# Adenocarcinoma of the Lung

Lung carcinoma is typically divided into two categories, small cell carcinoma and non-small cell carcinoma. Non-small cell carcinoma subtypes include adenocarcinoma, squamous cell carcinoma, large cell carcinoma and carcinoid tumor. Adenocarcinoma is the most common lung cancer and is the most common lung cancer in nonsmokers. It typically arises in the periphery of the lung and may present with hemoptysis or finger clubbing. This cancer is associated with the KRAS, EGFR and ALK mutations. On histology, adenocarcinoma displays a glandular pattern and often stains mucin positive. In the early stages, treatment involves surgical resection. In the later stages, treatment involves radiation and chemotherapy.




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## Characteristics

**Most Common Lung Cancer**
#1 Foam-finger Lungs with Tumor-guy
Adenocarcinoma cases account for half of lung cancer cases, making it the most common lung cancer overall (except for metastases).

**Most Common in Nonsmokers**
#1 Foam-finger Nun-nonsmoker
Adenocarcinoma is the most common lung cancer in nonsmokers. It has a lower association with smoking among other major lung cancers like small cell and squamous cell carcinoma. Rather, adenocarcinoma may be related to pulmonary scars or fibrosis.

**Peripheral Location**
Peripheral damage to lungs
Adenocarcinoma is most commonly located in the lung periphery. This is in contrast to small cell carcinoma and squamous cell carcinoma, which tend to be located in the central portions of the lung.

**KRAS, EGFR, and ALK Mutations**
KRASH with Engine-fire and Ale-keg
Adenocarcinoma is associated with activating mutations including Kirsten Rat Sarcoma Viral Oncogene Homologue (KRAS), Epidermal Growth Factor Receptor (EGFR) and Anaplastic Lymphoma Kinase (ALK). It is important to analyze tumor tissue for the presence of these mutations since there are drugs that target and inhibit the specific molecular pathways in the malignant cells.

## Diagnosis

**Glandular Pattern**
Glands with Glandular Pattern
The characteristic histology for adenocarcinoma is gland formation. Histological diagnosis requires evidence of either neoplastic gland formation or intracytoplasmic mucin.

**Often Stains with Mucin**
Mucous
Adenocarcinoma tends to stain mucin positive since it is derived from the mucus producing glands of the lung.

## Clinical Features

**Presents with Hemoptysis**
Red-mop coughing blood
Hemoptysis is the coughing up of blood or blood-tinged sputum from the lungs, bronchi, trachea or larynx. Hemoptysis can be a symptom of cancer, bronchiectasis, and pulmonary embolism or infections such as pneumonia, tuberculosis or bronchitis.

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**Clubbing**

Club causing Clubbing

Digital clubbing is a deformity characterized by increased distal finger tip mass and increased nail plate curvature. The Lovibond angle, the angle between the nail plate and the proximal nail fold when viewed for the side is greater than 180 degrees in clubbed nails, compared to 160 degrees in normal nails. There are many causes of clubbing, including pulmonary diseases.

## Treatment

**Surgical Resection**

Surgeon

Non-small cell lung cancers that present early in the disease process are generally treated upfront with surgical resection. Patients with metastatic disease outside of the chest are not candidates for surgical resection. Even with a complete resection, recurrence is still possible.

**Chemotherapy and Radiation**

Chemo-head-wrap and Radiation-radio

For patients who present early in the disease process, radiation therapy is an important adjunct to surgery. For patients who present in later stages, radiation and chemotherapy are the mainstays of treatment.

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