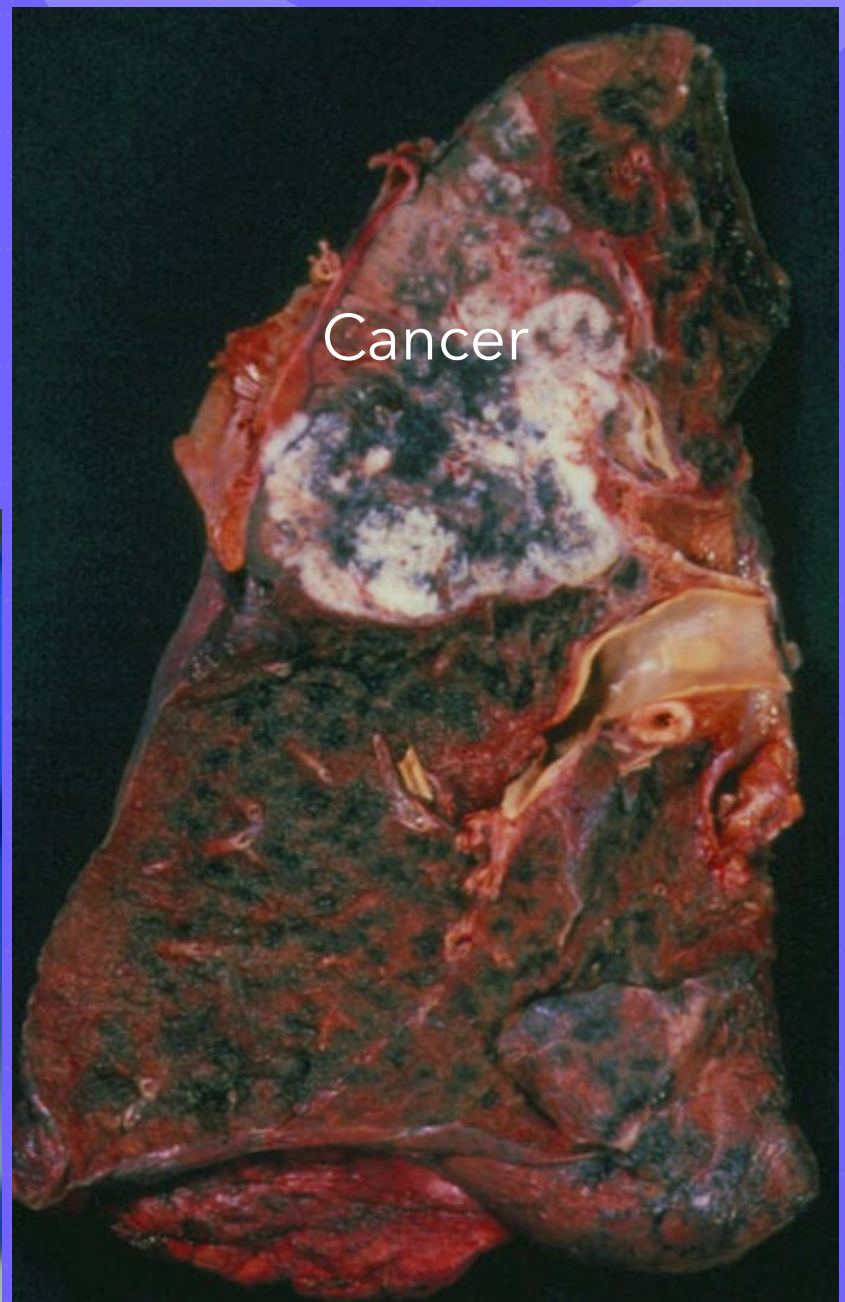
LUNG CANCER

FCDS

Betty Malanowski

Smoker’s lungs versus healthy lungs



Leading Causes of Death

Print

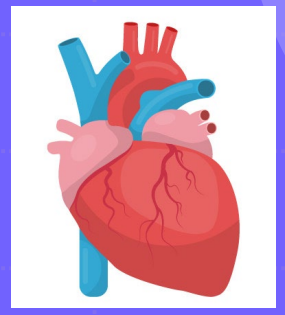
Data are for the U.S.

Number of deaths for leading causes of death

- Heart disease: 695,547
- Cancer: 605,213
- COVID-19: 416,893
- Accidents (unintentional injuries): 224,935
- Stroke (cerebrovascular diseases): 162,890
- Chronic lower respiratory diseases: 142,342
- Alzheimer's disease: 119,399
- Diabetes: 103,294
- Chronic liver disease and cirrhosis : 56,585
- Nephritis, nephrotic syndrome, and nephrosis: 54,358

Source: Mortality in the United States, 2021, data table for figure 4

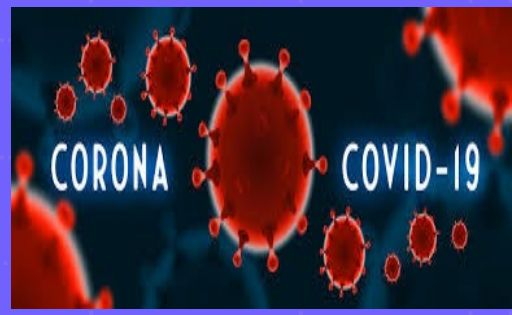
2021

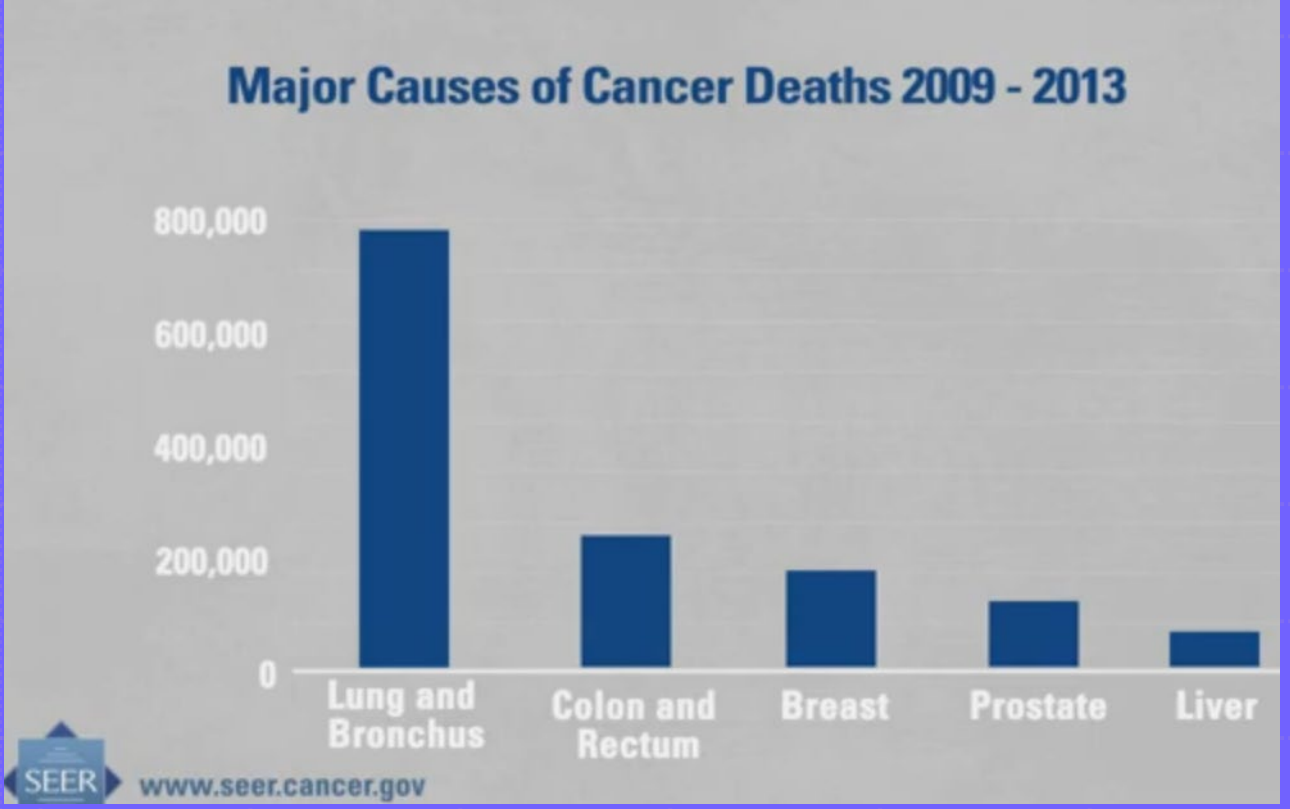


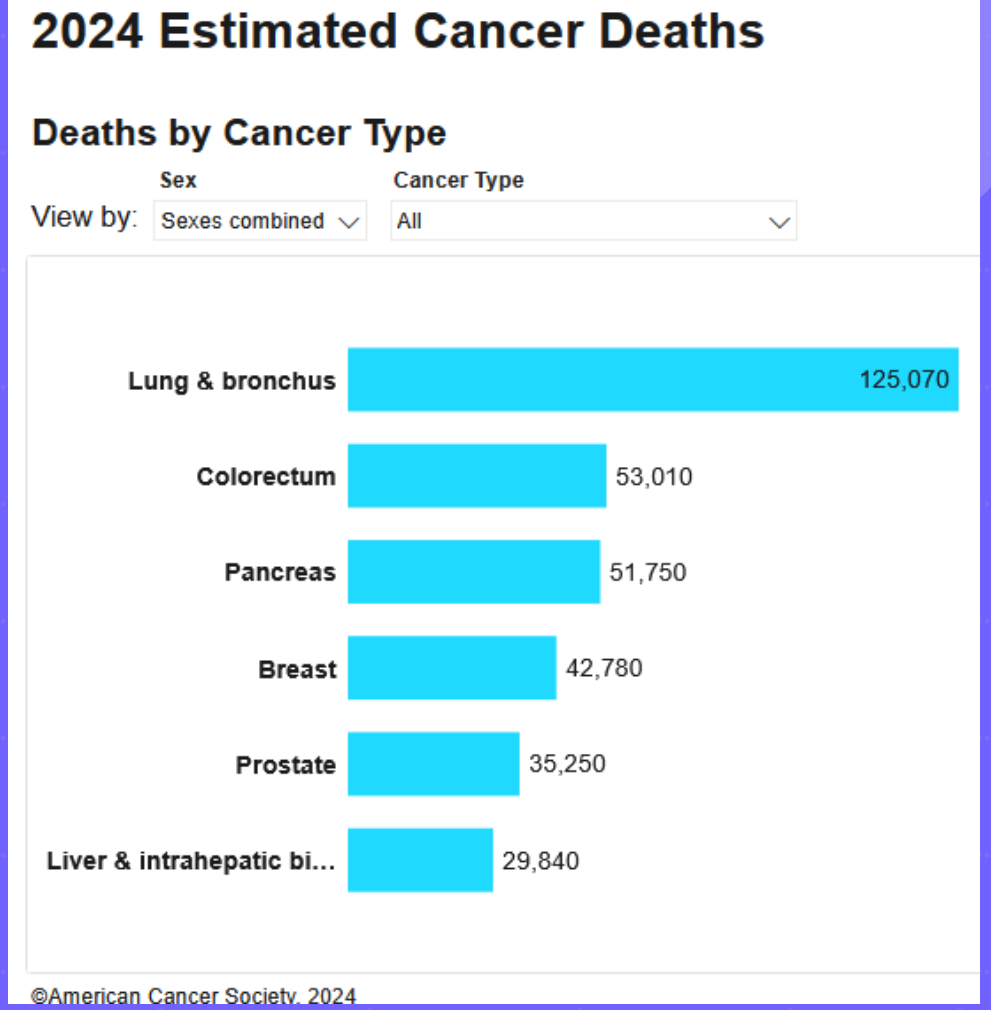
1.Heart disease

2. Cancer was the second leading cause of death in the USA in 2021 after Heart disease.

3. Covid-19 the third







The count of **Lung Cancer** deaths has improved since the period 2009-2013 to the estimated cancer deaths for the current year.

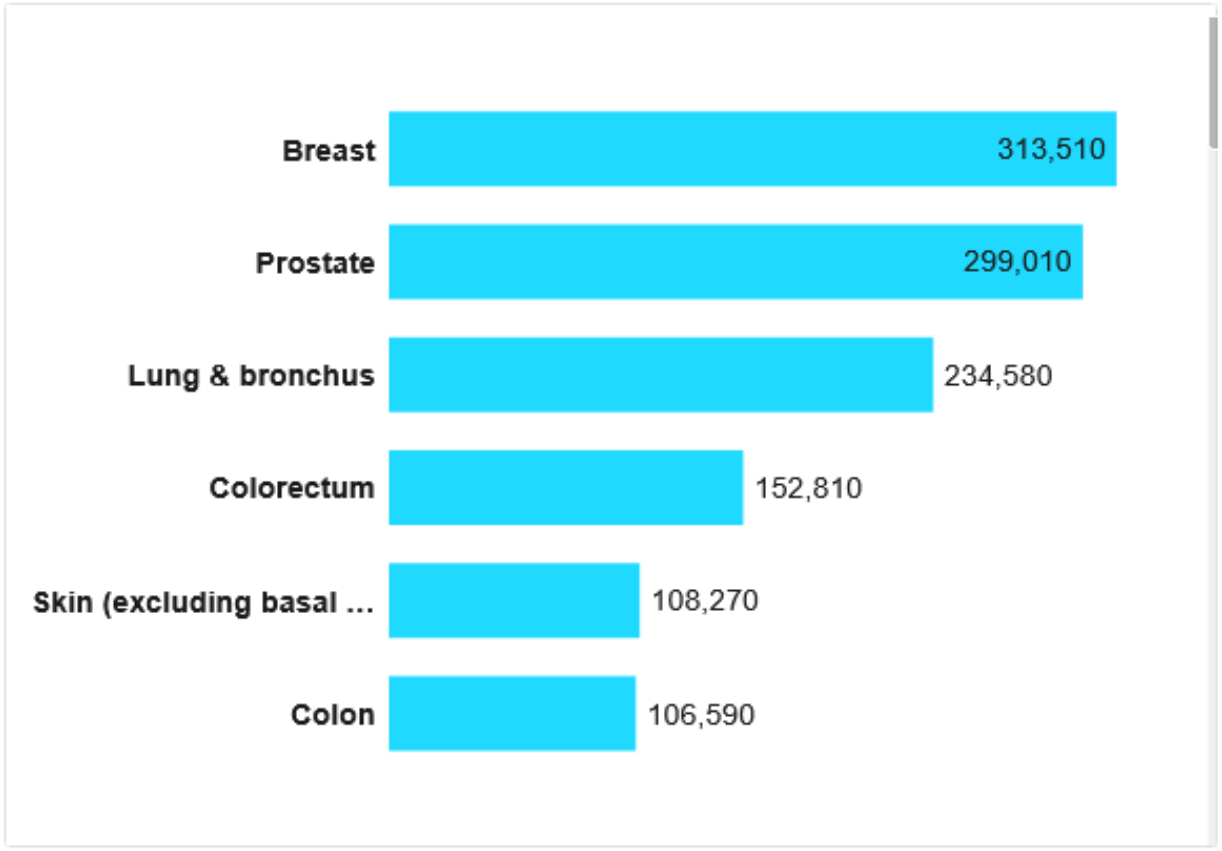
There was an improvement in the number of cancer deaths for Colorectal, Breast, and Prostate.

However, Pancreatic cancer jumped to occupy the third place.

2024 Estimated New Cancer Cases

Cases by Cancer Type

View by: Sex: Sexes combined | Cancer Type: All

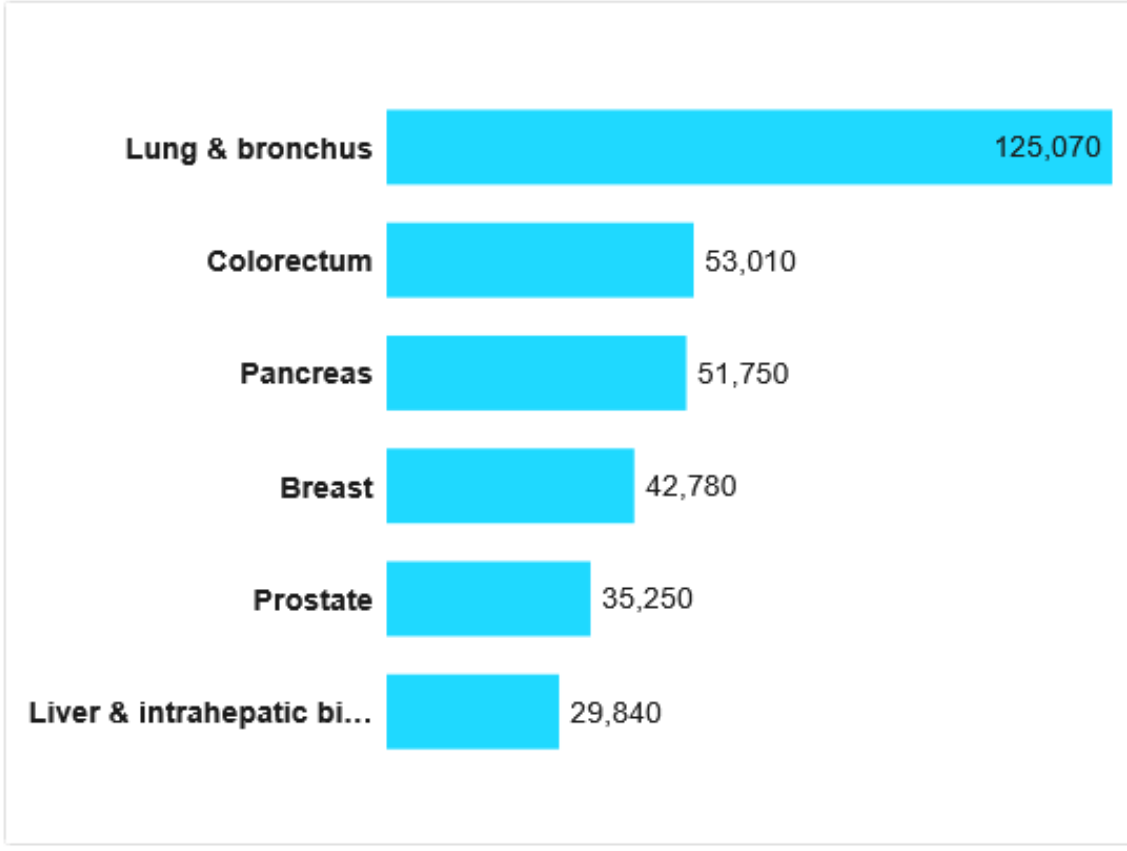


©American Cancer Society, 2024
Colorectum includes appendix.
Male & female breast cancers combined for whole U.S.
Urinary bladder includes in situ cases.

2024 Estimated Cancer Deaths

Deaths by Cancer Type

View by: Sex: Sexes combined | Cancer Type: All

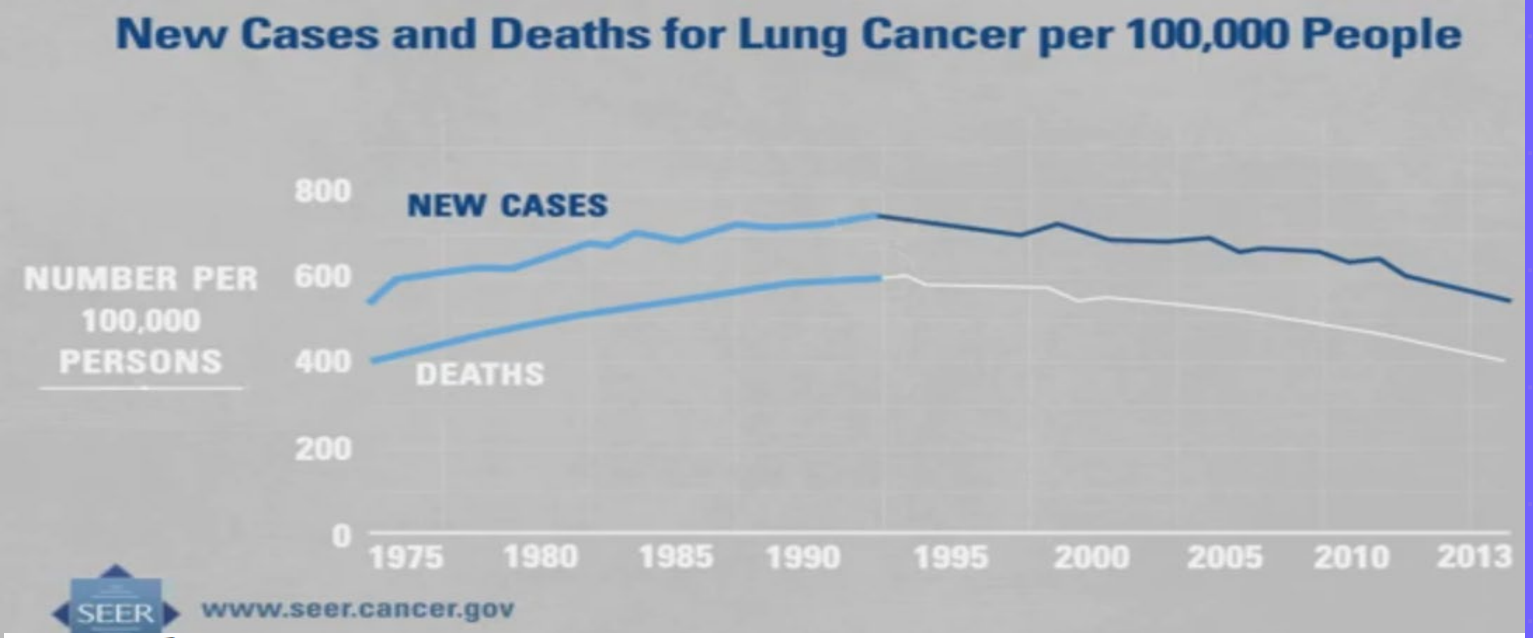


©American Cancer Society, 2024
Colorectum includes appendix.
Estimates not show were fewer than 50 cases or deaths.
Male & female breast cancers combined for whole U.S.
Urinary bladder includes in situ cases.

Even though Breast and Prostate cancer are leading in incidence or new cases…

Lung and bronchial cancer cause more deaths in the USA than any other type of cancer in both men and women.

Lung Cancer



At a Glance

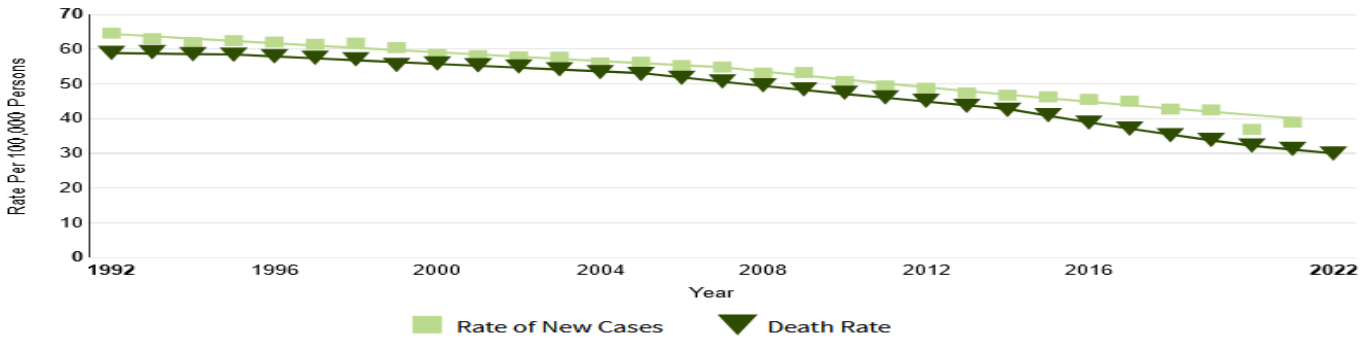
Estimated New Cases in 2024	234,580
% of All New Cancer Cases	11.7%

Estimated Deaths in 2024	125,070
% of All Cancer Deaths	20.4%

5-Year Relative Survival

26.7%

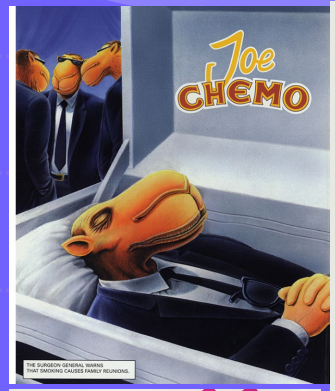
2014–2020



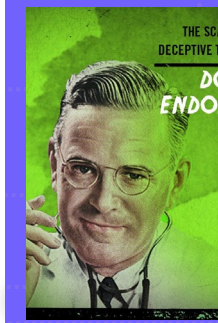
New cases come from SEER 12. Deaths come from U.S. Mortality.
All Races, Both Sexes. Rates are Age-Adjusted.
Modeled trend lines were calculated from the underlying rates using the Joinpoint Trend Analysis Software.
The 2020 incidence rate is displayed but not used in the fit of the trend line(s). Impact of COVID on SEER Cancer

As smoking rates increased, cancer cases increased.

As smoking rates decreased, cancer cases decreased.



Anti-smoking campaigns helped to lower smoking rates.



Estimated New Cancer Cases and Deaths By State (sexes combined)

View by: Cancer Type: Lung & bronchus | State: All

State	Cases	Deaths
Florida	18,580	10,230
California	16,920	9,320
Texas	14,430	8,050
New York	14,200	6,100
Ohio	10,390	5,670
Pennsylvania	11,200	5,570
Michigan	8,690	4,920
Illinois	9,430	4,910
North Carolina	8,920	4,640
Georgia	7,350	3,770
Tennessee	6,440	3,730
Indiana	5,930	3,390
Virgina	5,980	3,380

Estimates are not available for Puerto Rico at this time.

According to the American Cancer Society, Florida is the leading state in the USA in terms of new cases and deaths in sexes combined .

The American Lung Association released its 2023 Lung Cancer report:
Florida lung cancer screening in Florida is lower than the national average of 4.5%
Florida lung cancer screening is 2.4%

Also, Florida ranks poorly for early diagnosis.

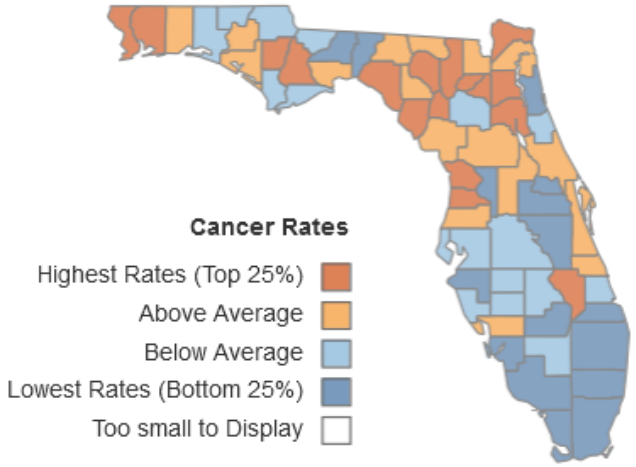
https://umiamihealth.org/en/sylvester-comprehensive-cancer-center/lp/lung-cancer-screening#cost

LUNG CANCER SCREENING ASSESSMENT

Take the quick assessment today to see if you qualify for a lung cancer screening.
You may also call 305-689-5864 or email lungcancerscreening@miami.edu for more information.

Lung Cancer in Florida: New Cancers

*All data represent **2016-2020 combined**, except the annual trend chart below*



Number of cases

Average # of cases per year from **2016-2020**

17,280
Statewide

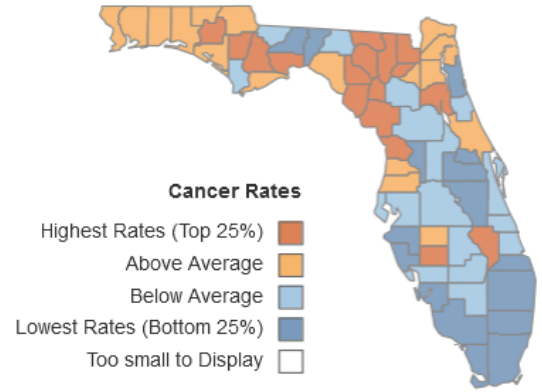
Rate

cases per 100k people from 2016-2020

54.7
Statewide

Lung Cancer in Florida: Cancer Deaths

*All data represent **2016-2020 combined**, except the annual trend chart below*



Number of deaths

Average # of deaths per year from **2016-2020**

10,880
Statewide

Rate

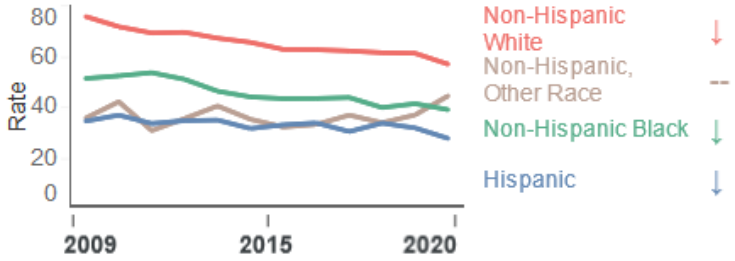
deaths per 100k people from 2016-2020

34.2
Statewide

Changes in Statewide rates from 2009-2020

Lung Cancer Rates by Race/ Ethnicity

Choose a group: by Race/ Ethnicity



Stage at Diagnosis

Cancer is easiest to treat when caught **early**

24.9%
Early Stage

64.1%
Late Stage

11.1%
Unknown

Statewide

Florida ranks poorly for early diagnosis.

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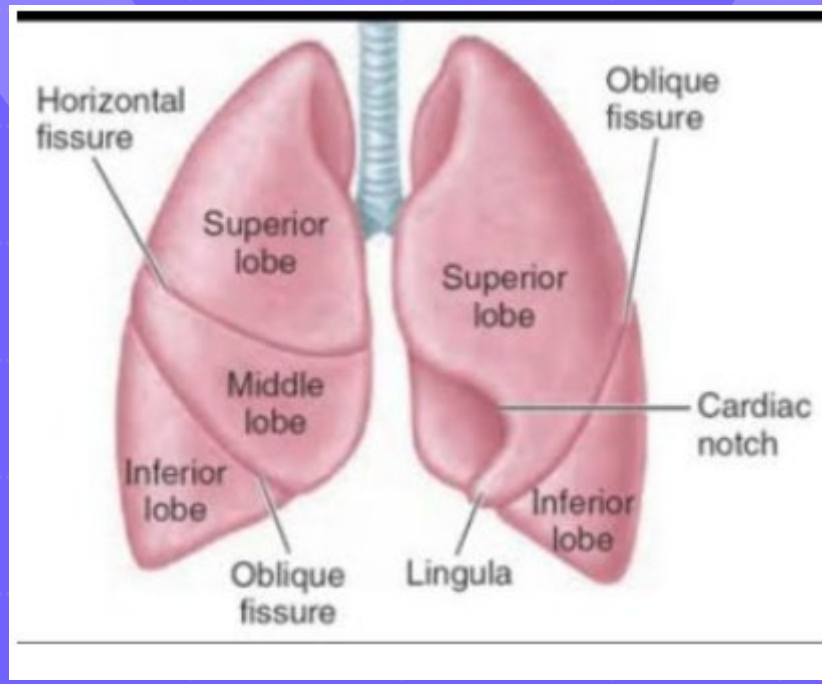
DID YOU KNOW? Lung cancer has been the leading cause of cancer death in Florida for years, but a new screening test is available that can catch it early and save lives. Adults 55-80 years old with a history of smoking should talk to their doctors about lung cancer screening.

The Florida Cancer Data System (FCDS) houses all cancer incidence and mortality data for the state of Florida since 1981. For more information on the registry, including statistical reports, procedures, and contacts, visit https://fcds.med.miami.edu. We acknowledge the Centers for Disease Control and Prevention, for its support of the Florida Cancer Data System, and the publication and distribution of the Florida Annual Cancer Report

Relevant Lung Anatomy



Tongue translation to Spanish = LENGUA

Lingula means little tongue (Latin) or tongue like projection.

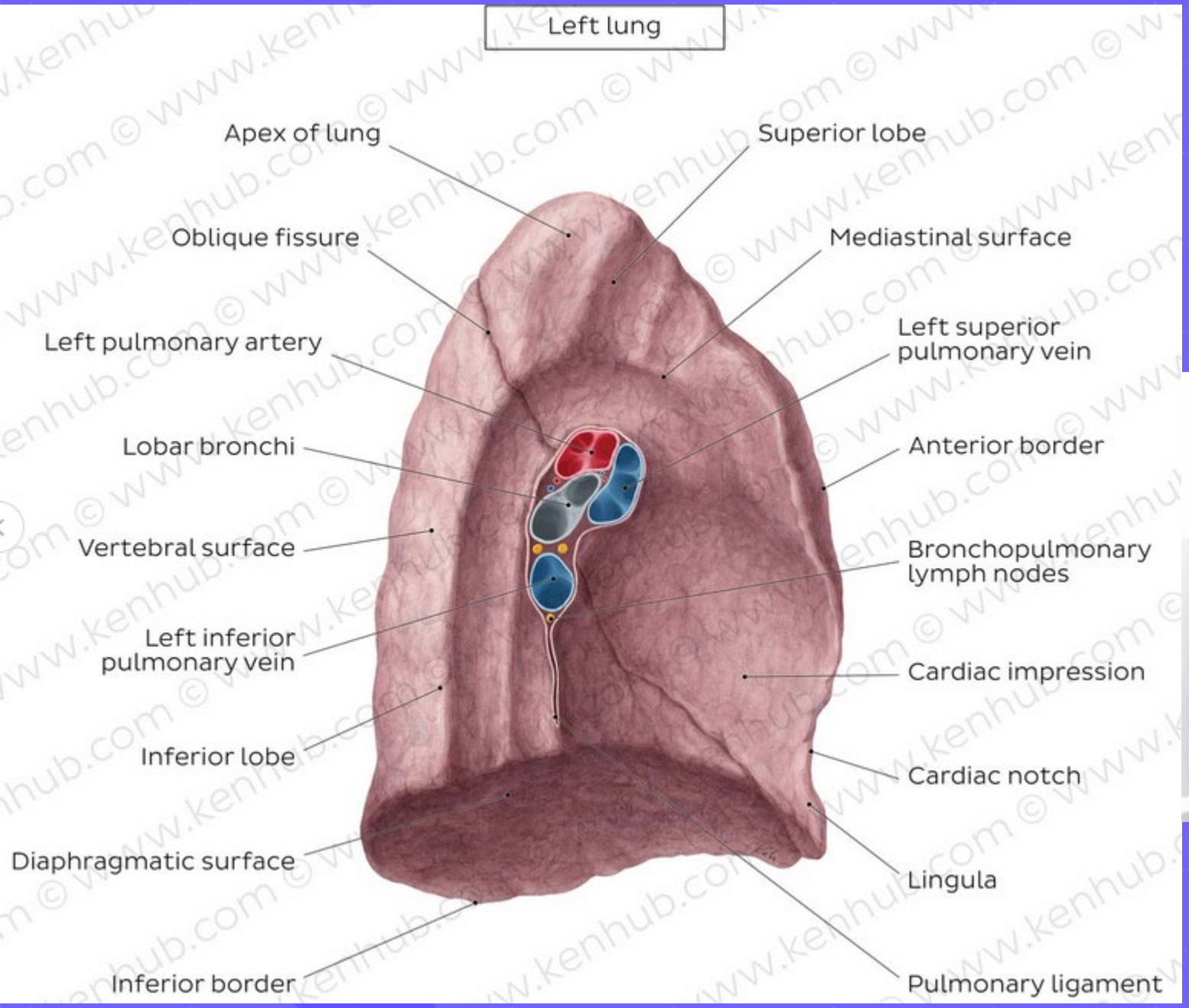
It is only found in the LEFT lung.

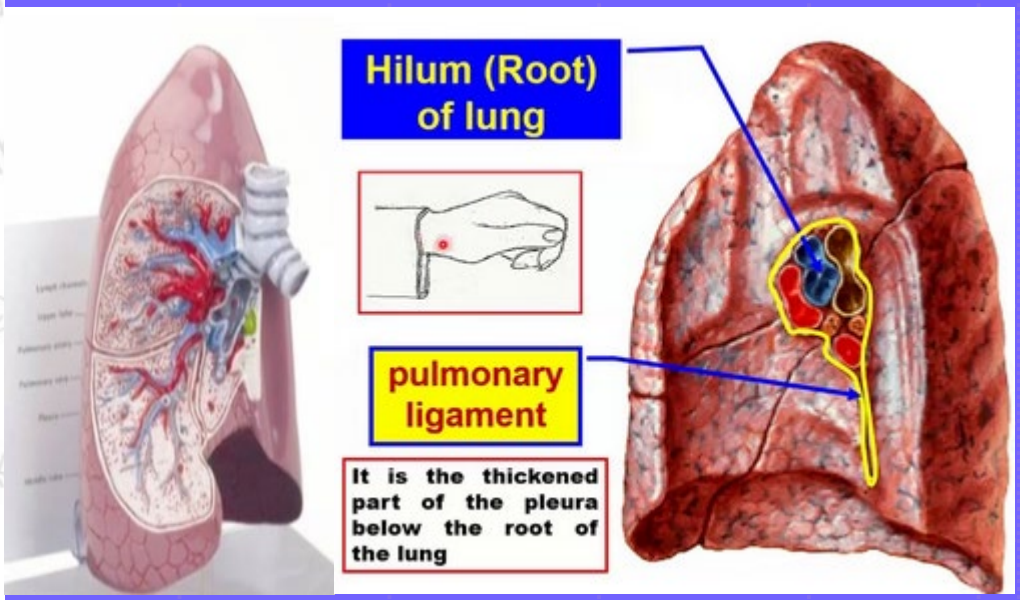
C341 Upper lobe, lung
Lingula
Apex
Pancoast tumor

SEER Program Coding and Staging Manual 2024

Hilum of lung

The Hilum or root is where various structures enter and exit the lung: pulmonary veins, pulmonary artery, bronchi to the lobes, nerves, lymphatics. It is surrounded by the pleura.



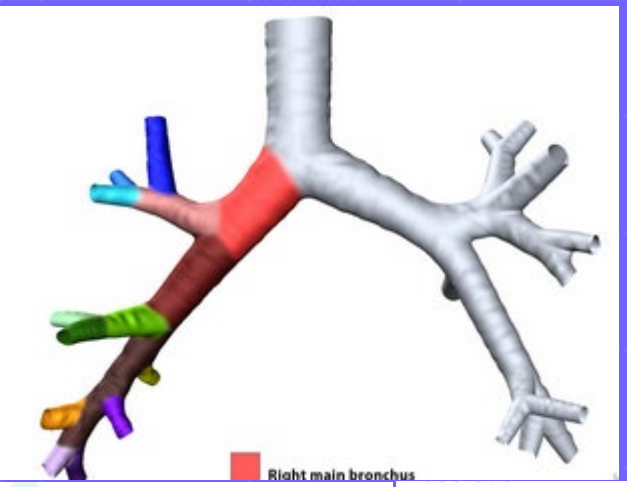


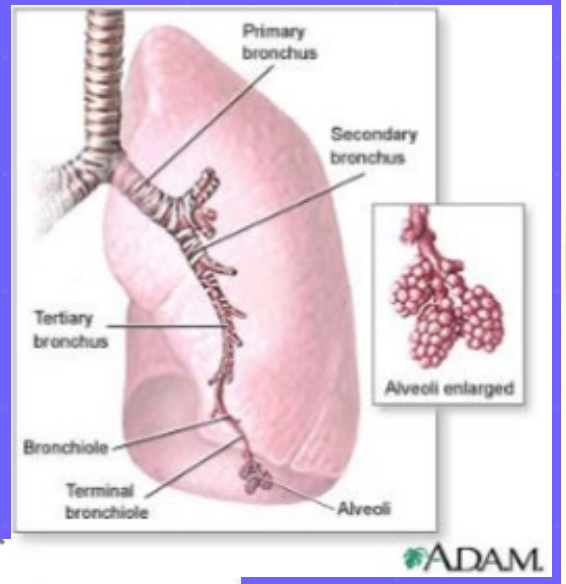
The Mediastinum is a central compartment in the thoracic cavity between the pleural sacs of the lungs.

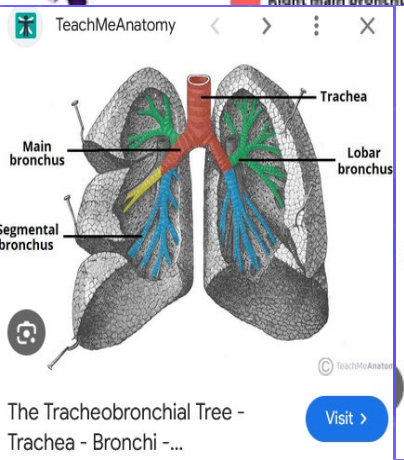
Middle Mediastinum: The trachea divides at the level of the T5 (5TH thoracic vertebra) into the right and left main bronchi.

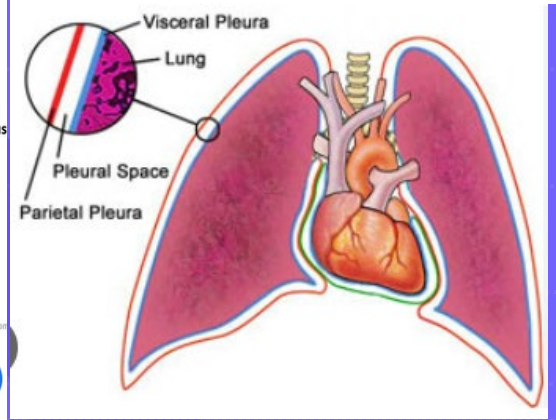
The Right main bronchus is wider, shorter and more vertical. It divides into 3 lobar bronchus

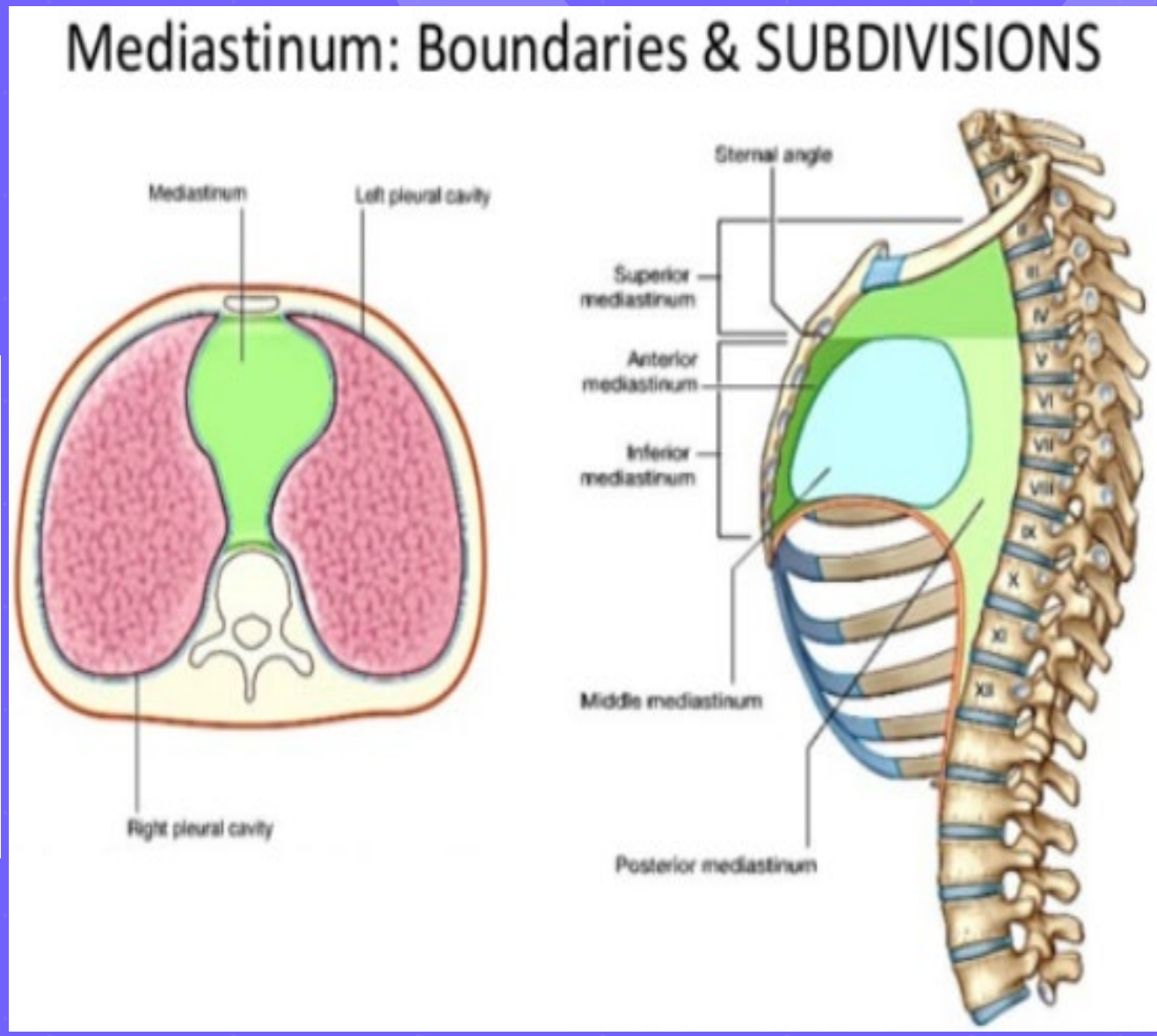
The Left main bronchus is narrower and longer and it divides into 2 lobar bronchus.





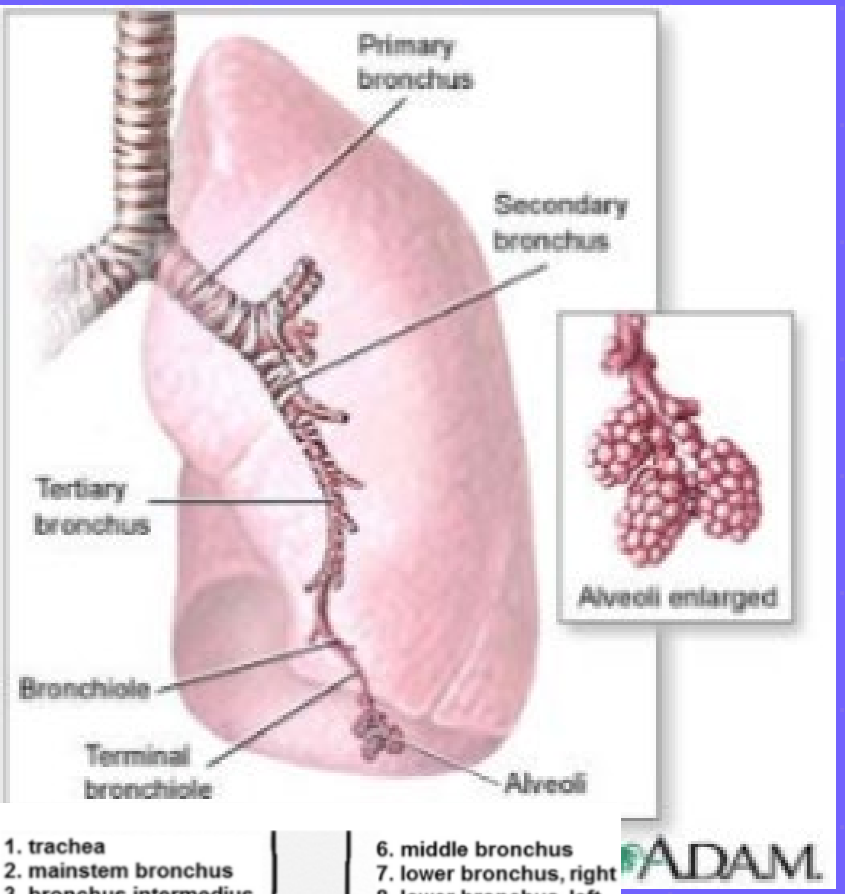


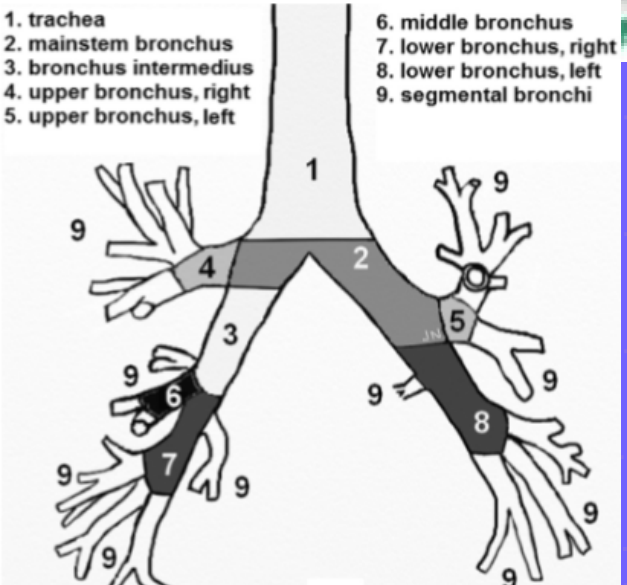




Relevant Lung Anatomy

BRONCHUS





Bronchus is NOT always equivalent to MAINSTEM bronchus. The mainstem bronchus only extends a few centimeters into the lung.

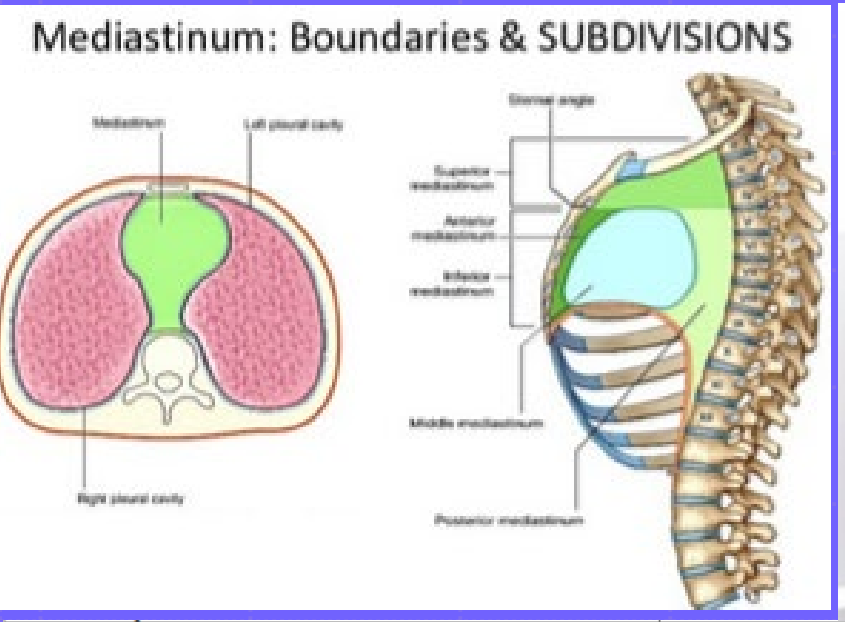
Code the mainstem bronchus C340 when it is specifically stated in the operative report and/or documented by a physician.

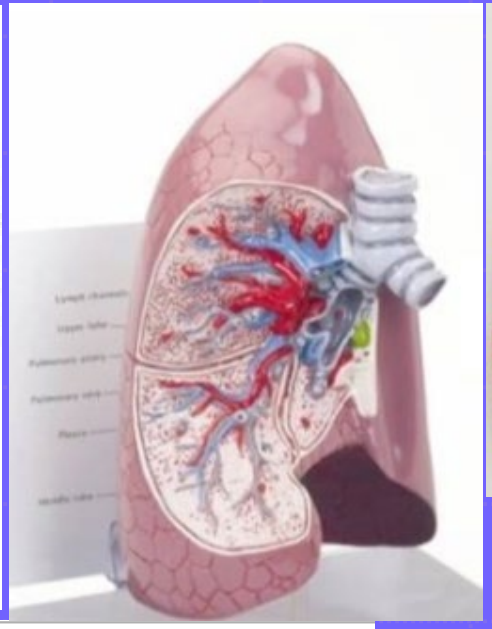
When only called bronchus, code to the lobe in which the bronchial tumor is located.

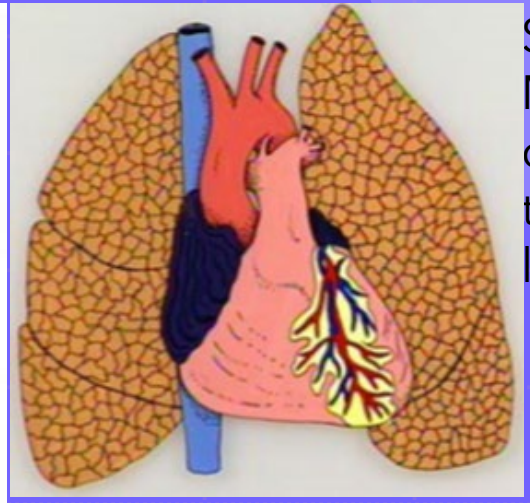
When lobe of origin is NOT documented/unknown, code to Lung NOS C349 (STR)

Lung Equivalent Terms and Definitions
C340-C343, C348, C349
(Excludes lymphoma and leukemia M9590 – M9993 and Kaposi sarcoma M9140)

Terminology	Laterality	Site Term and Code
Bronchus intermedius **Carina** **Hilus of lung** **Perihilar**	Bilateral	Mainstem bronchus **C340** *Note*: **Bronchus intermedius** is the portion of the **right mainstem bronchus** between the upper lobar bronchus and the origin of the middle and lower lobar bronchi
Lingula of lung	Left	Upper lobe **C341**
Apex **Apex of lung** **Lung apex** **Pancoast tumor** **Superior lobar bronchus** **Upper lobe bronchi**	Bilateral	Upper lobe **C341**
Middle lobe **Middle lobe bronchi**	Right	Middle lobe **C342**
Base of lung **Lower lobar bronchus** **Lower lobe** **Lower lobe bronchi** **Lower lobe segmental bronchi**	Bilateral	Lower lobe **C343**
Overlapping lesion of lung	Bilateral	Overlapping lesion of lung **C348** *Note*: **One** lesion/tumor which **overlaps two or more** lobes







Superior Mediastinum: Trachea.
Middle Mediastinum: The trachea divides at the level of the T5 (5TH thoracic vertebra) into the right and left main bronchi

Anterior (mediastinal) part:
Contains a hilum in the middle (it is a depression in which bronchi, vessels, & nerves forming the root of lung).

Giant cell carcinoma

AND

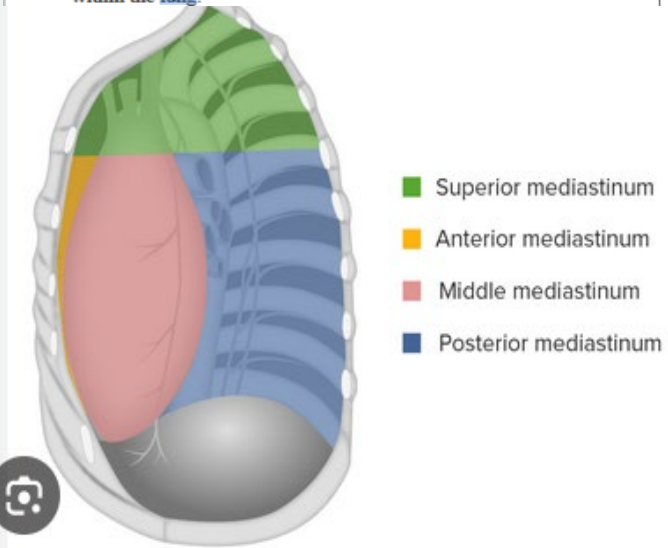
Spindle cell carcinoma

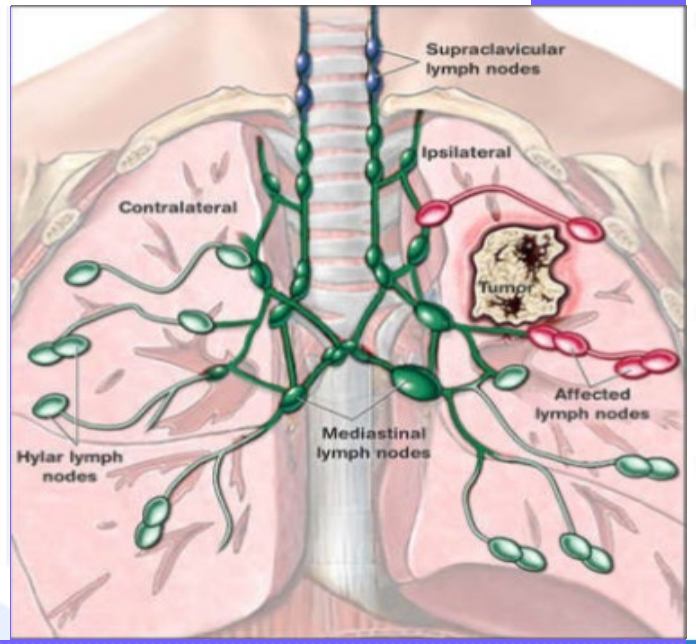
Note: Sarcomatoid carcinoma is not in the histology table because sarcomatoid tumors primarily originate in the mediastinum. The combination code is added for the rare occasion when a tumor occurs within the lung.

Sarcomatoid carcinoma **8033**

Note: Both giant cell carcinoma and spindle cell carcinoma are components of sarcomatoid carcinoma. The most accurate code for a combination of giant cell and spindle cell carcinoma is sarcomatoid carcinoma

All images are credited to their original source.



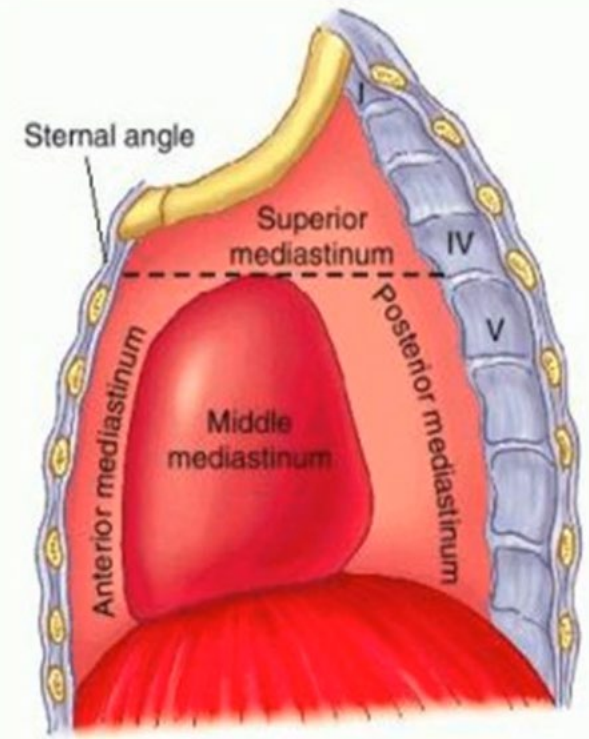


Mediastinum and Great

Visit

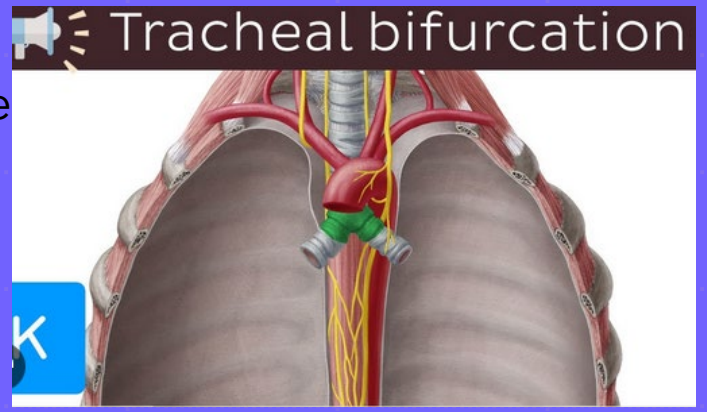
The mediastinum

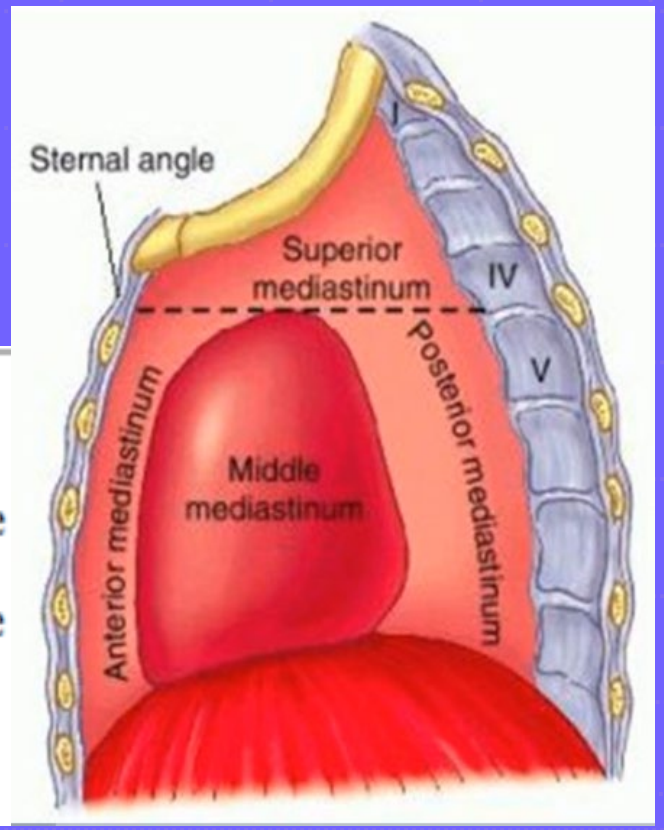
- It is a median septum/space between the two lungs.
- The mediastinum is divided by an imaginary plane passing through the sternal angle, into superior mediastinum and inferior mediastinum.
- The inferior is further divided into anterior, middle and posterior mediastinum.
- The heart and pericardium lies in the middle mediastinum.



The trachea divides at the level of the T5 (5TH thoracic vertebra) into right and left main bronchi in the middle mediastinum.

Sternal angle: the junction between the manubrium and the body of the sternum.





Giant cell carcinoma

AND

Spindle cell carcinoma

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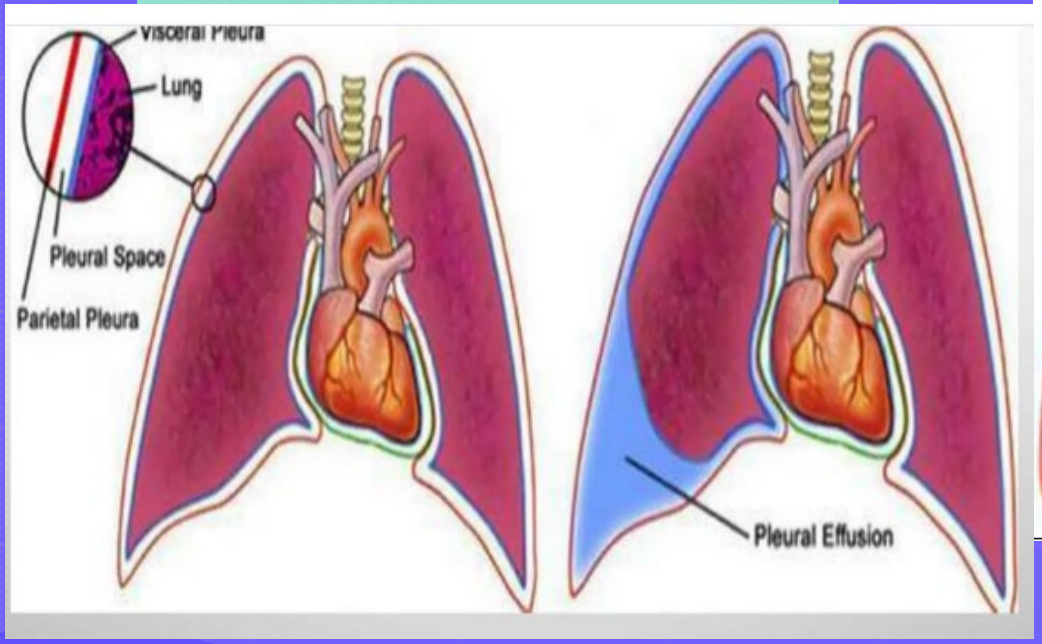
Sarcomatoid carcinoma **8033**

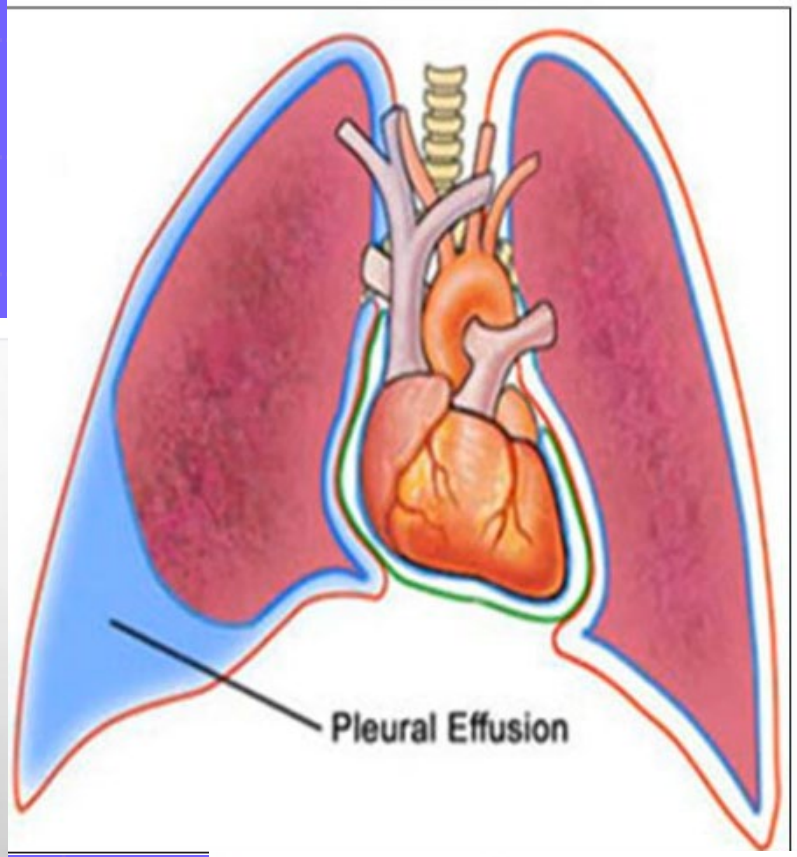
Note: Both giant cell carcinoma and spindle cell carcinoma are components of sarcomatoid carcinoma. The most accurate code for a combination of giant cell and spindle cell carcinoma is sarcomatoid carcinoma

- The pleural space normally contains 5 to 10 mL of clear fluid, which lubricates the apposing surfaces of the visceral and parietal pleura during respiratory movements

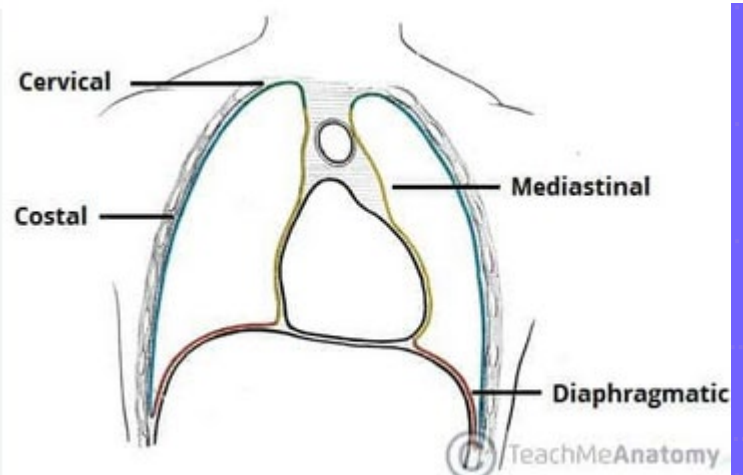


Decreased lung expansion, breathing difficult.

Pleural Effusion



- It is an abnormal accumulation of pleural fluid about 300 ml, in the *Costodiaphragmatic pleural recess* , (normally 5-10 ml fluid)
- Causes:
- Inflammation, TB, congestive heart disease and malignancy.
- The lung is compressed & the bronchi are narrowed.
- Auscultation would reveal only faint & decreased breathing sounds over compressed or collapsed lung lobe.
- Dullness on percussion over the effusion.



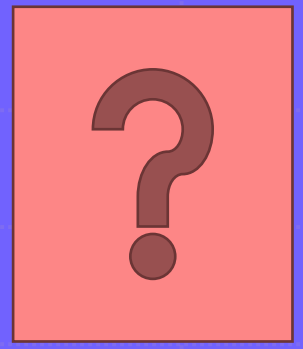
Pleura is coded separated from lung. Pleura: C38.4

C34 BRONCHUS AND LUNG
C38 HEART, MEDIASTINUM, AND PLEURA

LUNG CANCER

Etiology.

What are the Risk Factors?



RISK FACTORS

1."Smoking is the leading cause of lung cancer, accounting for 85% of cases" (National Library of Med

2. Radon

- After smoking, **the next leading cause of lung cancer is exposure to radon gas,** which is released from soil and can build up indoors.

American Cancer Society Jan 12, 2022

US EPA: Environmental Protection Agency

Radon is the number one cause of lung cancer amo non-smokers, according to EPA estimates. Overall, radon is the second leading cause of lung cancer. Radon is responsible for about 21,000 lung cancer deaths every year. About 2,900 of these deaths occu among people who have never smoked. On January 13, 2005, Dr. Richard H. Carmona, the U.S. Surgeon General, issued a national health advisory on radon

Radon in water Ingestion/ inhalation risk Most of the risk: radon released into the air when showering… less risk of stomach cancer from swallowing water with radon. Source of radon: surface water not as much a problem. Groundwater as a a well more concerning.

For more information, call EPA's Drinking Water Hotline at (800) 426-4791 If your water comes from a private well, you can also contact your state radon office.

3.Second hand smoke

Secondhand smoke is the third leading cause of lung cancer and responsible for an estimated 3,000 lung cancer deaths every year. Smoking affects non-smokers by exposing them to secondhand smoke.

Uranium Uranium-238 is present in rocks, soil… Uranium-238 decays to form RADIUM-226 Radium-226 then decays to form RADON -222 gas

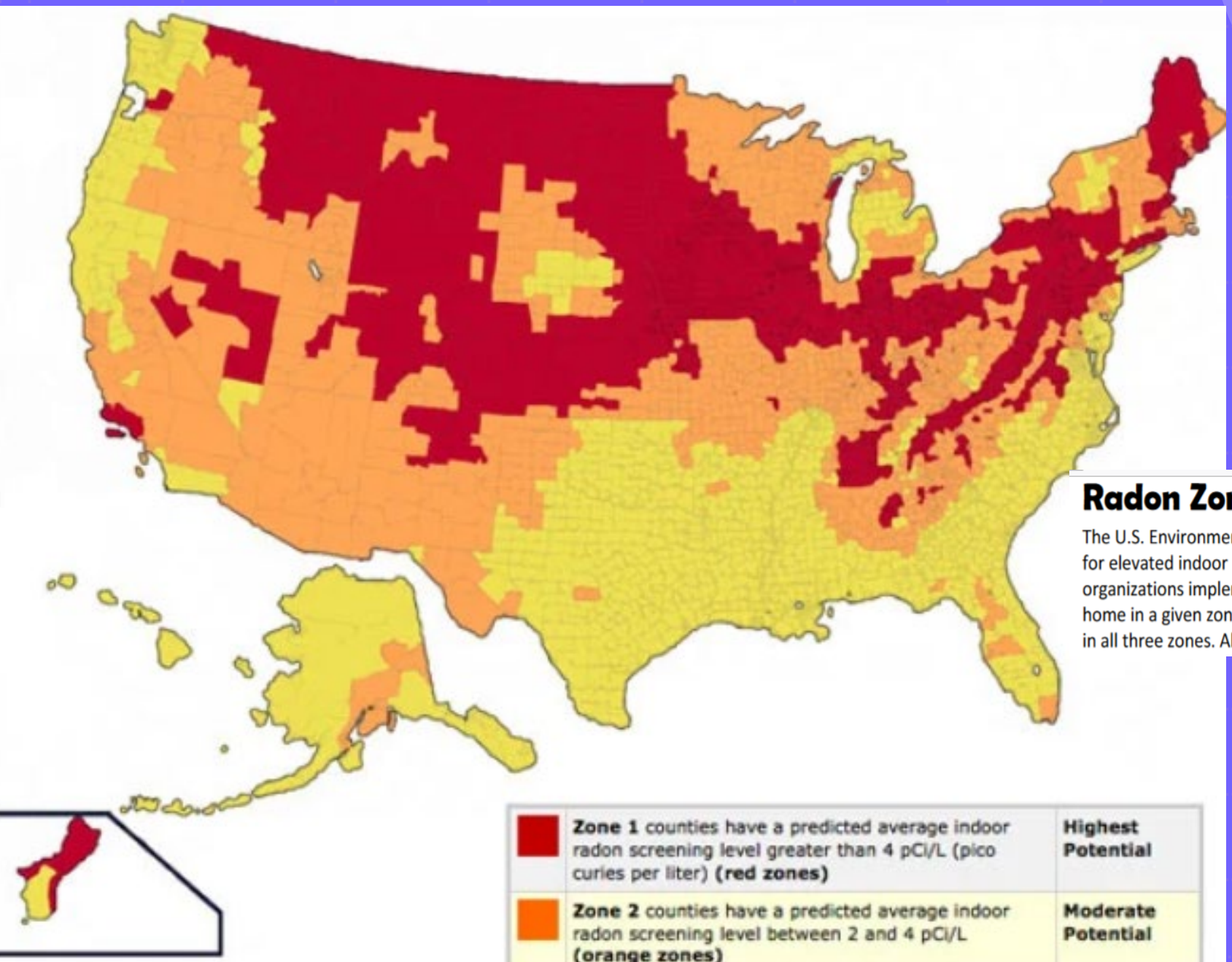
Chemicals: Chromium, Nickel, Soot, Tar, Coal, Diesel, Arsenic in drinking water. Asbestos. it is a fibrous silicate mineral used in many industries. found in cement products, shingles, floor tiles, and ceilings. Asbestos is also found in automotive transmission parts, clutch and brakes.

Beta carotene supplements in heavy smokers.

"Use of beta-carotene has been associated with an increased risk of lung cancer in people who smoke or who have been exposed to asbestos"

Beta carotene is a red-orange pigment found in carrots and other plants, fruits and vegetables. is converted to vitamin A (retinol) in the body.

Hereditary/ Family History of lung cancer, Previous lung cancer (Prior radiation therapy for the lungs), Increasing age, HIV infection, air pollution…



	Zone 1 counties have a predicted average indoor radon screening level greater than 4 pCi/L (pico curies per liter) **(red zones)**	**Highest Potential**
	Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L **(orange zones)**	**Moderate Potential**
	Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L **(yellow zones)**	**Low Potential**

Most radon gas comes through the soil, meaning a house with a dirt crawl space has maximum radon exposure potential. However, even houses with a seemingly tight concrete foundation can have high radon levels.
As a radioactive gas, radon can enter a home through cracks in the foundation floor and walls, through basement floor drains, and through sump openings. Radon can also enter a home through holes made in the foundation walls for pipes and other utility lines. Radon gas that enters a home through the basement or crawl space has no difficulty moving to the upstairs and into living areas.

Radon Zones Map

The U.S. Environmental Protection Agency (EPA) created this map to identify areas with the potential for elevated indoor radon levels. The EPA Map of Radon Zones helps national, state, and local organizations implement radon-resistant building codes. The map should not be used to determine if a home in a given zone should be tested for radon. Homes with elevated levels of radon have been found in all three zones. All homes should be tested for radon.

Radon gas is invisible, odorless, and chemically inert, so it can't be detected without using special detection devices. Fortunately, radon detectors are commonly available throughout the U.S., Canada, and most developed nations. The most common "passive" radon detectors can be purchased at hardware stores, home centers, and online. These devices are called Radon Test Kits. These are typically placed in the house for 2 to 5 days for adequate exposure. The test kits are then sent to a lab where the radon level can be determined.

For more accurate and immediate test results a National Radon Defense Radon Measurement Professional can provide you radon testing services with calibrated

RADON risk of cancer

RADON RISK IF YOU'VE NEVER SMOKED

Radon Level	If 1,000 people who never smoked were exposed to this level over a lifetime*...	The risk of cancer from radon exposure compares to**...	WHAT TO DO:
20 pCi/L	About 36 people could get lung cancer	35 times the risk of drowning	Fix your home
10 pCi/L	About 18 people could get lung cancer	20 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 15 people could get lung cancer	4 times the risk of dying in a fall	Fix your home
4 pCi/L	About 7 people could get lung cancer	The risk of dying in a car crash	Fix your home
2 pCi/L	About 4 people could get lung cancer	The risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 2 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L		(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be higher.
*Lifetime risk of lung cancer deaths from *EPA Assessment of Risks from Radon in Homes* (EPA 402-R-03-003).
**Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.

RADON RISK IF YOU SMOKE

Radon Level	If 1,000 people who smoked were exposed to this level over a lifetime*...	The risk of cancer from radon exposure compares to**...	WHAT TO DO: Stop Smoking and...
20 pCi/L	About 260 people could get lung cancer	250 times the risk of drowning	Fix your home
10 pCi/L	About 150 people could get lung cancer	200 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 120 people could get lung cancer	30 times the risk of dying in a fall	Fix your home
4 pCi/L	About 62 people could get lung cancer	5 times the risk of dying in a car crash	Fix your home
2 pCi/L	About 32 people could get lung cancer	6 times the risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 20 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L		(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be lower.

FLORIDA - EPA Map of Radon Zones

http://www.epa.gov/radon/zonemap.html

The purpose of this map is to assist National, State and local organizations to target their resources and to implement radon-resistant building codes.

This map is not intended to determine if a home in a given zone should be tested for radon. Homes with elevated levels of radon have been found in all three zones.

All homes should be tested, regardless of zone designation.

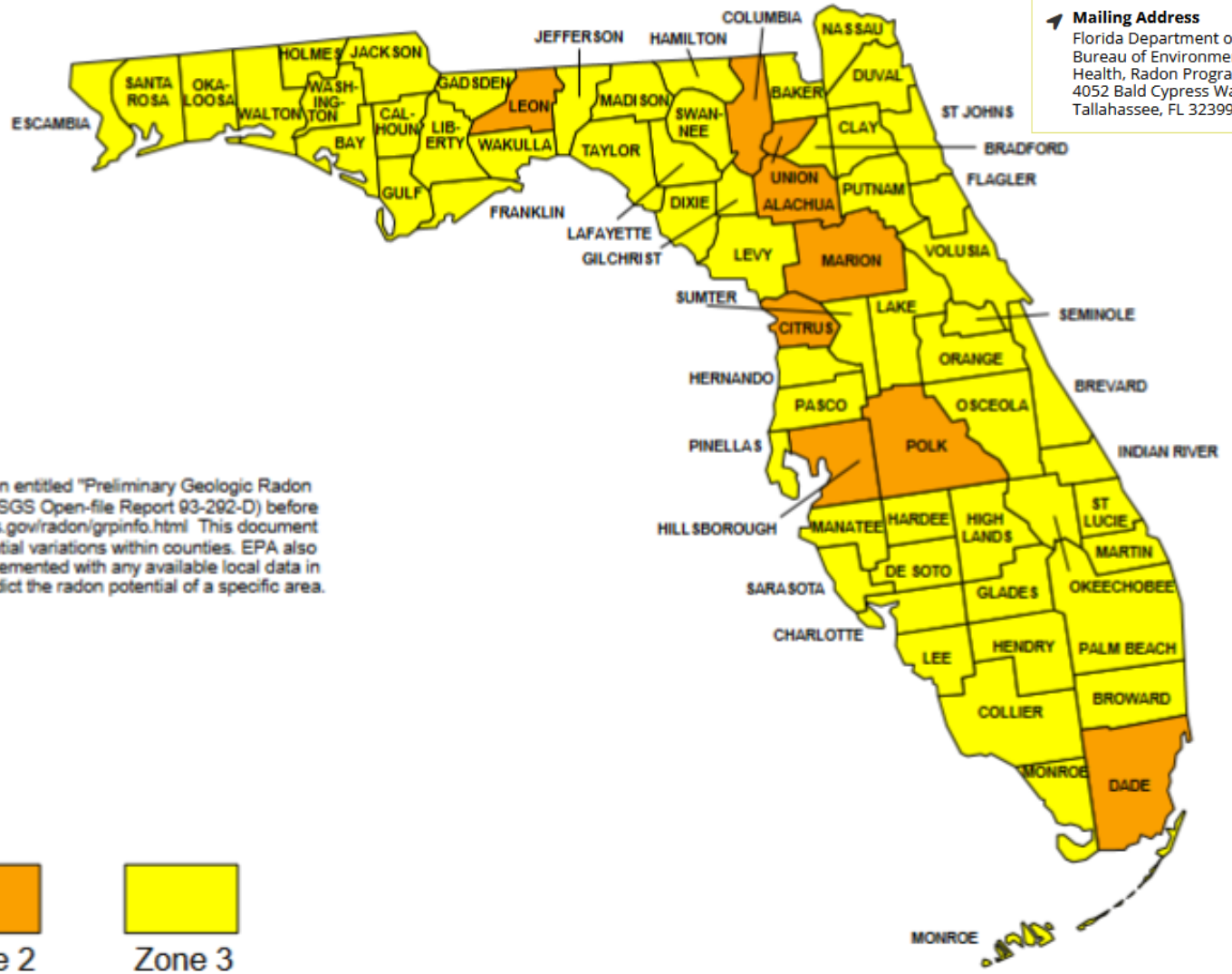
Radon and Indoor Air Program

For Florida Information: 850-245-4288 or 800-543-8279

phtoxicology@flhealth.gov

Fax
850-487-0864

Mailing Address
Florida Department of Health
Bureau of Environmental Public Health, Radon Program
4052 Bald Cypress Way, Bin A08
Tallahassee, FL 32399

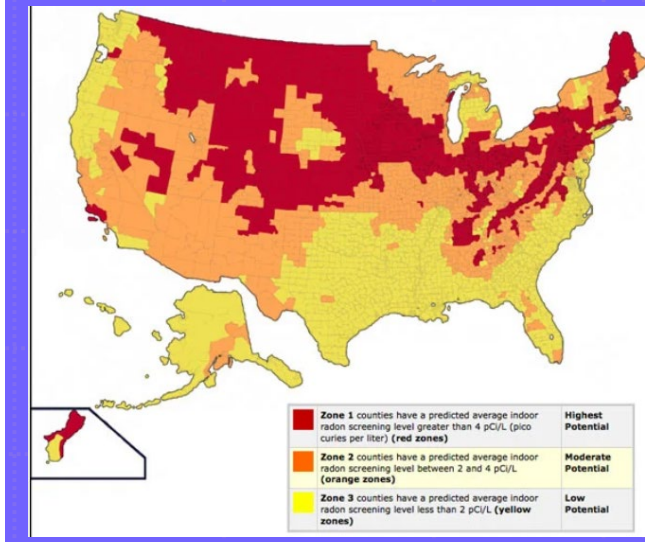


IMPORTANT: Consult the publication entitled "Preliminary Geologic Radon Potential Assessment of Florida" (USGS Open-file Report 93-292-D) before using this map. http://energy.cr.usgs.gov/radon/grpinfo.html This document contains information on radon potential variations within counties. EPA also recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential of a specific area.

Zone 1 Zone 2 Zone 3

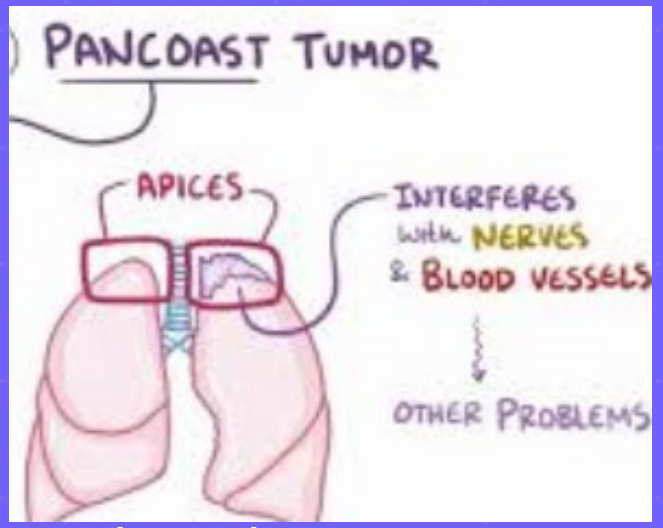
Radiation Facts

- Phosphogypsum, a waste product from manufacturing fertilizer, emits radon, a radioactive gas. It also contains the radioactive elements uranium, thorium and radium.

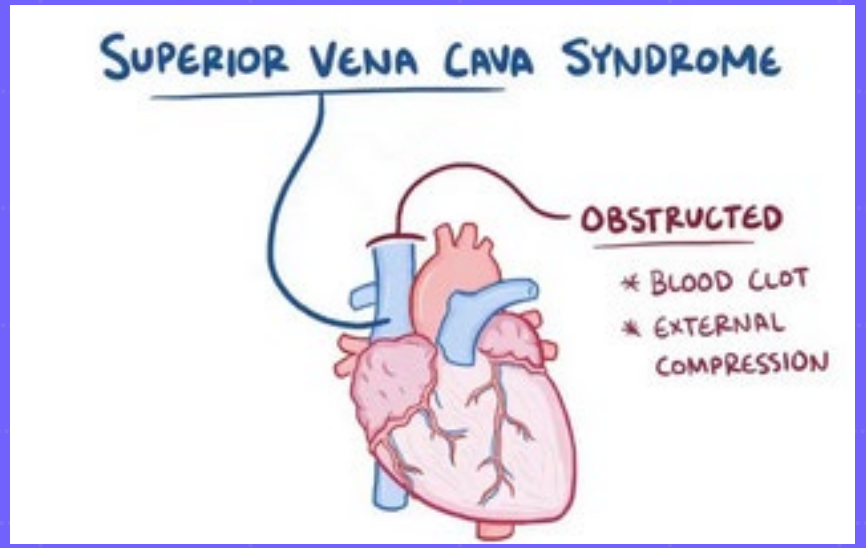


LUNG CANCER

Lung cancer can present in the APEX of the lung: PANCOAST tumor



Lung cancer mass can obstruct the drainage venous flow to the SVC causing Superior Vena Cava Syndrome.



All images are credited to their original source.

PANCOAST Tumors or Superior Sulcus tumors

Lung cancer in the apex or upper lung above the first rib.

"The brachial plexus is formed by the anterior primary rami of C5 through T1 and provides sensory and motor innervation of the upper extremity" (National Library of Medicine).

The brachial plexus may be affected by the tumor pressing some nerves resulting in **shoulder pain that radiates to the axilla and scapula. It may present with upper back pain, neck, arm, or chest pain**. Upper extremity weakness. Atrophy of hand muscles 4th or 5th digit.

Pancoast Syndrome: Horner's sx (ipsilateral anhidrosis, miosis, ptosis).

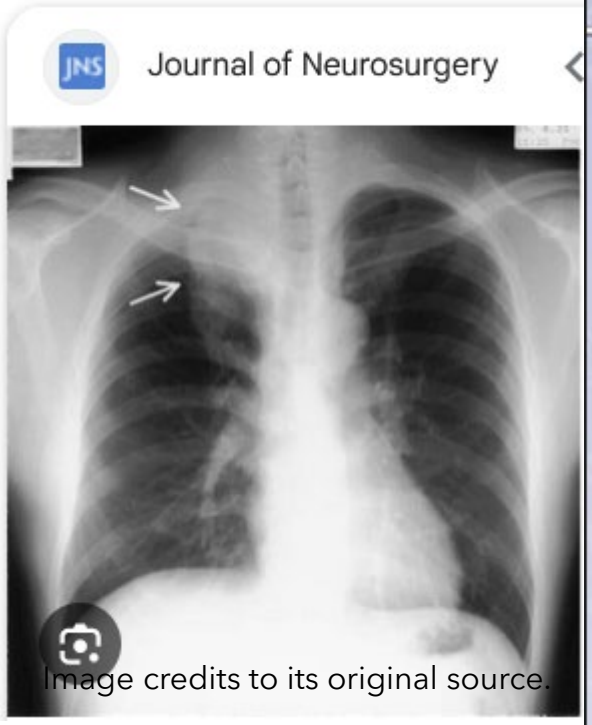


Image credits to its original source.

Laterality

Laterality must be coded for all subsites except carina.

Pancoast Tumor

Pancoast tumor is a lung cancer in the upper-most segment of the lung that directly invades the brachial plexus (nerve bundles) of the neck, causing pain. It is by definition malignant. Code the date of diagnosis from the imaging report when a Pancoast tumor is identified on imaging prior to biopsy.

Code the Date of Diagnosis from the imaging report when a Pancoast tumor is identified on IMAGING prior to biopsy.

C341 Upper lobe, lung
Lingula
Apex
Pancoast tumor

Pancoast lung cancer tumors
Intense shoulder pain that may radiate to the head, neck, and chest

- **Apex:**
- lies one inch above the medial 1/3 of the clavicle.

https://seer.cancer.gov/manuals/2024/AppendixC/Coding_Guidelines_Lung_2024.pdf

Appendix C: Coding Guidelines 1

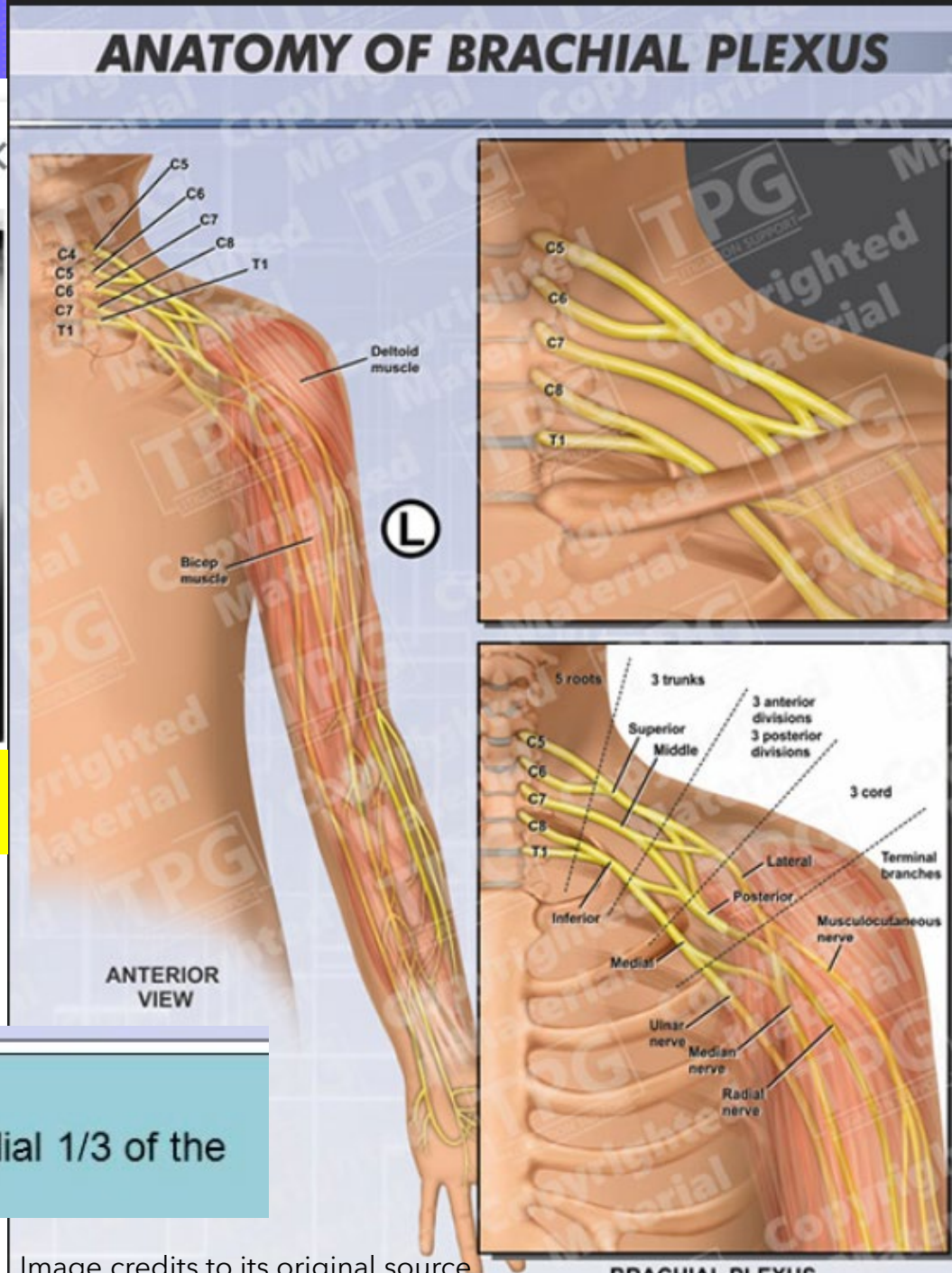
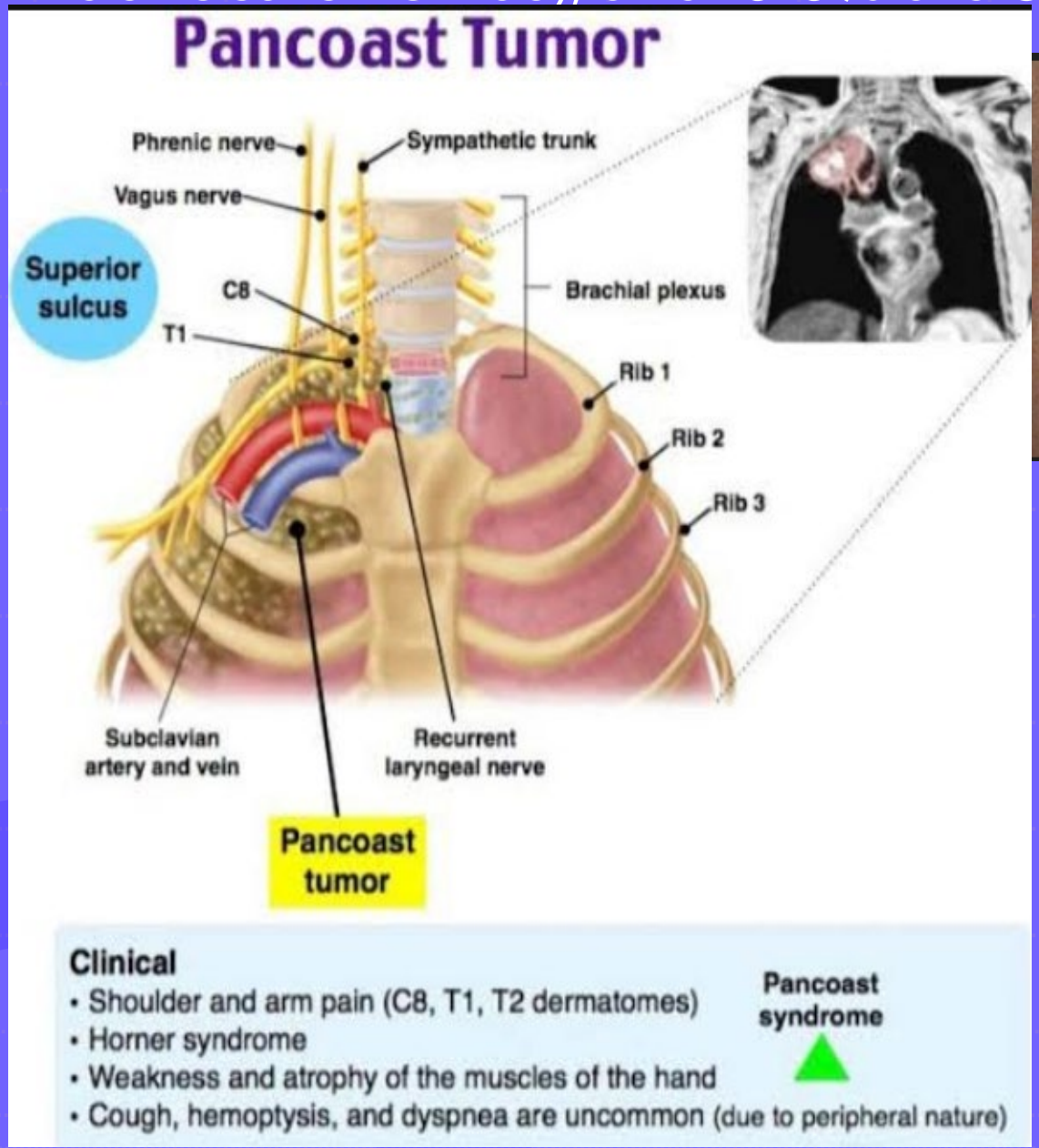
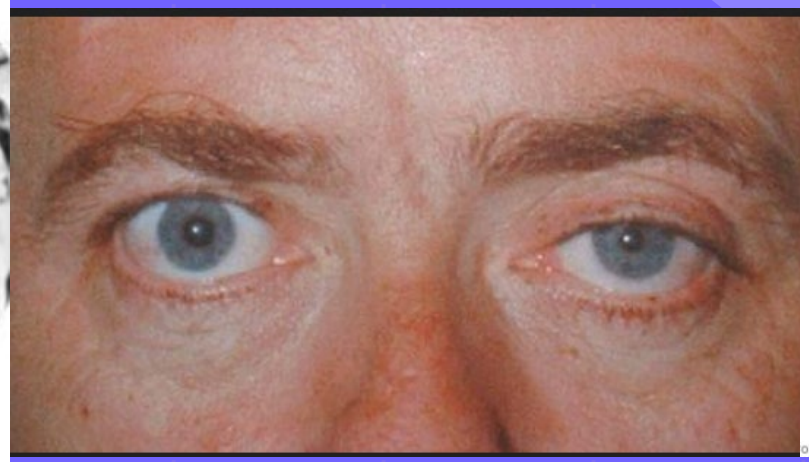
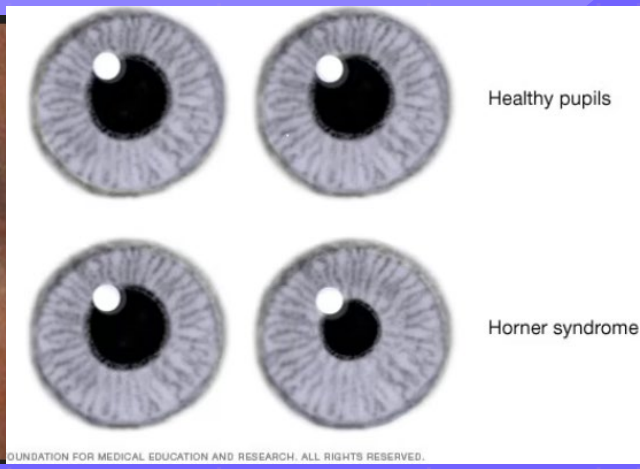


Image credits to its original source.

Most PANCOAST tumors are NSCLC (Squamous cell carcinoma or Adenocarcinomas), and 3-5% are Small cell carcinomas (Medscape source).







PANCOAST tumors may present with Horner syndrome: smaller size pupil (miosis), drooping of the eyelid (miosis), decreased sweating on the affected side of the face (anhidrosis).

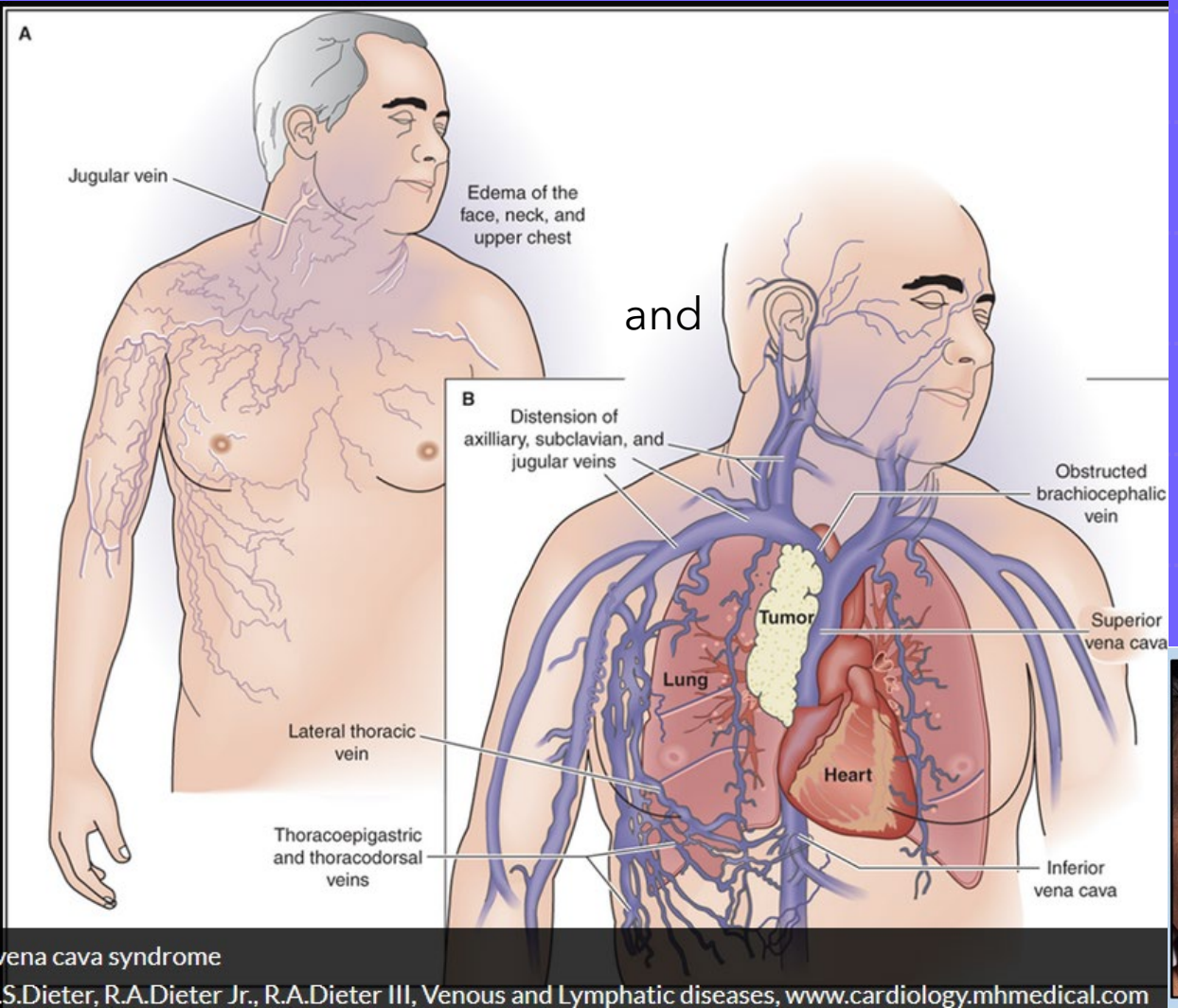
Horner syndrome results from interruption of the **sympathetic nerve** supply to the eye.

-Horner syndrome is not exclusive of lung cancer. There are other causes-

SUPERIOR VENA CAVA Syndrome

Obstruction of blood flow through the SVC.
Obstruction of venous return into the SVC to the heart.

The Superior Vena Cava drains the blood away from the head, neck, arms and upper chest into the right side of the heart.



vena cava syndrome
S.Dieter, R.A.Dieter Jr., R.A.Dieter III, Venous and Lymphatic diseases, www.cardiology.mhmedical.com

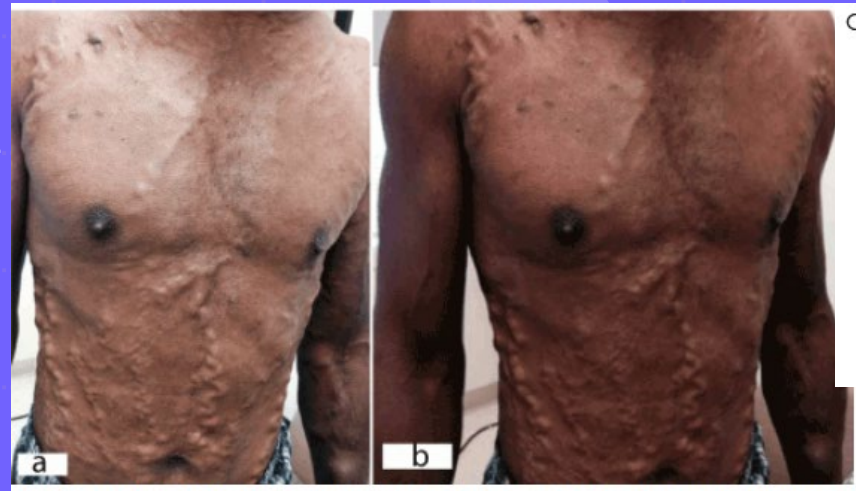
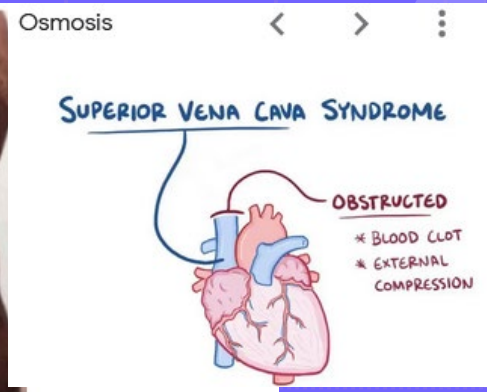


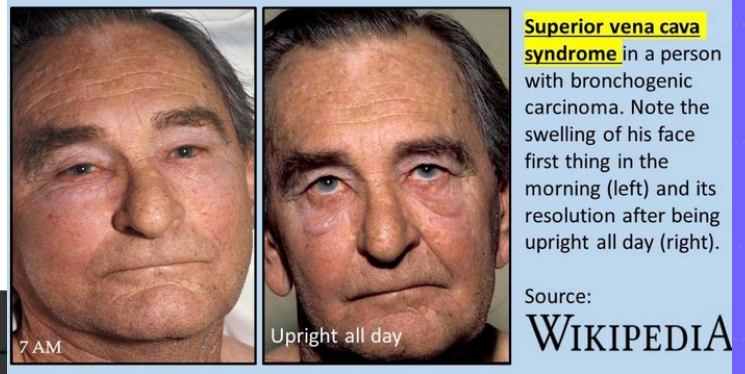
Figure 1. (a) and (b): Physical examination findings of neck, chest and abdomen. The patient showed typical clinical features of a superior cava syndrome with marked distension of his superficial neck, chest and abdominal veins. Cyanosis of the upper extremities can also be observed.



SVC Syndrome:Malignant and Non Malignant (less common) causes.

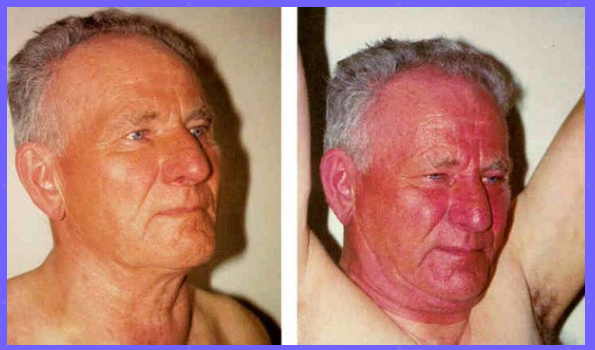
Malignant etiologies: Lung Cancer, Lymphoma, Mediastinal tumor, Malignant associated thrombus.

Non Malignant causes: intravascular venous catheter



Superior vena cava syndrome in a person with bronchogenic carcinoma. Note the swelling of his face first thing in the morning (left) and its resolution after being upright all day (right).

Source: WIKIPEDIA



Facial plethora (aka Pemberton's sign) with arm flexion above the head due to SVC syndrome. Facial plethora involves facial swelling and redness.

There is partial or complete obstruction and we can see face and neck swelling, upper extremity swelling.

Lung ADENOCARCINOMA is the most common cause of SVC Syndrome

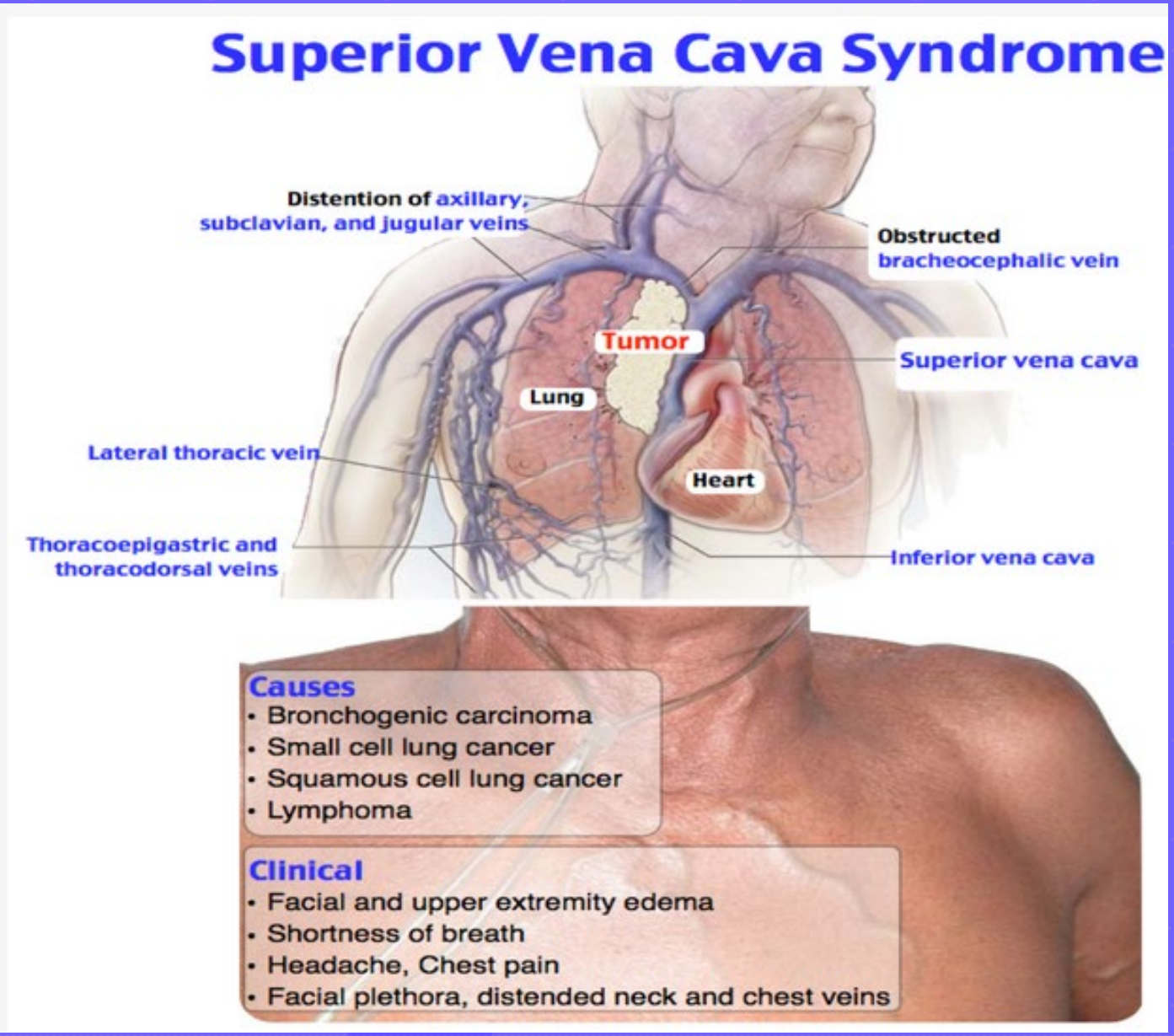


Table 1. Common causes of superior vena cava syndrome.

Malignant (>85%)	Benign (3% to 15%)
Lung cancer	Indwelling catheters
Lymphoma	Thymoma
Breast cancer	Cystic hygroma
	Tuberculosis
	Histoplasmosis
	Thyroid goiter
	Aortic aneurysm

LUNG CANCER

Signs and symptoms

-Persistent cough

-Shortness of breath

-Coughing or spitting up blood

-Unintentional unexplained weight loss

-Shoulder, arm, chest or back pain.

(See Pancoast cancer tumors)

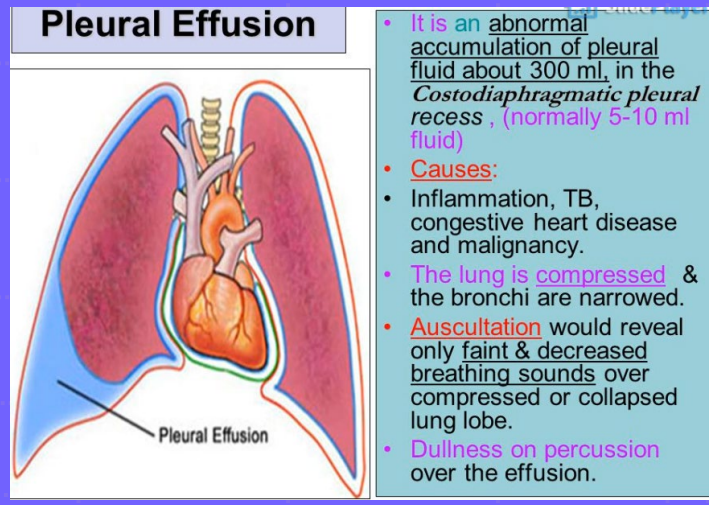
-Swelling (edema) in face, neck or arms (See SVC Syndrome secondary to lung cancer etiology).

Workup / Diagnosis

Chest X-rays, CT/MRI scan (chest/abdomen/pelvis for cancer staging)
PET scan

Sputum / Bronchoscopy / Bronchial washing / lung biopsy

Malignant pleural effusion in cytology



Codes for Solid Tumors

Microscopically Confirmed

Code	Description
1	Positive histology
2	Positive cytology
4	Positive microscopic confirmation, method not specified

Not Microscopically Confirmed

Code	Description
5	Positive laboratory test/marker study
6	Direct visualization without microscopic confirmation
7	Radiology and other imaging techniques without microscopic confirmation
8	Clinical diagnosis only (other than 5, 6, or 7)

Confirmation Unknown

Code	Description
9	Unknown whether or not microscopically confirmed; death certificate only

REMEMBER:

1 **Histology**: lung **FNA**

2 Cytology: sputum
bronchial brushings
bronchial washings
pleural fluid

4 Positive MICROSCOPIC confirmation, method not specified

Coding Instructions for Solid Tumors

1. The codes are in **priority order**; code **1** has the **highest** priority. Always code the procedure with the lower numeric value when presence of cancer is confirmed with multiple diagnostic methods.
2. Change to a higher-priority code, if at **ANY TIME** during the course of disease the patient has a diagnostic confirmation with a **higher priority**. Change to the higher-priority code even when diagnostic confirmation is based on the result of subsequent treatment.

   Example: Benign brain tumor diagnosed on MRI. Assign diagnostic confirmation code 7. Patient later becomes symptomatic and the tumor is surgically removed. Change diagnostic confirmation code to 1.
3. Assign code **1** when the microscopic diagnosis is based on
   a. **Tissue** specimens from fine needle aspirate, biopsy, surgery, autopsy, or D&C

   b. Bone marrow specimens (aspiration and biopsy)
4. Assign code **2** when the microscopic diagnosis is based on
   a. Examination of **cells** (rather than tissue) including but not limited to: sputum smears, bronchial brushings, bronchial washings, prostatic secretions, breast secretions, gastric fluid, spinal fluid, peritoneal fluid, pleural fluid, urinary sediment, cervical smears, or vaginal smears
   b. Paraffin block specimens from concentrated spinal, pleural, or peritoneal fluid
5. Assign code **4** when there is information that the diagnosis of cancer was microscopically confirmed, but the type of confirmation is unknown
6. Assign code **5** when the diagnosis of cancer is based on laboratory tests or tumor marker studies that are clinically diagnostic for that specific cancer and there is no other diagnostic work up (e.g., imaging)

   Example: If the workup for a prostate cancer patient is limited to a highly elevated PSA (no DRE and no imaging) and the physician **diagnoses and/or treats** the patient based only on that PSA, code the diagnostic confirmation to 5.

   Note: For tests and tumor markers that may be used to help diagnose cancer, see
   https://www.cancer.gov/about-cancer/diagnosis-staging/diagnosis
   https://www.cancer.gov/about-cancer/diagnosis-staging/diagnosis/tumor-markers-fact-sheet

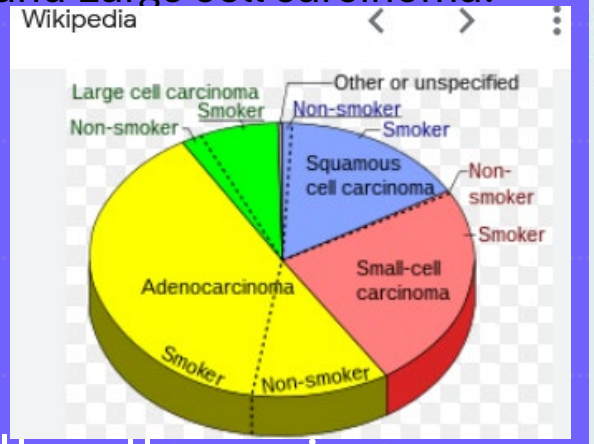
https://seer.cancer.gov/manuals/2024/SPCSM_2024_MainDoc.pdf

LUNG Cancer

- Non-small cell carcinoma.

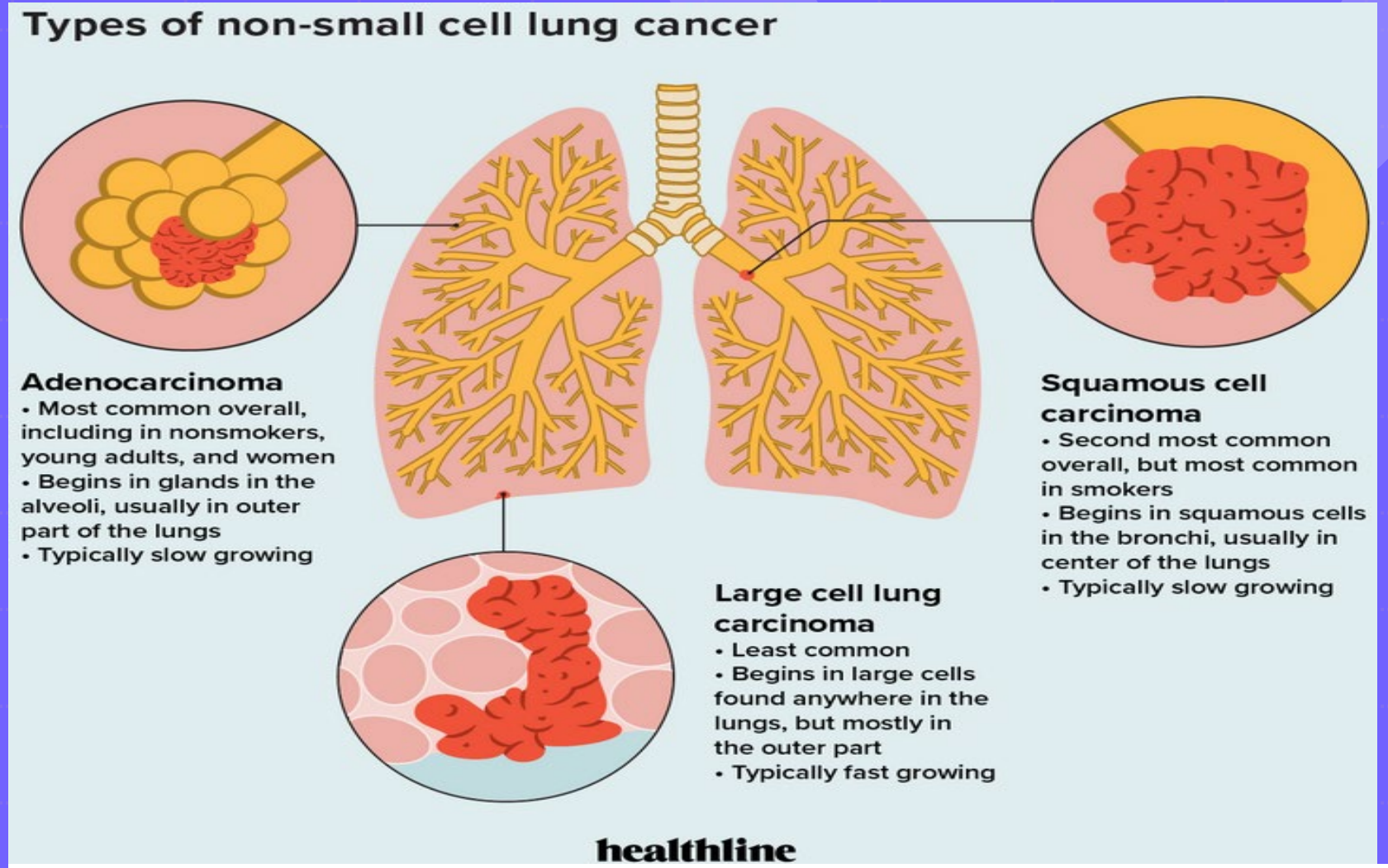
About 80% to 85% of lung cancers are NSCLC.

The main subtypes of NSCLC (arises from epithelial cells) are Adenocarcinoma, Squamous cell carcinoma, and Large cell carcinoma.



- Small cell carcinoma

SCLC comprises about 15% of lung cancer. Strongly associated with exposure to tobacco carcinogens. Very aggressive, early metastasis in most people 2/3 at diagnosis, poor prognosis.



IMPORTANT NOTE 1: Non-small cell lung carcinoma (NSCLC) is a broad group of cancers which includes all **carcinoma types** in Table 3 with the **exception** of:

- Neuroendocrine carcinoma (NEC), neuroendocrine tumors (NET) AND
  - Small cell carcinoma/neuroendocrine tumors/all subtypes of small cell carcinoma AND
  - Large cell neuroendocrine carcinoma/combined large cell neuroendocrine carcinoma AND
- Sarcoma NOS 8800 (not a carcinoma) **AND**
  - All subtypes of sarcoma NOS

NSCLC is usually adenocarcinoma, squamous cell carcinoma, or large-cell carcinoma. See the instructions for coding histology when NSCLC is the diagnosis.

IMPORTANT NOTE 2: The small cell neuroendocrine carcinoma row has been deleted in the 2024 update and replaced with new rows for neuroendocrine carcinoma (NEC) and neuroendocrine tumor (NET). This change is based on the 5th Ed WHO Classification of Lung tumors book and current concepts.

Lung cancer

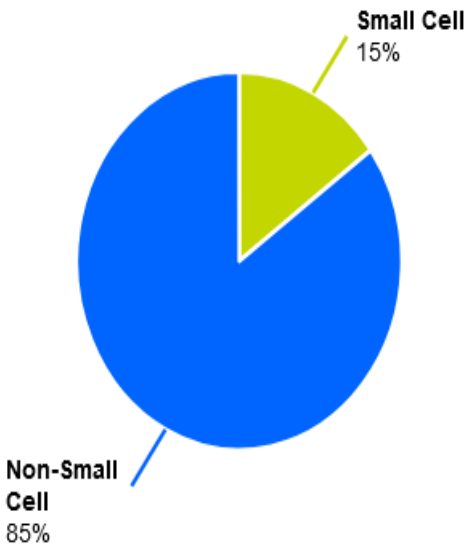
The majority of cases of non-small cell lung cancer NSCLC are ADENOCARCINOMA.

Histology

- In 2016-2020, most (85%) lung cancer cases were non-small cell.
- Of these non-small cell cases, over half (57%) were adenocarcinoma.

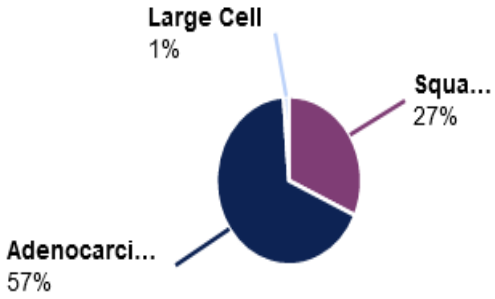
Lung Cancer Histology, 2016-2020

Source: National Cancer Institute. SEER*Explorer, 2023

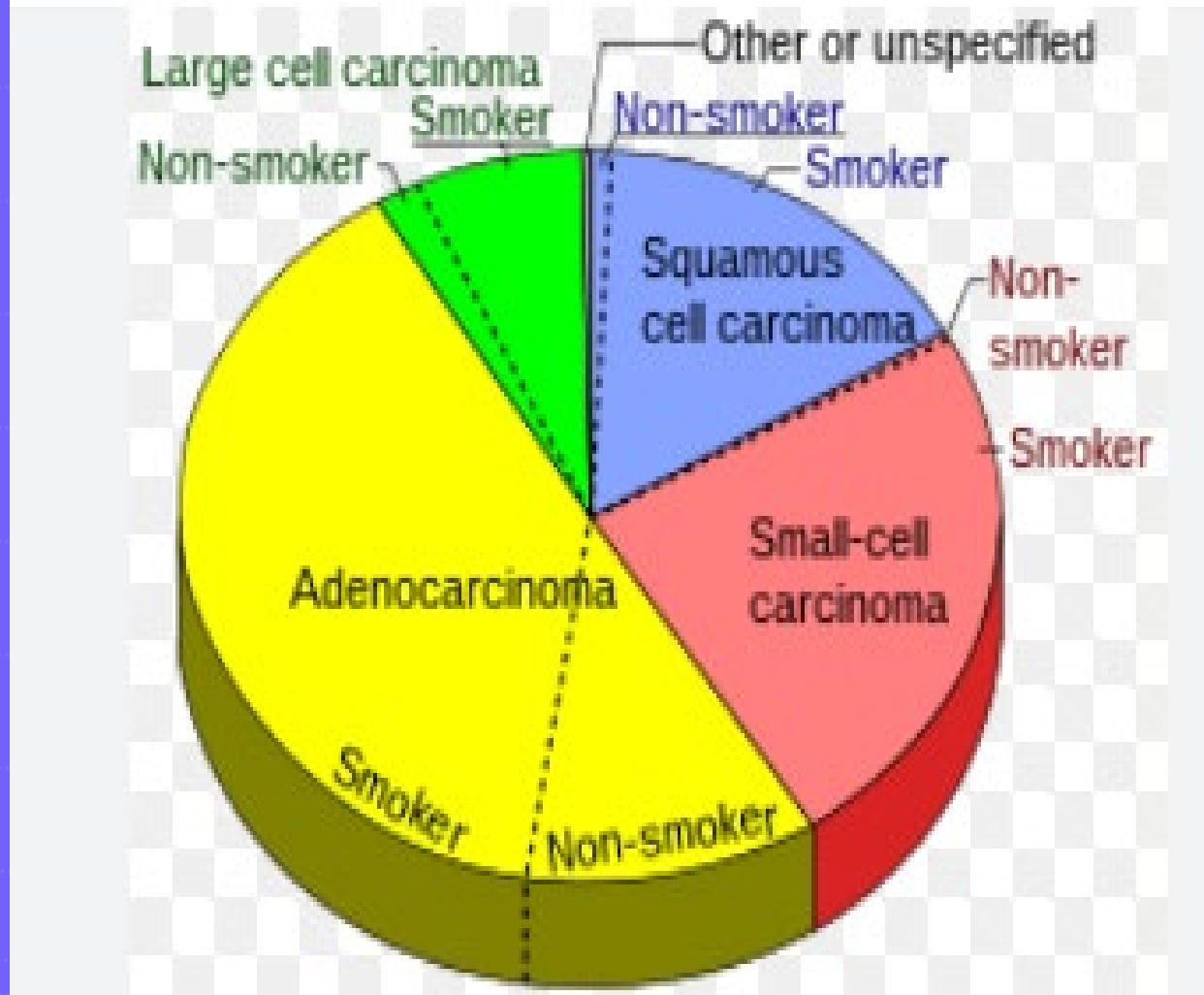


Non-Small Cell Lung Cancer Histology, 2016-2020

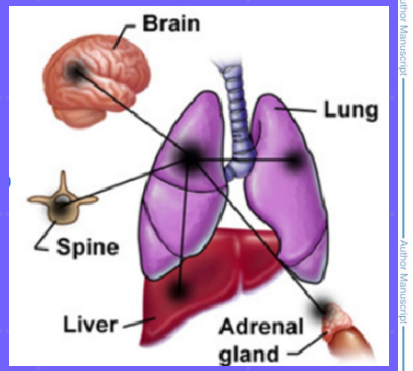
Source: National Cancer Institute. SEER*Explorer, 2023

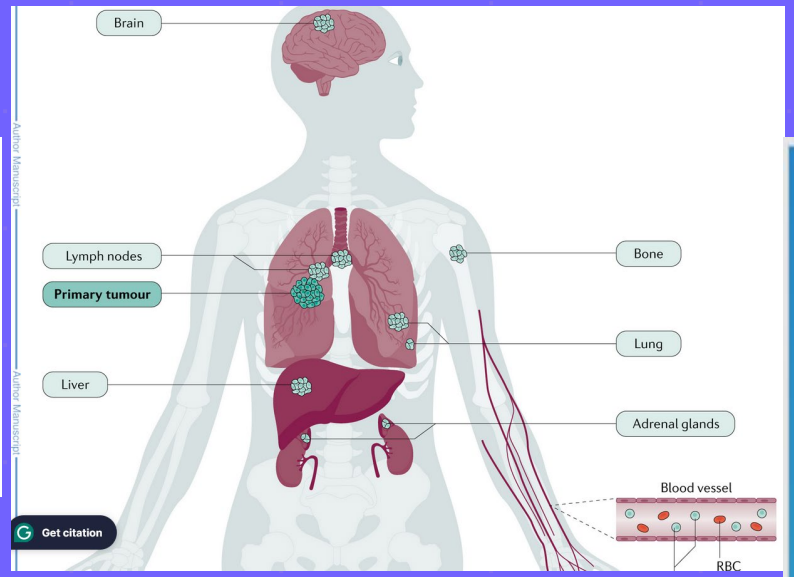


Wikipedia



Lung cancer Metastasis sites





Nat Rev Dis Primers. Author manuscript; available in PMC 2021 Jun 4.
www.ncbi.nlm.nih.gov/pmc/articles/PMC8177722/figure/F1/
Image credits to original source.

Lung Multiple Primary Rules
C340-C343, C348, C349
(Excludes lymphoma and leukemia M9590 – M9993 and Kaposi sarcoma M9140)

Note 1: These rules are **NOT** used for tumor(s) described as metastases. Metastatic tumors include but are not limited to:

- Adrenal glands
- Bone
- Brain
- Discontinuous lesions in adjacent/contiguous organs
- Discontinuous lesions in chest wall
- Discontinuous lesions/nodules in soft tissue adjacent to primary site
- Regional or distant lymph nodes as identified in Summary Staging Manual
- Esophagus
- Heart
- Liver
- Trachea

Lung cancer can break the blood-brain barrier and/or blood-CSF barrier and metastasize to the brain.

BRAIN PATHOGEN BARRIERS

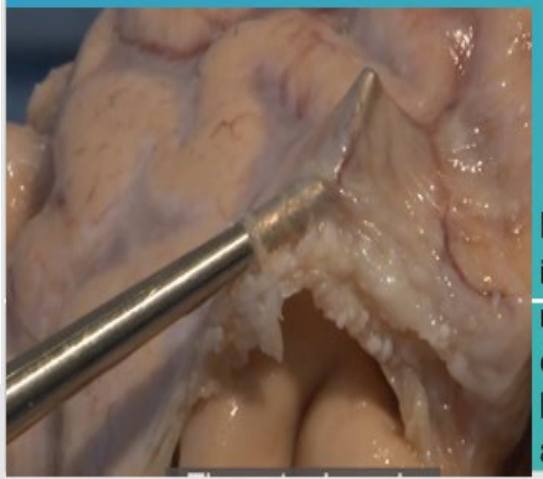
-Blood–brain barrier

was discovered in the late 19th century, when the German physician Paul Ehrlich injected a dye into the bloodstream of a mouse. To his surprise, the dye infiltrated all tissues except the brain and spinal cord.

-Blood–CSF barrier

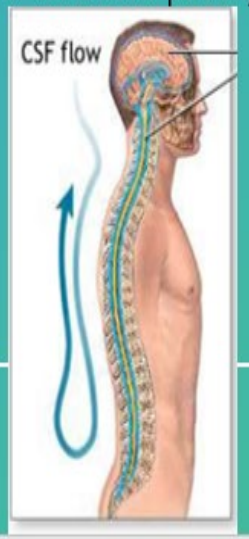
The purpose is to protect against circulating toxins or pathogens that could cause brain infections, while at the same time allowing vital nutrients to reach the brain.

Leptomeningeal disease occurs when cancer cells migrate from your breast, lung, or some other part of your body to your cerebrospinal fluid (CSF). Leptomeninges: Arachnoid and Pia mater.



Leptomeningeal disease occurs here in the **Subarachnoid space! Where the CSF circulates.**

Leptomeninges: **the two innermost layers of the meninges**; cerebrospinal fluid circulates between these innermost layers (Arachnoid mater (web-like), and Pia mater).



Lung CANCER can be present in children

-Childhood Pleuropulmonary Blastoma 8973/3

-Childhood Pulmonary IMTs (Inflammatory Myofibroblastic Tumor) Myofibroblastic sarcoma 8825/3

-Childhood Tracheobronchial Tumors

-NUT carcinoma

-Diffuse pulmonary lymphangiomatosis

NUT carcinoma 8023/3* **NUT: nuclear protein in tests** **NUT/M1 gene rearrangement**	Aggressive t(15:19) positive carcinoma BET-rearranged carcinoma Carcinoma with t(15:19) translocation Midline carcinoma of children and young adults with NUT rearrangement Midline lethal carcinoma NUT midline carcinoma

A very rare aggressive cancer with average survival from 28 weeks to 2 years.

Specific or NOS Histology Term and Code
Adenosquamous carcinoma 8560
Carcinosarcoma 8980/3
Diffuse pulmonary lymphangiomatosis 9170/3 *Note*: Diffuse pulmonary lymphangiomatosis is a diffuse proliferation of lymphatic channels and smooth muscle along otherwise normal lymphatic vessels of lungs, pleura, and mediastinum. Primarily occurs in infants and children.

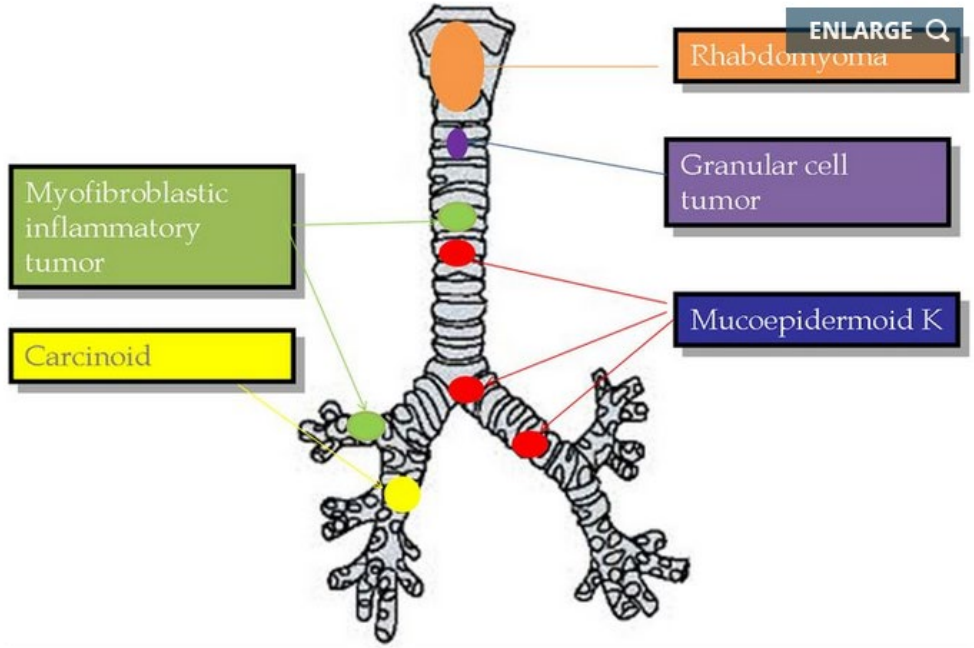
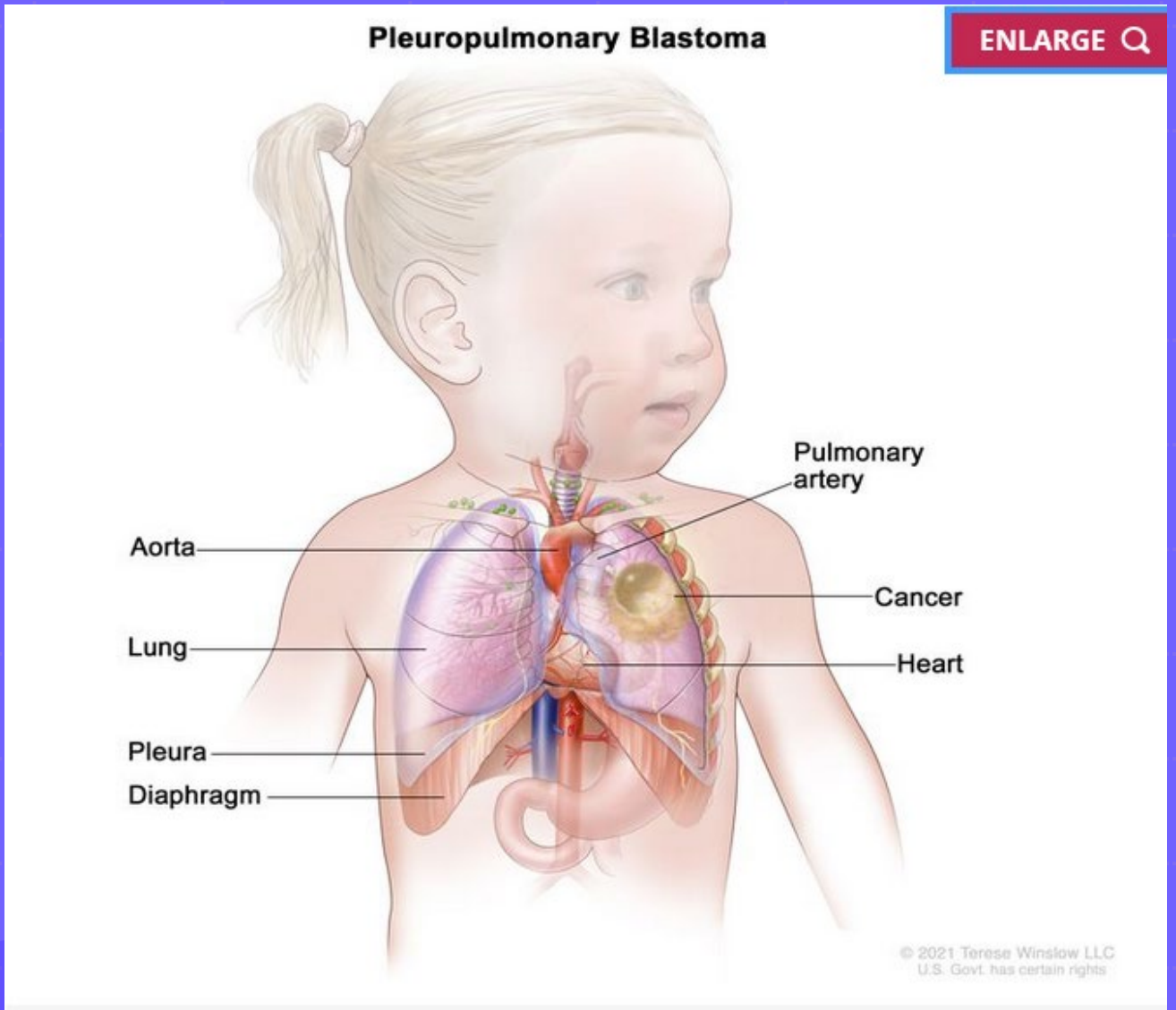


Figure 1. The most representative primary tracheobronchial tumors are described with their more frequent location. Reprinted from Seminars in Pediatric Surgery , Volume 25, Issue 3, Patricio Varela, Luca Pio, Michele Torre, Primary tracheobronchial tumors in children, Pages 150–155, Copyright (2016), with permission from Elsevier.



Pleuropulmonary blastoma is a rare, fast-growing cancer that forms in the tissues of the lung and pleura (the thin layer of tissue that covers the lungs and lines the inside of the chest). It may also form in the organs between the lungs, including the heart, aorta, and pulmonary artery, or in the diaphragm (the main breathing muscle below the lungs). Pleuropulmonary blastoma usually occurs in infants and young children.

Pleuropulmonary Blastoma

-Blastomas form in precursor fetal cells that remain after birth.

Childhood lung cancer

In most cases, pleuropulmonary blastomas are linked to a mutation in the DICER1 gene, or a family history of DICER1 syndrome (benign and malignant tumors in lung, thyroid, kidneys (cystic nephromas are common), cervix, ovaries, testicles, eye and brain).
___ most common sites.

Pleuropulmonary Blastoma

-Type I (cysts)

-Type II (cysts and solid tumors)

-Type III (a solid tumor)

Type I may evolve to type II.

Type II and III metastasize to liver, bones and brain.

Childhood Pulmonary Malignant IMTs (Inflammatory Myofibroblastic Tumor)

-Synonyms: **Plasma cell Granuloma or Inflammatory Pseudotumor**. They can be benign or malignant.

-We can find rearrangement of the ALK locus on Chromosome 2p23 in approx. 50%

Presents as a nodule or a lesion. Have few respiratory symptoms.

Symptoms of chronic **inflammation** as intermittent low-grade fever, weight loss, anemia, thrombocytosis, elevated sedimentation rate, hypergammaglobulinemia. In endobronchial lesions.

They have high recurrence after excision and low metastatic potential.

Within these kind of tumors, we may find **Myofibroblastic sarcomas**.

Primary Tracheobronchial tumor (PTT)

Childhood lung tumors which forms in the trachea or bronchi and can be benign or malignant. They are rare.

Carcinoid tumors are the most frequent PTT in children with an overall incidence of 3-5 cases per million of people per year.

Clinical presentations are **misdiagnosed as bronchitis**.

Chest X-ray is not diagnostic (can only detect airway obstruction atelectasis or collapsed lung area , opacity and hyperinflation).

CT scan with intravenous contrast is the gold standard for radiological diagnosis.

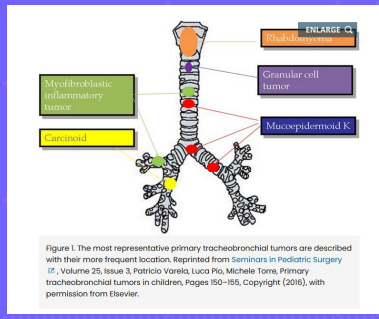


Figure 1. The most representative primary tracheobronchial tumors are described with their more frequent location. Reprinted from Seminars in Pediatric Surgery, Volume 25, Issue 3, Patricio Varela, Luca Pio, Michele Torre, Primary tracheobronchial tumors in children, Pages 150–155, Copyright (2016), with permission from Elsevier.

Childhood Primary Tracheobronchial tumors

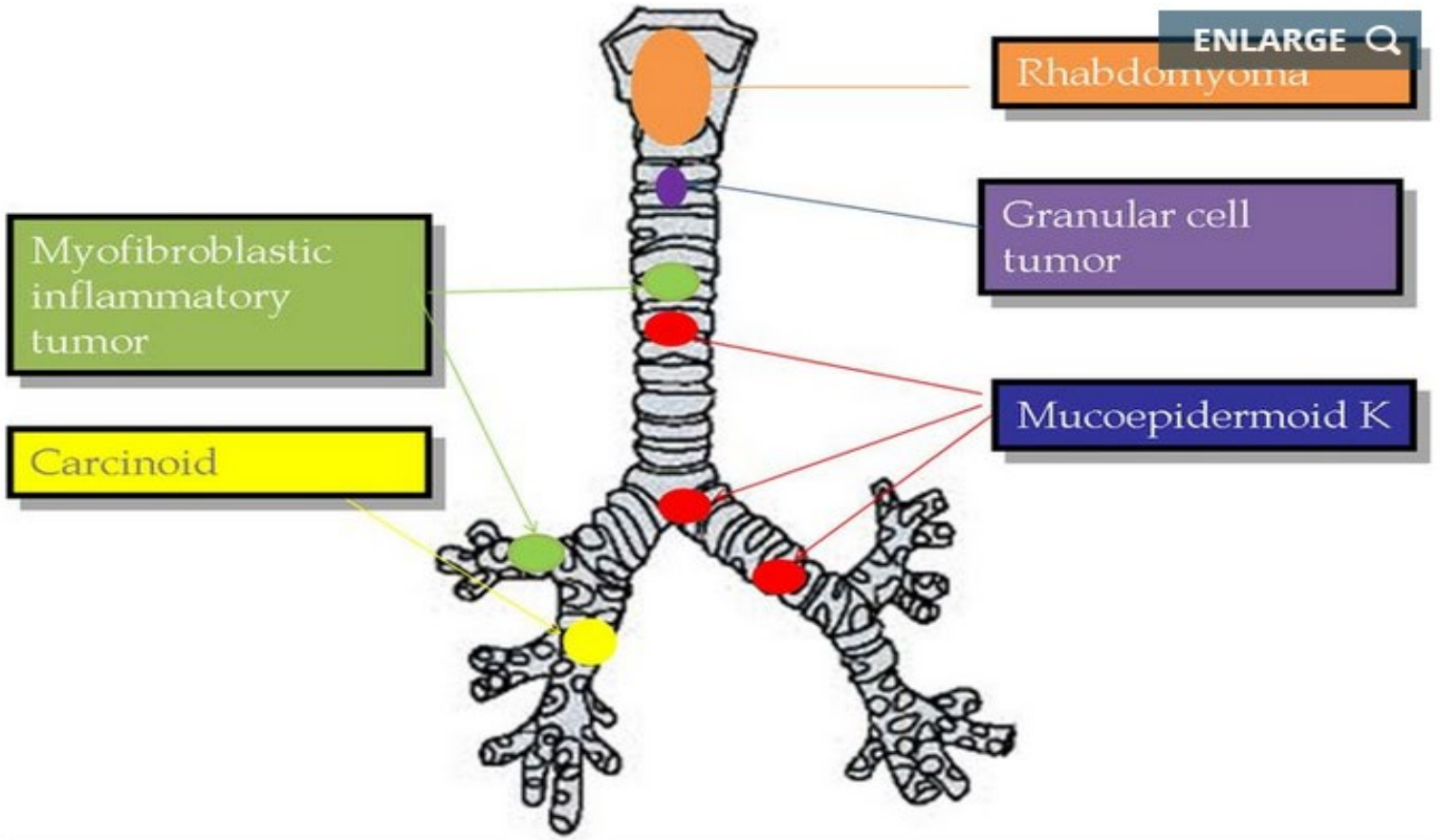


Figure 1. The most representative primary tracheobronchial tumors are described with their more frequent location. Reprinted from Seminars in Pediatric Surgery , Volume 25, Issue 3, Patricio Varela, Luca Pio, Michele Torre, Primary tracheobronchial tumors in children, Pages 150–155, Copyright (2016), with permission from Elsevier.

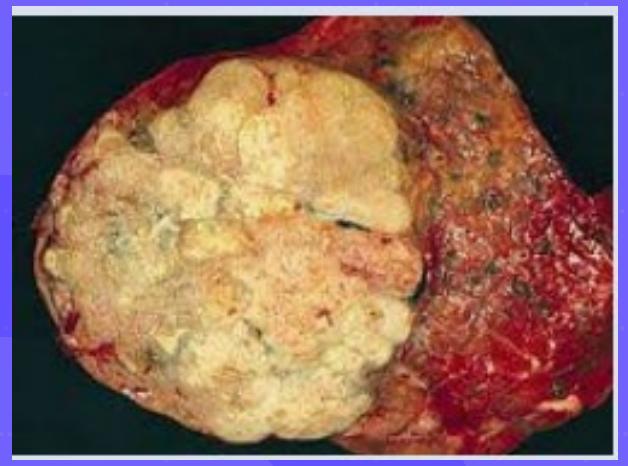
Clinical presentation: They may be **misdiagnosed as bronchitis**.

Do a CT scan as Chest X rays give limited information and it is not diagnostic.

LUNG CANCER TREATMENT

For non-small cell lung cancers, surgery is the treatment of choice.

- Surgery
- Radiation
- Chemotherapy
- Targeted therapy
- Immunotherapy



Lung Cancer Treatment

https://training.seer.cancer.gov/lung/treatment/

The two major types of lung cancers are in essence two completely different diseases, each of which has its own recommended therapies. Non-small cell lung cancers (squamous, adenocarcinoma and large cell carcinoma) are potentially curable with surgery, but largely unresponsive to chemotherapy. Patients with distant metastases from non-small cell lung cancer can be treated palliatively with radiation. Conversely small cell lung cancers do respond to chemotherapy and radiation, but are usually too far advanced at diagnosis for a surgical cure.

Surgically resectable non-small cell lung cancers have the best cure rate because they are usually Stage I or II (localized) tumors. An alternative medically inoperable non-small cell lung cancer is curative radiation. More advanced disease (positive lymph nodes, or inoperable tumors) also respond to radiation therapy. Stage IIIB tumors (extensive primary or contralateral nodes) are best treated with radiation.

Small cell carcinoma is extremely virulent, with a rapid clinical course if left untreated. However, because of its rapid growth rate (it tends to be widely disseminated at the time of diagnosis), it is also more responsive to chemotherapy and irradiation than non-small cell carcinoma. Surgery is not recommended for small cell carcinoma.

Lung Surgery Codes

325	Appendix A	Current Site-Specific Surgery Codes for 2024	Surgical code changes for the sites below noted with 2024. Thyroid topography was corrected on Appendix A title page List of sites were organized chronologically then by topography code. • C44.0-C44.9 Skin (2023) • C18.0-C18.9 Colon (2024) • C25.0-C25.9 Pancreas (2024) • C34.0-C34.9 Lung (2024) • C 50.0-C50.9 Breast (2024) • C73.9 Thyroid (2024)

STORE 2024 APPENDIX A: Site Specific Surgery Codes

APPENDIX A: Current Site-Specific Surgery Codes for 2024+

Coding of Data Items Rx Hosp – Surg 2023 [671] and Rx Summ- Surg 2023 [1291]

Do not re-assign codes previously coded for diagnosis years 2022 and prior for data items # 670 and 1290.

For diagnosis years 2003 – 2022, Surgical Procedure of Primary Site at this Facility [NAACCR data item #670] and Surgical Procedure of Primary Site [NAACCR data item #1290] should be coded utilizing the STORE manual based on the year of diagnosis.

All 2024 site specific surgery codes begin with a letter A except for the primary sites listed below, which start with a letter B indicating a significate change in coding. The year following the primary site is the year the change in the surgical code was implemented for that specific primary site.

- C44.0-C44.9 Skin (2023)
- C18.0-C18.9 Colon (2024)
- C25.0-C25.9 Pancreas (2024)
- C34.0-C34.9 Lung (2024)
- C50.0-C50.9 Breast (2024)
- C73.9 Thyroid (2024)

NOTE TO VENDORS/RESEARCHERS:
RX Hosp--Surg Prim Site [670] was changed to RX Hosp—Surg Prim Site 03-2022 [670]
RX Summ--Surg Prim Site [1290] was changed to RX Summ--Surg Prim Site 03- 2022 [1290]

LUNG

C34.0–C34.9

Codes

B000 None; no surgery of primary site; autopsy ONLY

B150 Local tumor destruction, NOS
- B120 Laser ablation or cryosurgery
- B130 Electrocautery; fulguration (includes use of hot forceps for tumor destruction)

No specimen sent to pathology from surgical events B120–B130 and B150.

B190 Local tumor destruction or excision, NOS

Unknown whether a specimen was sent to pathology for surgical events coded B190

B200 Excision or resection of less than one lobe, NOS
- B210 Wedge resection
- B220 Segmental resection, including lingulectomy
- B230 Excision, NOS
- B240 Laser excision
- B250 Bronchial sleeve resection ONLY

B300 Resection of lobe or bilobectomy, but less than the whole lung (partial pneumonectomy, NOS)
- B320 Bronchial sleeve lobectomy/bilobectomy
- B330 Lobectomy WITH mediastinal lymph node dissection

Note: A sleeve lobectomy/bilobectomy includes resection of the entire lobe(s) in addition to part of the bronchus. A sleeve lobectomy is distinct from a typical lobectomy or bilobectomy, in which the bronchus is not resected.

The lymph node dissection should also be coded under *Scope of Regional Lymph Node Surgery* (NAACCR Item #1292) or *Scope of Regional Lymph Node Surgery at This Facility* (NAACCR Item #672).

B450 Lobe or bilobectomy extended, NOS
- B460 WITH chest wall
- B470 WITH pericardium
- B480 WITH diaphragm

B550 Pneumonectomy, NOS
- B560 WITH mediastinal lymph node dissection (radical pneumonectomy)

The lymph node dissection should also be coded under *Scope of Regional Lymph Node Surgery* (NAACCR Item #1292) or *Scope of Regional Lymph Node Surgery at This Facility* (NAACCR Item #672).

B650 Extended pneumonectomy, NOS
- B660 Extended pneumonectomy plus pleura or diaphragm.

Note: An extended pneumonectomy is the resection of the entire lung in addition to one or more of the following structures: superior vena cava, carina, left atrium, aorta, or chest wall.

LUNG Surgery Codes

Surgery codes start with a **B** (instead of A).

347			Lung Removed wording: code B700 Extended radical pneumonectomy- Obsolete

STORE 2024 Codes

APPENDIX A: Site Specific Surgery

STORE 2024 *APPENDIX A: Site-Specific Surgery Codes*

B800 Resection of lung, NOS

Specimen sent to pathology from surgical events B200–B800.

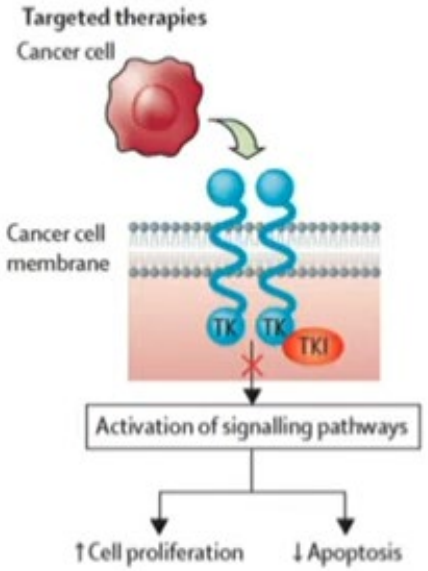
B900 Surgery, NOS

B990 Unknown if surgery performed; death certificate ONLY

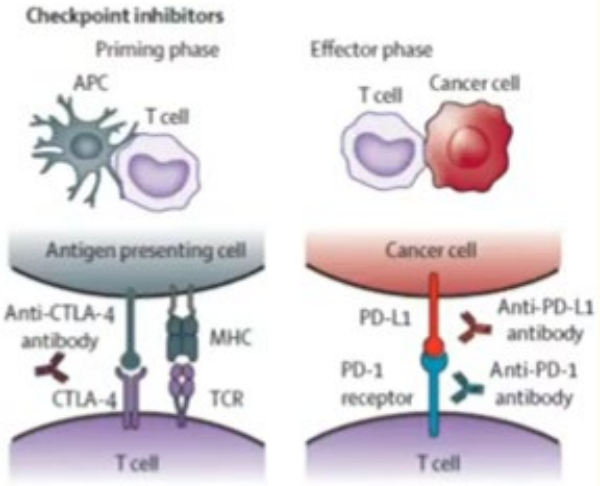
(Revised 01/04, 01/10, 02/10, 01/16, 02/21, 01/22, 01/23, 01/24)

Emergence of Two Major Paradigms

Targeted Therapy



Immunotherapy



Thai AA et al., Lancet 2(

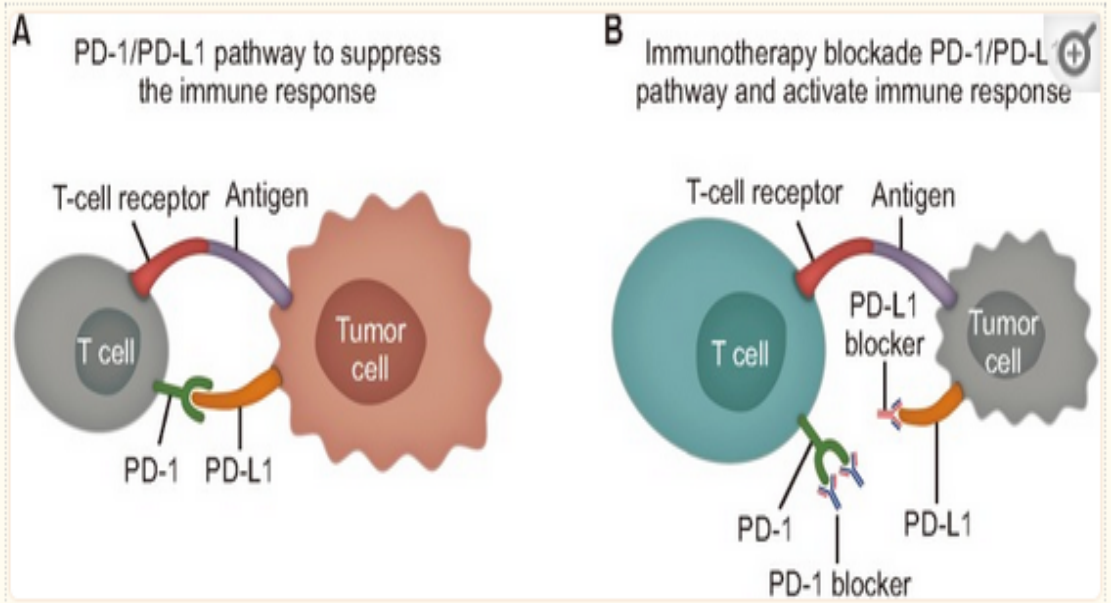
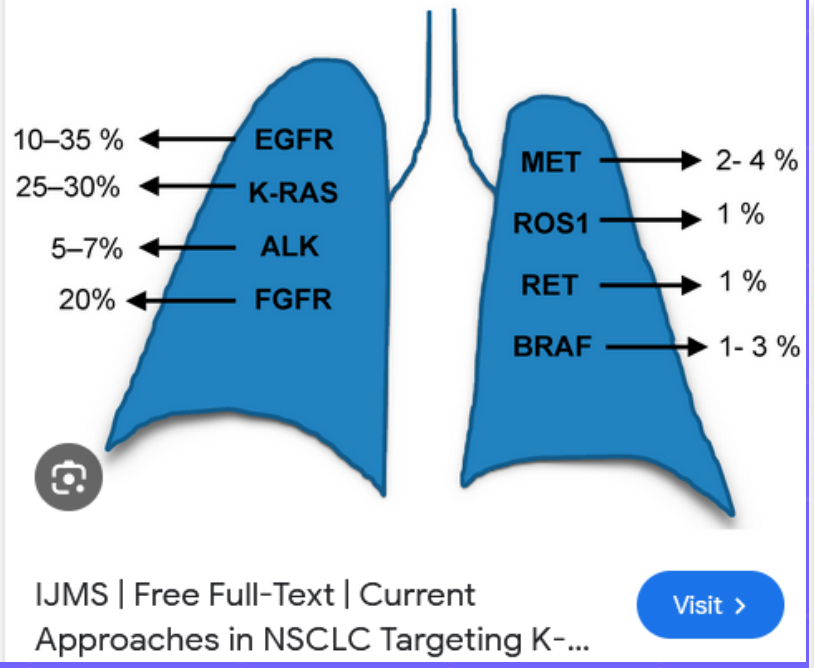


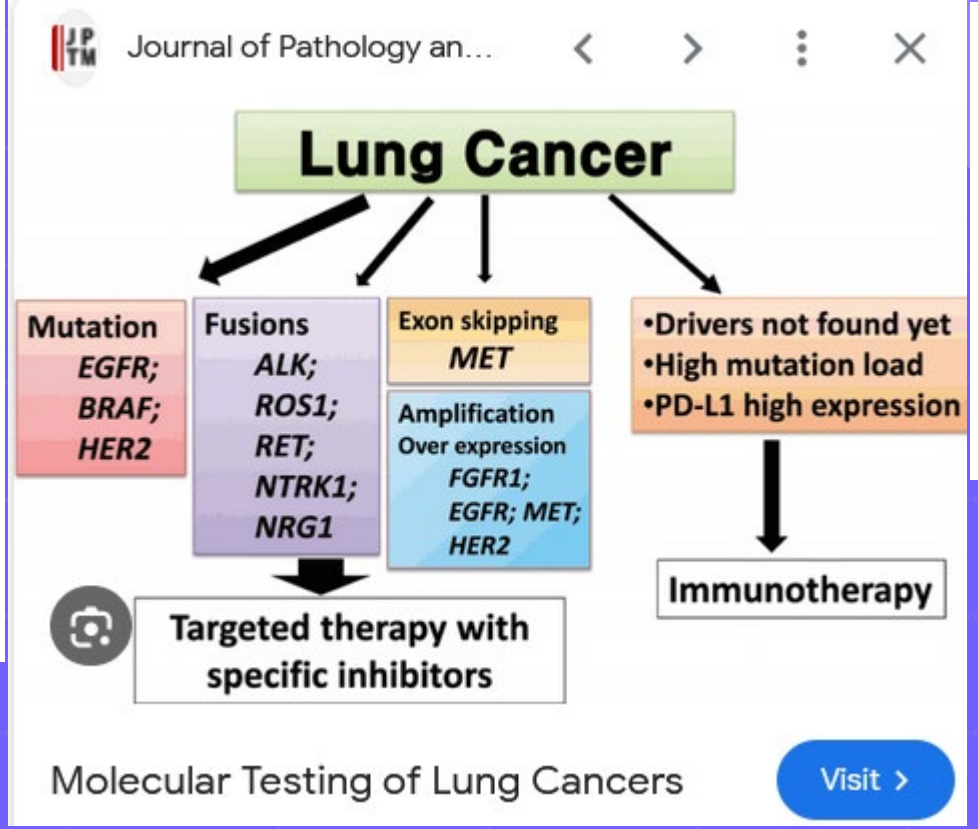
Figure 2

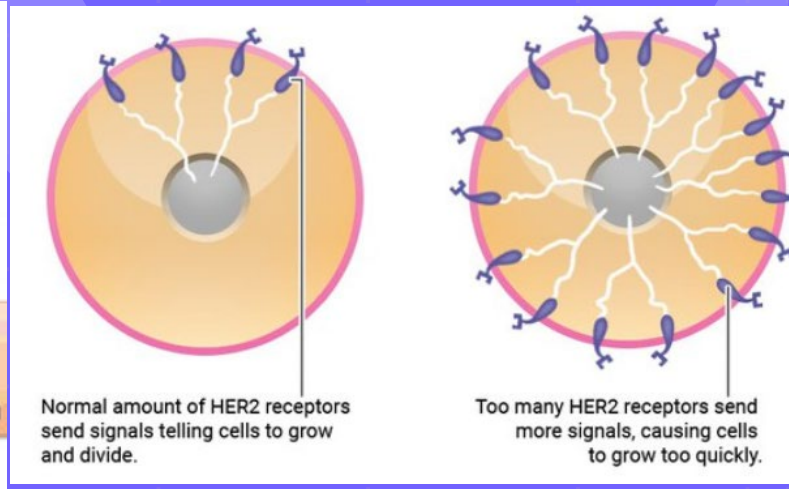
Mechanism of action of immune checkpoint inhibitors. (A) PD-1/PD-L1 pathway to suppress the immune response. (B) Immunothearpy blockade PD-1/PD-L1 pathway and activate immune response. PD-1: programmed death-1; PD-L1: programmed death-ligand 1.

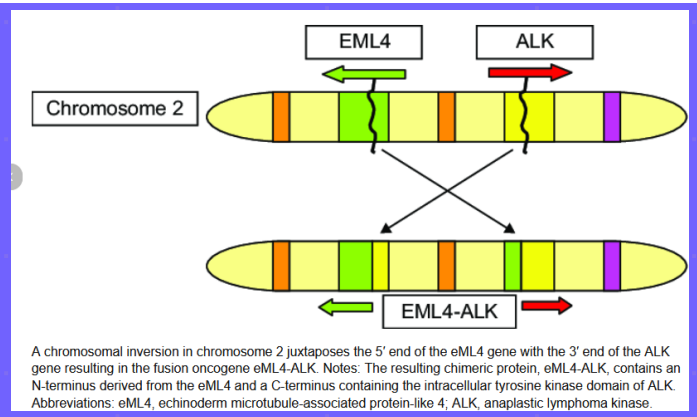
Targeted therapy (**Precision medicine** or **Personalized medicine**) addresses genetic abnormalities or mutations through Molecular Genotyping or Genomic tests.
EGFR-tyrosine kinase inhibitors (TKIs) is a type of targeted therapy.

Immunotherapy helps our own immune system to recognize and kill cancer cells.
ICI: **I**mmune **C**heckpoint **I**nhibitors are used for the treatment of lung cancer.
The interaction between the PD-L1 PROTEIN and the PD-1RECEPTOR or LIGAND on the T cell STOPS the immune system from responding to cancer.
The goal is to break that bond with immune checkpoint inhibitors so the immune system can attack the cancer cells.







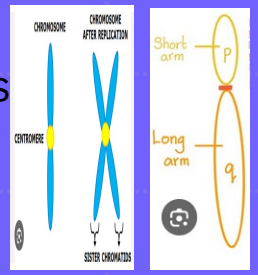


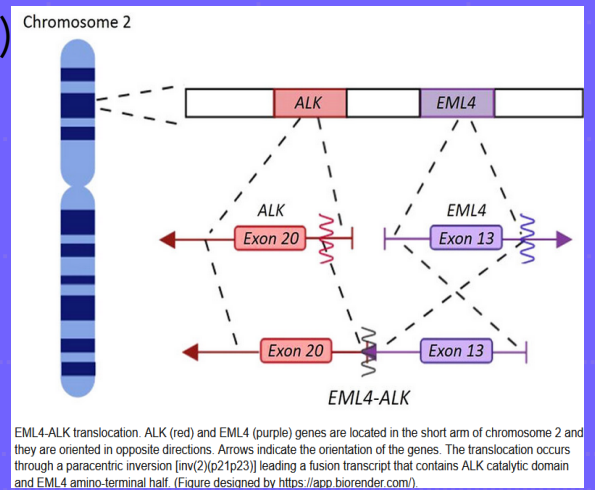
ALK: Anaplastic Lymphoma Kinase gene

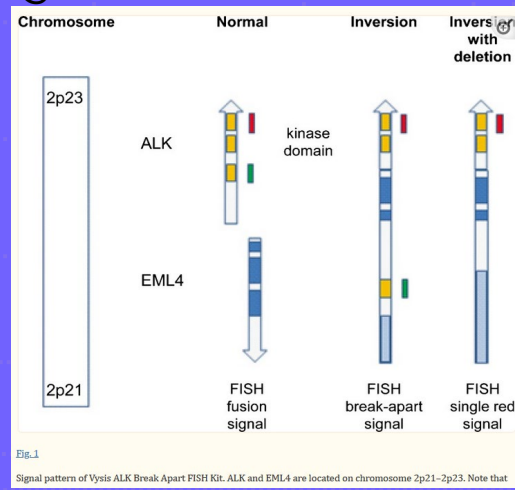
An **<u>inversion</u>** on the short arm (p) of chromosome 2 which result in ALK **<u>fusion</u>** Oncogene: **EML4-ALK** in non-small cell lung cancer (NSCLC) . ALK(2p23), EML4 (2p21)

EML4 and/or ALK **<u>amplifications</u>** also occur.

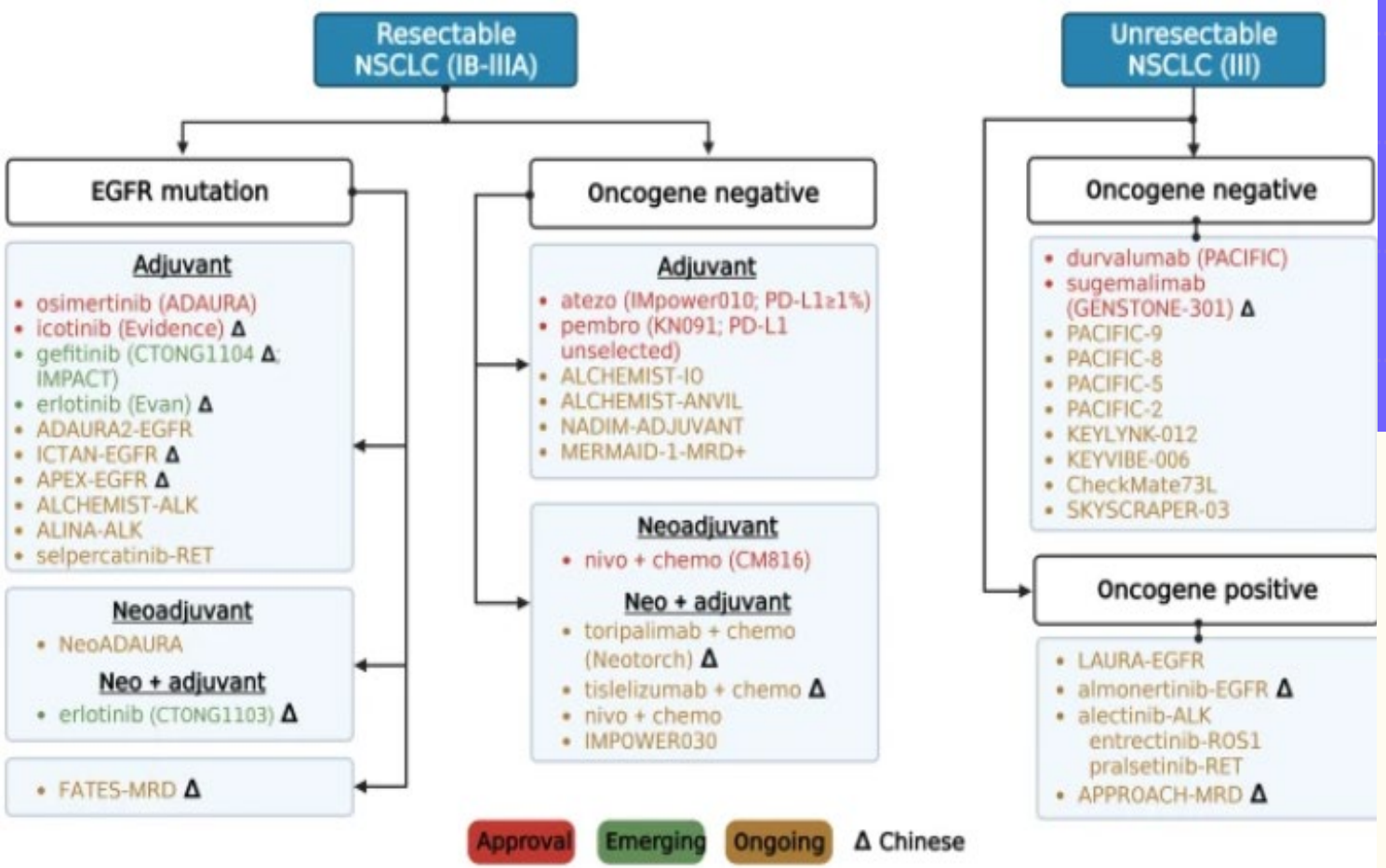
Amplification increases the normal amount of proteins







EGFR: Epithelial <u>Growth</u> Factor Receptor



Treatment algorithm for resectable and unresectable NSCLC. Atezo, atezolizumab; nivo, nivolumab; pembro, pembrolizumab; durva, durvalumab; chemo, chemotherapy; CM816, CheckMate816; KN091, KEYNOTE-091

https://jhoonline.biomedcentral.com/articles/10.1186/s13045-023-01436-2

Cancer is promoted by proliferative cells because of **Oncogenes** or Defective **Tumor Suppressor genes**.

EGFR Stands for Epithelial Growth Factor Receptor.

EGFR is an ONCOGENE. The **EGFR is overexpressed**.

EGFR is a transmembrane tyrosine kinase receptor.

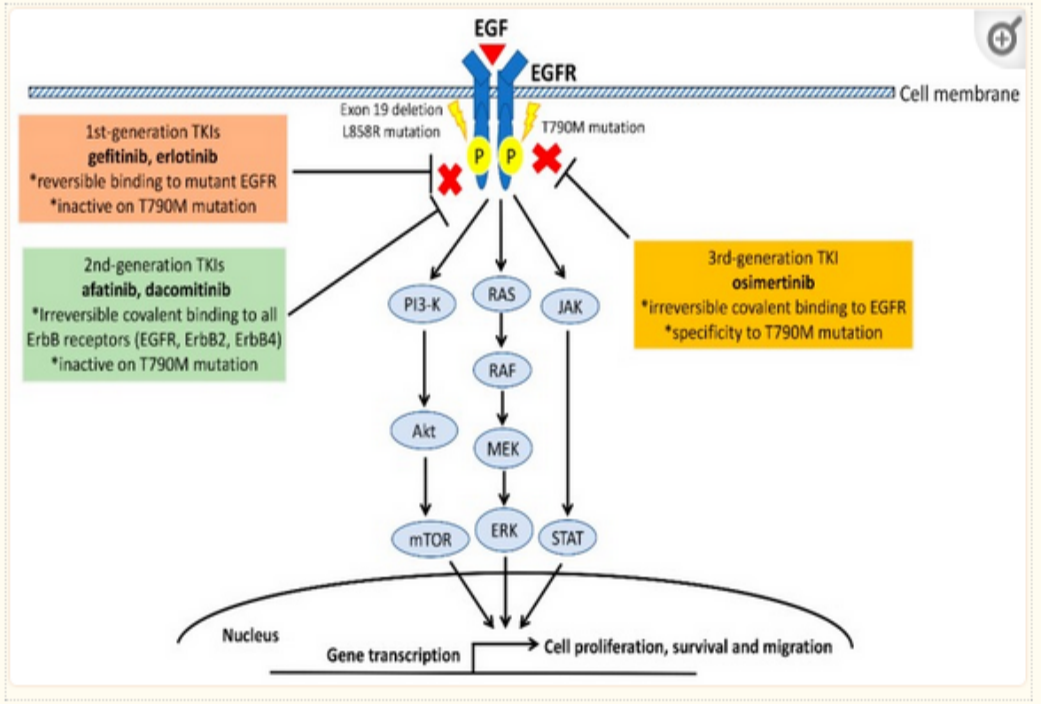


Figure 1

The Epidermal growth factor receptor (EGFR) pathway in non-small cell lung cancer (NSCLC). EGFR kinase domain mutations including exon 19 deletion, L858R and T790M increase kinase activity of EGFR, leading to the hyperactivation of downstream signaling pathways including MAPK, PI3K/Akt/mTOR, and IL-6/JAK/STAT3 which promote tumorigenesis of NSCLC cells. The three generations of EGFR-TKIs differ with respect to how they bind to different EGFR mutations and which EGFR mutations are active or inactive.

Breadth of biomarker-directed therapies for advanced NSCLC

National Comprehensive Cancer Network®

NCCN Guidelines Version 3.2023
Non-Small Cell Lung Cancer

NCCN Guidelines Index
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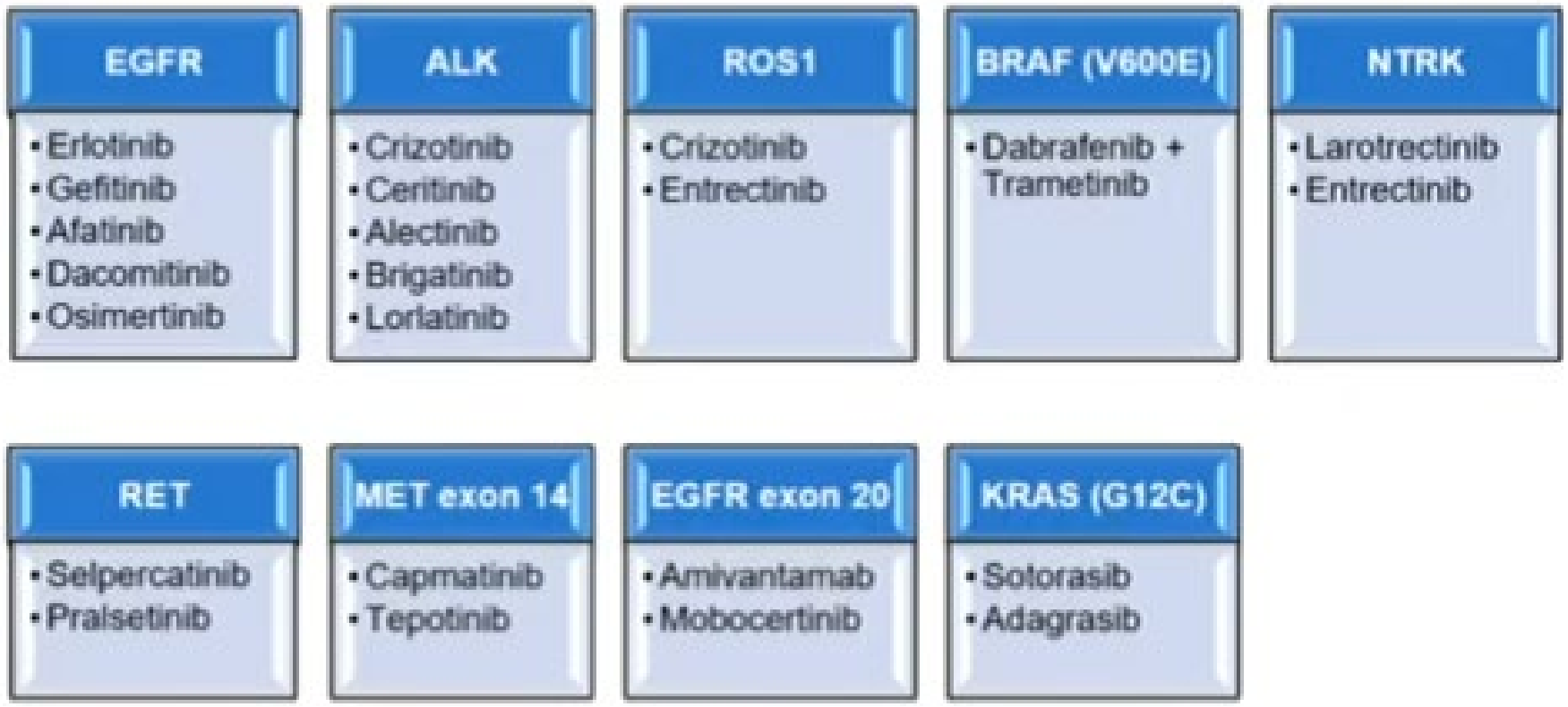
PD-L1 ≥50% First-line Therapy

PD-L1 ≥1–49% First-line Therapy

FDA-approved targeted therapies and their targets



TARGETED THERAPY:

After molecular Genotyping, the next step is to target the Oncogenic Driver(e.g., RET, EGFR, ALK..., etc.).

First, second and third generation available to address drug resistance.

Lung cancer prognosis

5-year relative survival rates for non-small cell lung cancer

These numbers are based on people diagnosed with NSCLC between 2012 and 2018.

SEER stage	5-year relative survival rate
Localized	65%
Regional	37%
Distant	9%
All SEER stages combined	28%

5-year relative survival rates for small cell lung cancer

These numbers are based on people diagnosed with SCLC between 2012 and 2018.

SEER stage	5-year relative survival rate
Localized	30%
Regional	18%
Distant	3%
All SEER stages combined	7%

American Cancer Society

2024 Revision History for the STR

Lung

Terms and Definitions

- Equivalent Terms/Definitions:
  - "Sarcoma NOS 8800 and all subtypes of sarcoma NOS" added to the exclusions for NSCLC
- Table 3: Specific Histologies, NOS, and Subtype/Variants
  - Note 1 Definition of NSCLC clarified
  - Note 2 added
  - "Adenocarcinoma 8140" row: Note added

Histology Coding Rules

- Coding Histology Section
  - Note about exception added to #4 (Do not code histology described as pattern…)
- H Rule: "Code the histology that comprises the greatest percentage of tumor when…"
  - Note 3 and Example 3 added regarding coding "patterns"

IMPORTANT NOTE 1: Non-small cell lung carcinoma (NSCLC) is a broad group of cancers which includes all **carcinoma types** in Table 3 with the **exception** of:

- Neuroendocrine carcinoma (NEC), neuroendocrine tumors (NET) AND
  - Small cell carcinoma/neuroendocrine tumors/all subtypes of small cell carcinoma AND
  - Large cell neuroendocrine carcinoma/combined large cell neuroendocrine carcinoma AND
- Sarcoma NOS 8800 (not a carcinoma) **AND**
  - All subtypes of sarcoma NOS

NSCLC is usually adenocarcinoma, squamous cell carcinoma, or large-cell carcinoma. See the instructions for coding histology when NSCLC is the diagnosis.

IMPORTANT NOTE 2: The small cell neuroendocrine carcinoma row has been deleted in the 2024 update and replaced with new rows for neuroendocrine carcinoma (NEC) and neuroendocrine tumor (NET). This change is based on the 5th Ed WHO Classification of Lung tumors book and current concepts.

STR 2024

Specific or NOS Histology Term and Code

Adenocarcinoma 8140

Note 1: Mucinous adenocarcinoma for lung only is coded as follows:

- **8253/3*** when
  - Behavior unknown/not documented (use staging form to determine behavior when available)
  - Invasive
- **8257/3*** when
  - Microinvasive
  - Minimally invasive
- **8253/2*** when
  - Preinvasive
  - In situ

Note 2: Non-mucinous adenocarcinoma for lung only is coded as follows:

- **8256/3*** when
  - Microinvasive
  - Minimally invasive
- **8250/2*** when
  - Preinvasive
  - In situ

Note 3: The term "mucinous carcinoma/adenocarcinoma NOS" is not recommended for lung; specific mucinous terms should be used. If a diagnosis states mucinous carcinoma/adenocarcinoma, NOS and a subtype/variant, code the subtype/variant.

predominant **8256/3**

Mucinous carcinoma/adenocarcinoma **(for lung only; See Note 3)**
in situ **8253/2***; invasive **8253/3***
minimally invasive **8257/3***
microinvasive **8257/3***
preinvasive **8253/2***

Micropapillary adenocarcinoma/adenocarcinoma, micropapillary predominant **8265**

Mixed invasive mucinous and non-mucinous adenocarcinoma **8254***

Non-mucinous adenocarcinoma **(for lung only)**
in situ **8250/2***
microinvasive **8256/3***
minimally invasive **8256/3***
preinvasive **8250/2***

Coding Instructions

1. Code the month, day and year the tumor was first diagnosed, clinically or microscopically, by a recognized medical practitioner

   a. When the first diagnosis includes reportable ambiguous terminology, record the date of that diagnosis

   Example: Area of microcalcifications in breast suspicious for malignancy on 02/13/2024. Biopsy positive for ductal carcinoma on 02/28/2024. The date of diagnosis is 02/13/2024.

2. When the **only** information available is a positive pathology or cytology report, code the date the procedure was done as the date of diagnosis. Do not code the date the specimen was received, read as positive by the pathologist, or the date the report was dictated or transcribed.

   Example: Biopsy was performed on 05/06/2024. The specimen from the biopsy was received and read by the pathologist as positive for cancer on 05/09/2024. The date of diagnosis is 05/06/2024.

3. The first diagnosis of cancer may be **clinical** (i.e., based on clinical findings or physician's documentation)

   Note: Do **not** change the date of diagnosis when a clinical diagnosis is subsequently confirmed by positive histology or cytology.

   Example 1: On May 15, 2024, physician states that patient has lung cancer based on clinical findings. The patient has a positive biopsy of the lung in June 3, 2024. The date of diagnosis remains May 15, 2024.

Lung:

Do NOT change the date of diagnosis when a CLINICAL diagnosis is subsequently confirmed by positive histology or cytology.

The diagnosis of lung cancer may be CLINICAL.

Lung Highlights

4. **DO NOT CODE** histology described as:
   - Architecture
   - Foci; focus; focal
   - Pattern (**Exception**: See Rule H7)

Lung Histology Rules
C340-C343, C348, C349
(Excludes lymphoma and leukemia M9590 – M9993 and Kaposi sarcoma M9140)

Rule H7

Code the histology that comprises the **greatest percentage** of tumor when two or more of the following histologies are present:

- Acinar adenocarcinoma / Adenocarcinoma, acinar predominant **8551**
- Lepidic adenocarcinoma / Adenocarcinoma, lepidic predominant **8250**
- Micropapillary adenocarcinoma / Adenocarcinoma, micropapillary predominant **8265**
- Papillary adenocarcinoma / Adenocarcinoma, papillary predominant **8260**
- Solid adenocarcinoma / Adenocarcinoma, solid predominant **8230**

Note 1: The rules are hierarchical, so the tumors are **NOT** a NOS and subtype/variant.
Note 2: If the percentages are unknown/not documented, or are equal percentages, continue through the rules.
Note 3: CAP Lung Protocol now allows pathologists to identify the bulleted histologies as **pattern** along with percentages. The histology pattern with the greatest percentage can be coded. This is an **exception** to the histology coding instruction to not code pattern.

Example 1: Pathology reads the tumor is adenocarcinoma, acinar predominant (acinar 60%, solid predominant 20%, lepidic predominant 20%). Code the histology with the highest percentage: acinar adenocarcinoma 8551/3.
Example 2: Pathology reads the tumor is adenocarcinoma, solid predominant (with acinar, lepidic, and papillary subtypes). Code the predominant histology: solid adenocarcinoma 8230/3.
Example 3: Pathology reads the tumor is adenocarcinoma, lepidic prominent 80%, solid predominant 20% and the synoptic report states lepidic pattern 80%, solid pattern 20%. Code the histology with the higher pattern percentage: lepidic adenocarcinoma 8250/3

Rule H9

Code adenocarcinoma with mixed subtypes **8255** for

- Multiple adenocarcinoma subtypes **OR**
- Any combination of histologies which are not listed in Table 2 in the Equivalent Terms and Definitions

Note 1: Any combination of histologies listed in H7 with equal percentages is coded 8255.
Note 2: Adenocarcinoma with mixed subtypes 8255 does not apply to squamous cell carcinoma.

Lung Highlights

Remember:

- Lung only: Mucinous is NOT equivalent to Colloid

  (They want to analyze mucinous carcinoma and colloid carcinoma separately.)

- Mucin-producing/mucin-secreting carcinoma 8481 is **NOT equivalent** to Mucinous carcinoma 8253 (new code for lung primaries only)

Mucin producing/secreting tumors produce mucin, but NOT enough to be classified as MUCINOUS Carcinoma.

-Large cell carcinoma 8012

Note 3: Large cell carcinoma with neuroendocrine (NE) differentiation lacks NE morphology and is coded as large cell carcinoma 8012, NOT large cell neuroendocrine carcinoma.

-Large cell neuroendocrine carcinoma 8013

Mucoepidermoid carcinoma 8430

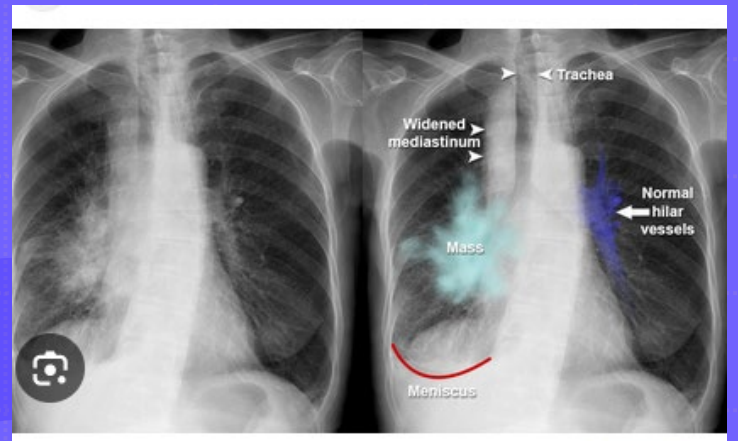
Note: **As of 1/1/2023, mucoepidermoid tumor is no longer a synonym of mucoepidermoid carcinoma in WHO**

STR

Lung Highlights

Terminology	Laterality	Site Term and Code
Bronchus intermedius **Carina** **Hilus of lung** **Perihilar**	Bilateral	Mainstem bronchus **C340** *Note*: **Bronchus intermedius** is the portion of the **right mainstem bronchus** between the upper lobar bronchus and the origin of the middle and lower lobar bronchi

Terminology	Laterality	Site Term and Code
Bronchus NOS **Bronchogenic** **Extending up to the hilum** **Extending down to the hilar region** **Infrahilar NOS** **Lung NOS** **Pulmonary NOS** **Suprahilar NOS**	Bilateral	Lung NOS **C349** *Note*: Includes • Multiple tumors in different lobes of ipsilateral lung **OR** • Multiple tumors in ipsilateral lung; unknown if same lobe or different lobe **OR** • Tumor in bronchus, unknown if mainstem or lobar bronchus **OR** • Tumor present, unknown which lobe



Chest X-ray - Lung cancer - Hilar mass and effusion

Visit ›

Lung Equivalent Terms and Definitions
C340-C343, C348, C349
(Excludes lymphoma and leukemia M9590 – M9993 and Kaposi sarcoma M9140)

Required Terms	Combination Histologies and Code
Adenocarcinoma NOS **AND** Squamous cell carcinoma NOS *Note*: Cases diagnosed prior to 1/1/2023: Diagnosis **must be** adenocarcinoma NOS and squamous cell carcinoma NOS, **NOT** any of the **subtypes/variants** of adenocarcinoma or squamous cell carcinoma Cases diagnosed 1/1/2023 forward: Subtypes/variants of adenocarcinoma, NOS and keratinizing and/or non-keratinizing variants of squamous cell carcinoma, NOS can be coded adenosquamous carcinoma	Adenosquamous carcinoma **8560**

https://seer.cancer.gov/tools/solidtumor/current/Lung_STM.pdf

GRADE Lung (REMINDER!)

Grade **C**linical **9** Grade **P**athological **9**

CANNOT be left blank

Code	Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown

yc yp

CAN be LEFT blank

Grade Post Therapy Clin (yc) and Grade Post Therapy Path (yp)

Code	Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown Not applicable
<BLANK>	See Note 1

LUNG

Grade CLINICAL: Never leave it blank

NOTES

Note 1: Grade Clinical must not be blank.

Note 2: Assign the highest grade from the primary tumor assessed during the clinical time frame.

Note 3: If there are multiple tumors with different grades abstracted as one primary, code the highest grade.

Note 4: G4 includes anaplastic.

Note 5: Code 9 (unknown) when

- Grade from primary site is not documented
- Clinical workup is not done (for example, cancer is an incidental finding during surgery for another condition)
- Grade checked "not applicable" on CAP Protocol (if available) and no other grade information is available

Note 6: If there is only one grade available and it cannot be determined if it is clinical or pathological, assume it is a Grade Clinical and code appropriately per Grade Clinical categories for that site, and then code unknown (9) for Grade Pathological, and blank for Grade Post Therapy Clin (yc) and Grade Post Therapy Path (yp).

Grade PATHOLOGICAL: Never leave it blank

ote 1: Grade Pathological must not be blank.

ote 2: There is a preferred grading system for this schema. If the clinical grade given uses the preferred grading system and the pathological grade does not se the preferred grading system, do not record the Grade Clinical in the Grade Pathological field. Assign Grade Pathological 9.

- *Example:* Biopsy of primary site shows a moderately differentiated adenocarcinoma. The surgical resection states a high grade adenocarcinoma.
  - Code Grade Clinical as 2 since Moderately differentiated (G2) is the preferred grading system
  - Code Grade Pathological as 9 since the preferred grading system was not used and the Generic Grade Categories do not apply to this grade table

ote 3: Assign the highest grade from the primary tumor.

ote 4: If there are multiple tumors with different grades abstracted as one primary, code the highest grade.

ote 5: G4 includes anaplastic.

ote 6: Use the grade from the **clinical work up** from the primary tumor in different scenarios based on behavior or surgical resection

- **Behavior**
  - Tumor behavior for the clinical and the pathological diagnoses are the same AND the clinical grade is the highest grade
  - Tumor behavior for clinical diagnosis is invasive, and the tumor behavior for the pathological diagnosis is in situ
- **Surgical Resection**
  - Surgical resection is done of the primary tumor and there is no grade documented from the surgical resection
  - Surgical resection is done of the primary tumor and there is no residual cancer
- **No Surgical Resection**
  - Surgical resection of the primary tumor has not been done, but there is positive microscopic confirmation of distant metastases during the clinical time frame

ote 7: Code 9 (unknown) when

- Grade from primary site is not documented
- No resection of the primary site (see exception in Note 6, Surgical resection, last bullet)
- Neo-adjuvant therapy is followed by a resection (see Grade Post Therapy Path (yp))
- Grade checked "not applicable" on CAP Protocol (if available) and no other grade information is available
- Clinical case only (see Grade Clinical)
- There is only one grade available and it cannot be determined if it is clinical, pathological, post therapy clinical or post therapy pathological

There is a preferred grading system for this schema. If the clinical grade given uses the preferred grading system and the pathological grade does not use the preferred grading system, do not record the Grade Clinical in the Grade Pathological field. Assign Grade Pathological 9.

Code	Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown Not applicable
<BLANK>	See Note 1

yc: ___

NOTES

Note 1: Leave Grade Post Therapy Clin (yc) blank when

- No neoadjuvant therapy
- Clinical or pathological case only
- Neoadjuvant therapy completed, no microscopic exam is done prior to surgery/resection of primary tumor
- There is only one grade available and it cannot be determined if it is clinical, pathological, post therapy clinical or post therapy pathological

Note 2: Assign the highest grade from the microscopically sampled specimen of the primary site following neoadjuvant therapy or primary systemic/radiation therapy.

Note 3: If there are multiple tumors with different grades abstracted as one primary, code the highest grade.

Note 4: G4 includes anaplastic.

Note 5: Code 9 (unknown) when

- Microscopic exam is done after neoadjuvant therapy and grade from the primary site is not documented
- Microscopic exam is done after neoadjuvant therapy and there is no residual cancer
- Grade checked "not applicable" on CAP Protocol (if available) and no other grade information is available

NOTES

Note 1: Leave Grade Post Therapy Path (yp) blank when

- No neoadjuvant therapy
- Clinical or pathological case only
- Neoadjuvant therapy completed; surgical resection not done
- There is only one grade available and it cannot be determined if it is clinical, pathological, post therapy clinical or post therapy pathological

Note 2: There is a preferred grading system for this schema. If the post therapy clinical grade given uses the preferred grading system and the post therapy pathological grade does not use the preferred grading system, do not record the Grade Post Therapy Clin (yp) in the Grade Post Therapy Path (yp) field. Assign Grade Post Therapy Path (yp) 9.

- *Example:* Neoadjuvant therapy completed. Biopsy of primary site shows a moderately differentiated adenocarcinoma. The post therapy surgical resection states a high grade adenocarcinoma.
  - Code Grade Post Therapy Clin (yc) as 2 since Moderately differentiated (G2) is the preferred grading system
  - Code Grade Post Therapy Path (yp) as 9 since the preferred grading system was not used and the Generic Grade Categories do not apply to this grade table

Note 3: Assign the highest grade from the resected primary tumor assessed after the completion of neoadjuvant therapy.

Note 4: If there are multiple tumors with different grades abstracted as one primary, code the highest grade.

Note 5: G4 includes anaplastic.

Note 6: Use the grade from the post therapy **clinical work up** from the primary tumor in different scenarios based on behavior or surgical resection

- **Behavior**
  - Tumor behavior for the post therapy clinical and the post therapy pathological diagnoses are the same AND the post therapy clinical grade is the highest grade
  - Tumor behavior for post therapy clinical diagnosis is invasive, and the tumor behavior for the post therapy pathological diagnosis is in situ
- **Surgical Resection**
  - Surgical resection is done of the primary tumor after neoadjuvant therapy is completed and there is no grade documented from the surgical resection
  - Surgical resection is done of the primary tumor after neoadjuvant therapy is completed and there is no residual cancer

Note 7: Code 9 (unknown) when

- Surgical resection is done after neoadjuvant therapy and grade from the primary site is not documented and there is no grade from the post therapy clinical work up
- Surgical resection is done after neoadjuvant therapy and there is no residual cancer and there is no grade from the post therapy clinical work up
- Grade checked "not applicable" on CAP Protocol (if available) and no other grade information is available

yp: ___

•*Example:* Neoadjuvant therapy completed. Biopsy of primary site shows a moderately differentiated adenocarcinoma. The post therapy surgical resection states a high grade adenocarcinoma.

- Code Grade Post Therapy Clin (yc) as 2 since Moderately differentiated (G2) is the preferred grading system
- Code Grade Post Therapy Path (yp) as 9 since the preferred grading system was not used and the Generic Grade Categories do not apply to this grade table

Code	Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown Not applicable
<BLANK>	See Note 1

THE END

Thank you
for your ATTENTION!

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