplained
- Stomach pain
- Vomiting that is persistent
- Weight loss that is unintentional.

Risk Factors.

Factors that increase the likelihood of developing stomach cancer include:

- Dietary factors; diet high in salty and smoked foods, and low in fruits and vegetables.
- Eating foods contaminated with aflatoxin fungus.
- Family history of stomach cancer.
- Infection with Helicobacter pylori.
- Long-term stomach inflammation.
- Pernicious anemia.
- Smoking.
- Stomach polyps.

Screening.

Tests and procedures used to ***diagnose*** stomach cancer include:

- **OGD**

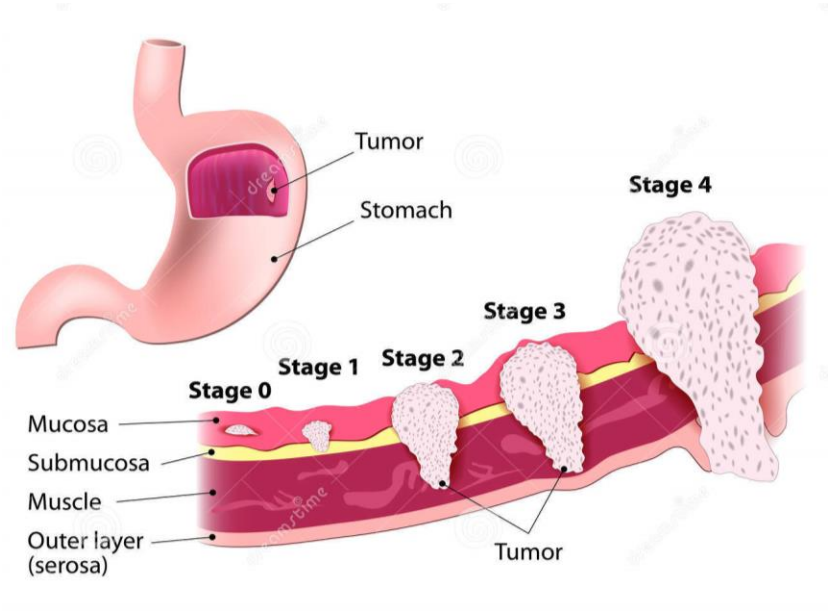
Tests and procedures used to determine the ***stage (extent)*** of cancer include:

- **Imaging tests.** Tests may include CT and Positron Emission Tomography (PET).

- **Diagnostic Laparoscopy/surgery.** Your doctor may recommend laparoscopic surgery to evaluate the spread within your abdomen.

STAGING.

- **Stage 0.** Tumour is limited to the stomach inner lining.



Treatment.

Options include:

- **Removing early-stage tumors from the stomach lining.** Very small cancers limited to the inside lining of the stomach may be removed using endoscopy in a procedure called ***endoscopic mucosal resection (EMR)***.

Surgery

- The goal of surgery is to remove all of the stomach cancer and a margin of healthy tissue, when possible. These operations can be performed through open method or laparoscopically.
- **Removing a portion of the stomach (subtotal gastrectomy).** During subtotal gastrectomy, the surgeon removes only the portion of the stomach affected by cancer.
- **Removing the entire stomach (total gastrectomy).** Total gastrectomy involves removing the entire stomach and some surrounding tissue. The esophagus is then connected directly to the small intestine to allow food to move through your digestive system.
- **Removing lymph nodes to look for cancer.** The surgeon examines and removes lymph nodes in your abdomen to look for cancer cells.
- **Surgery to relieve signs and symptoms.** Removing part of the stomach may relieve signs and symptoms of a growing tumor in people with advanced stomach cancer. In this case, surgery can't cure advanced stomach cancer, but it can make you more comfortable.

Radiation therapy

Radiation therapy uses high-powered beams of energy, such as X-rays, to kill cancer cells.

Radiation therapy can be used before surgery (neoadjuvant radiation) to shrink a stomach tumor so that it's more easily removed. Radiation therapy can also be used after surgery (adjuvant radiation) to kill any cancer cells that might remain around your stomach.

Chemotherapy

Chemotherapy is a drug treatment that uses chemicals to kill cancer cells. Chemotherapy drugs travel throughout your body, killing cancer cells that may have spread beyond the stomach.

Chemotherapy can be given before surgery (***neoadjuvant chemotherapy***) to help shrink a tumor so that it can be more easily removed. Chemotherapy is also used after surgery (***adjuvant chemotherapy***) to kill any cancer cells that might remain in the body. Chemotherapy is often combined with radiation therapy. Chemotherapy may be used alone in people with advanced stomach cancer to help relieve signs and symptoms.