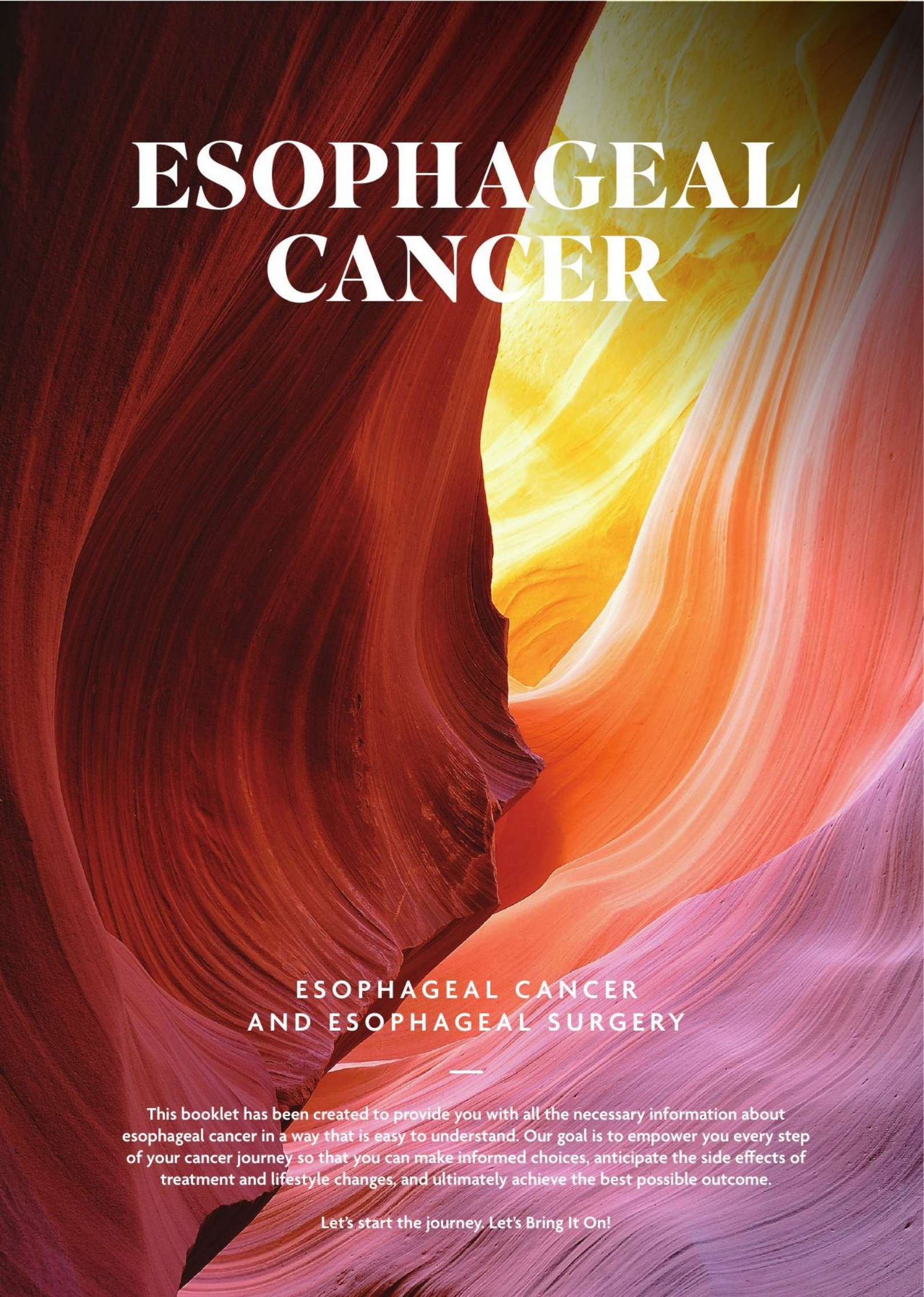

ESOPHAGEAL CANCER

ESOPHAGEAL CANCER AND ESOPHAGEAL SURGERY

This booklet has been created to provide you with all the necessary information about esophageal cancer in a way that is easy to understand. Our goal is to empower you every step of your cancer journey so that you can make informed choices, anticipate the side effects of treatment and lifestyle changes, and ultimately achieve the best possible outcome.

Let's start the journey. Let's Bring It On!

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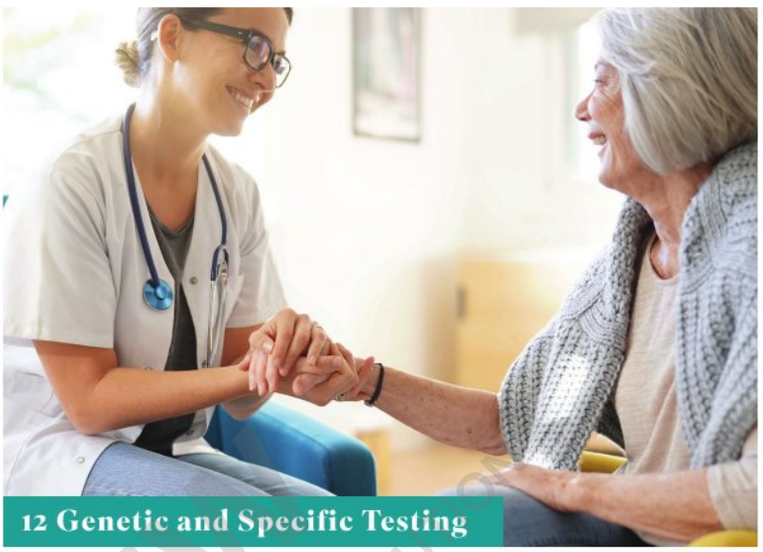

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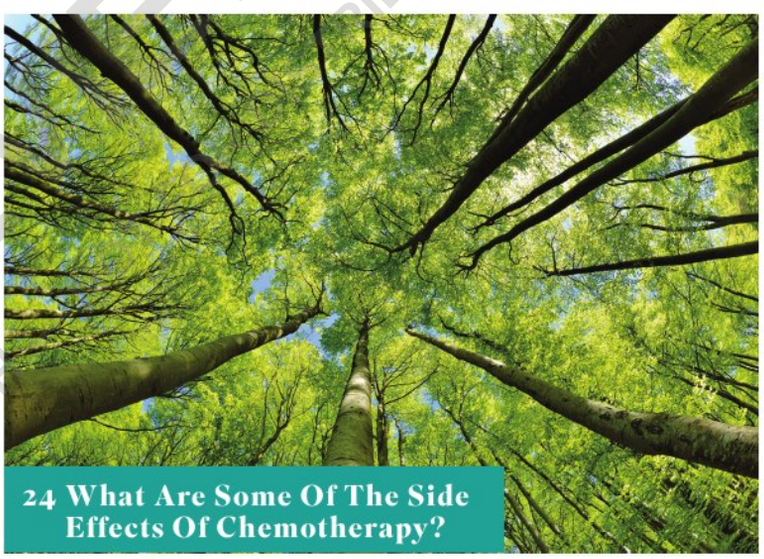

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INTRODUCTION AND RISK FACTORS

Esophageal cancer makes up about 1% of all cancers diagnosed in the United States, but it is much more common in other parts of the world. It is the 8th most common cancer worldwide. The rate of new esophageal cancer cases was 4.2 per 100,000 men and women per year, slightly more common in men than women.

The risk factor for developing esophageal cancer include Smoking or tobacco chewing, Alcohol use (heavy), Chronic heartburn or gastroesophageal reflux disease, and Barrett (pre-cancerous changes) esophagus.

WHERE, WHAT, SYMPTOMS, AND DIAGNOSIS

Where is the esophagus?

The esophagus is part of the upper digestive system and is a muscular tube-like structure approximately 25 cm long. It connects your digestive system from the hypopharynx (located behind your throat) to the stomach. The esophagus descends from the chest to the abdomen cavity and is located behind the windpipe (trachea) and the heart. Before joining the stomach, it passes through a diaphragmatic opening called hiatus. At the end of the esophagus is a muscular valve called the lower esophageal sphincter, which allows food to pass into the stomach. This short section is also known as the gastroesophageal junction (GEJ).

What is esophageal cancer?

Did you know that the esophagus has four layers of tissues? The innermost layer is known as the epithelium or mucosa. Unfortunately, this layer can undergo abnormal changes that transform normal cells into cancer cells, leading to esophageal cancer. It's important to note that, like all cancer cells, esophageal cancer can grow and spread and thus requires treatment.

THE ESOPHAGUS CAN BE DIVIDED INTO THREE PARTS

- Cervical esophagus
- Thoracic esophagus (Upper, Middle, Lower)
- Gastroesophageal Junction

What are the symptoms and signs of esophageal cancer?

Esophageal cancer is a serious health concern that can be difficult to detect in its early stages. Most patients do not experience any symptoms until the disease has progressed significantly. When symptoms do appear, they can vary depending on the size and location of the cancer. Common symptoms include difficulty swallowing, painful swallowing, bleeding,

anemia, unintended weight loss, fatigue, and severe coughing. If you are experiencing any of these symptoms, seeking medical attention immediately is essential. Early detection and treatment can significantly improve your chances of recovery.

How is esophageal cancer diagnosed?

If a patient is suspected of having esophageal cancer, a diagnosis may require an upper endoscopy (esophagogastroduodenoscopy, EGD). During this procedure, patients are sedated as a lighted endoscope is inserted through the mouth to examine the lining of the esophagus, stomach, and the first portion of the small intestine (called the duodenum). The gastroenterologist will locate the site of the lesion and biopsy any suspicious areas, which will then be examined under a microscope by a pathologist for diagnosis.

Pathological Diagnosis of Esophageal Cancer

Typically, the pathology report will include information about the type and grade of the condition.

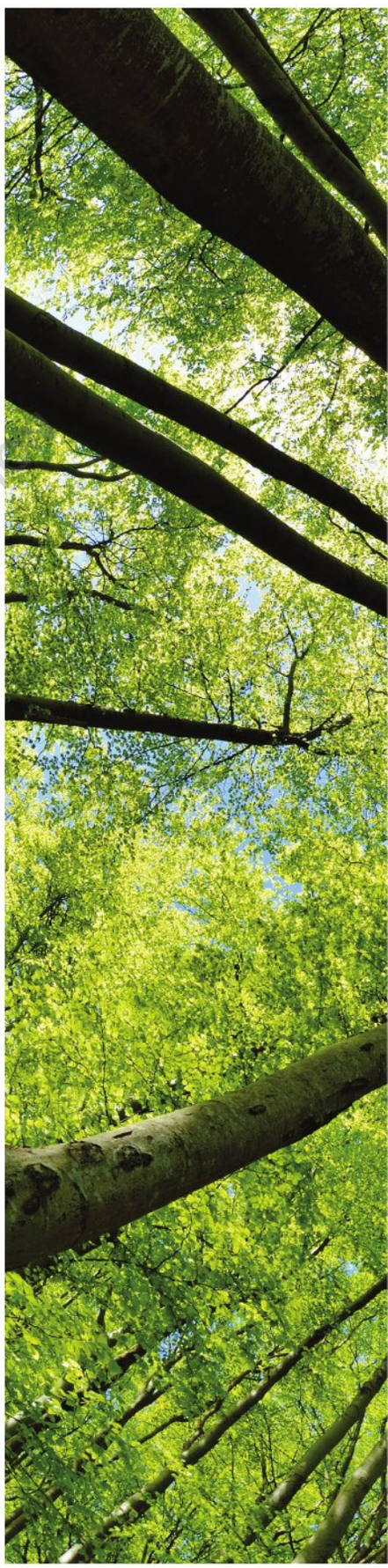
TYPES OF ESOPHAGEAL CANCER

- **Squamous cell carcinoma:** This tumor usually forms in the upper and the middle part of the esophagus
- **Adenocarcinoma:** This kind of tumor usually develops in the lower part of the esophagus, near the stomach
- Others

HISTOLOGIC GRADE OF ESOPHAGEAL CANCER

- Well differentiated
- Moderately differentiated
- Poorly differentiated

STAGING
What other tests do I need after the diagnosis is made?



During your cancer diagnosis, your doctor may order tests to determine the stage of your cancer. Staging is a crucial process that helps your healthcare team understand the extent of the cancer and if it has spread. By knowing the stage of your cancer, your healthcare team can plan the best treatment options and predict your chances of survival.

CT scan (Computer Tomography) or MRI (Magnetic Resonance Imaging)
A radiological study that makes a series of images through the different body areas (chest, abdomen, and pelvic). Contrast may be injected into a vein in your arm or swallowed to help the internal tissue show up more clearly.

PET scan (Positron Emission Tomography)
A nuclear medicine study to find cancer cells in the body. A small amount of radiolabeled sugar is injected into a vein. The PET scanner shows where sugar is being used in the body. Cancer cells appear brighter in the picture because they are more active and consume more sugar than normal cells. A PET is useful to help determine the N-stage and M-stage.

EUS (Endoscopic Ultrasound)
A probe at the end of the endoscope sends sound waves off internal tissues to make echoes and then form pictures of body tissues. An additional biopsy can be taken from the suspicious area and any suspicious adjacent lymph nodes. EUS can help your doctor determine the tumor's exact location and local extent (T-stage) and see whether surrounding lymph nodes are involved (N-stage).

Staging Laparoscopy
For cancer near the gastroesophageal junction, staging laparoscopy may be indicated. This minimally invasive surgical procedure is performed under general anesthesia. A surgeon inserts a camera into the abdomen and examines the lining of the abdomen cavity (peritoneum), the surface of major intra-abdominal organs, to check for the spread of cancer.

Bronchoscopy
For some patients with esophageal cancer, a procedure may be necessary to examine their airways and lungs. This procedure involves using a bronchoscope, a thin and illuminated tube. The tube is inserted through the nose or mouth and moved down the throat and windpipe, allowing the physician to view the voice box, trachea, bronchi, and bronchioles and ensure no tumor invasion from the esophagus to these airway structures. Typically, a pulmonologist or thoracic surgeon performs this procedure.

MULTIDISCIPLINARY

TEAM APPROACH

SPECIALIST PHYSICIANS, YOU ARE GOING TO MEET

During your treatment for esophageal cancer, you will meet with a team of physicians who specialize in various fields. Their collaborative approach is essential to ensuring the best outcome for you. This multidisciplinary care team will coordinate multiple treatment approaches and sequences to treat your cancer.

Each team member must possess experience, competence, compassion, communication skills, and passion to provide exceptional care. We strongly encourage you to bring a family member or close friend to these visits. This will help you assess the human qualities of each specialist and ensure that you receive the best possible care.

GASTROENTEROLOGIST

A specialized physician to evaluate your esophagus and stomach with an endoscopy (EGD) & endoscopic ultrasound (EUS).

MEDICAL ONCOLOGIST

A specialized physician treats cancer using chemotherapy, targeted therapy, immunotherapy, and other biological therapy. They also provide supportive care and coordinate your treatment plan provided by other specialists.

RADIATION ONCOLOGIST

A specialized physician treats cancer using radiation.

THORACIC SURGEON OR ONCOLOGIC SURGEON

A specialized physician to provide surgical care to treat your cancer.

PULMONOLOGIST

A specialized physician in treating lung conditions. The suitability of a patient undergoing esophageal surgery depends on the patient's underlying lung function. Some patients may need to be evaluated by a pulmonologist.

QUESTIONS THAT YOU MAY WANT TO ASK YOUR PHYSICIAN

To make the most of your time with your doctor, preparing a list of questions before your consultation is helpful. Consider asking some basic questions such as:

1. **LOCATION:** Where exactly is my cancer?
2. **DIAGNOSIS:** Can you explain the pathology diagnosis to me?
3. **STAGE:** How advanced is my cancer? What stage is my cancer?
4. **INVESTIGATIONS:** What tests do I need before we decide on the treatment options?
5. **TREATMENT OPTIONS:** What are my treatment options?
6. **COMPLICATIONS OF TREATMENT:** What are the potential side effects of each treatment option?
7. **MD RECOMMENDATION:** What is the best treatment for me?
8. **SECOND OPINION:** Should I see another specialist for a second opinion?
9. **FOR SURGEON:** What is your track record in performing this surgery? How many such surgeries have you performed in the last year? Can you describe a typical course of a successful surgery, hospital stay, and after-surgery recovery? What and when was your recent major complication?
10. **OTHER RESOURCES:** Can I take any brochures or printed material with me?

Esophageal Cancer Staging System

TNM STAGING SYSTEM
(T stands for Tumor, N stands for Node, M stands for Metastatic)

Esophagus and esophagogastric junction cancer TNM staging AJCC UICC 8th edition

Primary tumor (T), squamous cell carcinoma and adenocarcinoma	
T category	T criteria
TX	Tumor cannot be assessed
TO	No evidence of primary tumor
Tis	High-grade dysplasia, defined as malignant cells confirmed to the epithelium by the basement membrane
T1	Tumor invades the lamina propria, muscularis mucosae, or submucosa
T1a	Tumor invades the lamina propria or muscularis mucosae
T1b	Tumor invades the submucosa
T2	Tumor invades the muscularis propria
T3	Tumor invades adventitia
T4	Tumor invades adjacent structures
T4a	Tumor invades the pleura, pericardium, azygos vein, diaphragm or peritoneum
T4b	Tumor invades other adjacent structures such as aorta, vertebral body or airway
Regional lymph nodes (N), squamous cell carcinoma and adenocarcinoma	
N category	N criteria
NX	Regional lymph nodes cannot be assessed
NO	No regional lymh node metastasis
N1	Metastases in 1 or 2 regional lymph nodes
N2	Metastases in 3 to 6 regional lymph nodes
N3	Metastases in 7 or more regional lymph nodes
Distant metastasis (M), squamous cell carcinoma and adenocarcinoma	
M category	M criteria
MO	No distant metastasis
M1	Distant metastases
Histologic grade (G), squamous cell carcinoma and adenocarcinoma	
G category	G definition
GX	Grade cannot be assessed
G1	Well differentiated
G2	Moderately differentiated
G3	Poorly differentiated, undifferentiated

Location, squamous cell carcinoma

Location plays a role in the stage grouping of esophageal squamous cancers.

Location category	Location criteria
X	Location unknown
Upper	Cervical esophagus to lower border of azygos vein
Middle	Lower border of azygos vein to lower border of inferior pulmonary vein
Lower	Lower border of inferior pulmonary vein to stomach, including gastroesophageal junction

Note: Location is defined by the position of the epicenter of the tumor in the esophagus.