LUNG CANCER

FCDS 2013 Educational Webcast Series

September 19, 2013

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Florida HEALTH

Presentation Outline

- Overview of Lung Cancer
- Signs, Symptoms and Risk Factors
- Anatomy of the Lungs
- Histologic Types of Lung Cancer
- New Lung Cancer Screening Recommendations
- Multiple Primary and Histology Coding Rules Refresher
- Collaborative Stage Data Collection System (CSv02.04)
- C.S. Site Specific Factors
- NCCN/ASCO Treatment Guidelines by Stage
- Text Documentation

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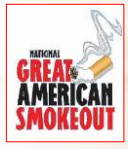
Overview



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Definition of Lung Cancer

*Lung cancer or bronchogenic cancer is defined as a malignant tumor of the lung arising within the wall or epithelium of the bronchus

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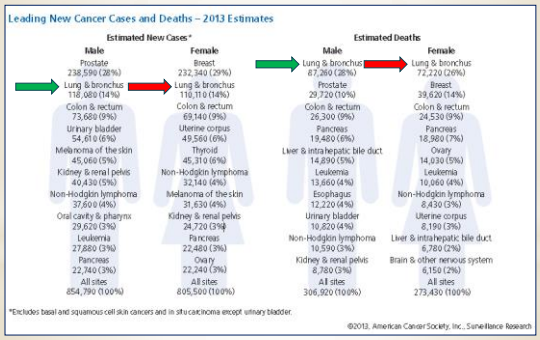
Incidence and Mortality Lung Cancer



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Incidence and Mortality Lung Cancer

Estimated Number* of New Cancer Cases and Deaths by Sex
US & FL - 2013

➢228,190 **new** lung cancers	➢159,480 lung cancers **deaths**
➢118,080 **new Male** lung cancer	➢ 87,260 **Male** lung cancer **deaths**
➢110,110 **new Female** lung cancer	➢72,220 **Female** lung cancer **deaths**
➢17,960 FL **new** cases lung cancer	➢12,070 FL lung cancers **deaths**

*ACS Cancer Facts & Figures 2013

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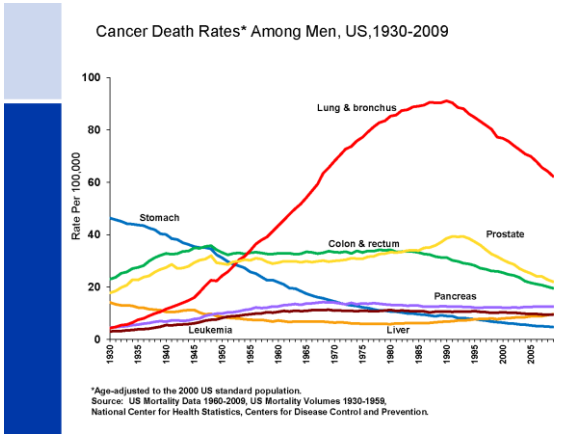
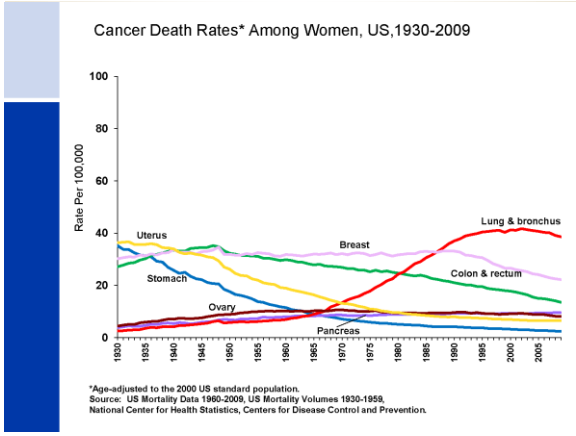
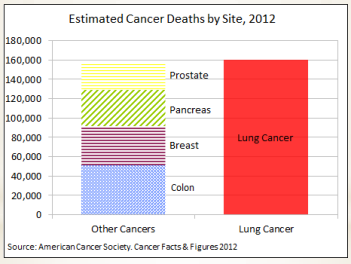
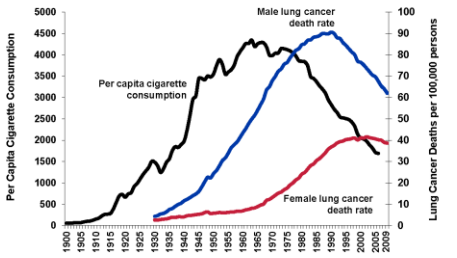




Lung Cancer Kills More People Than…



Trends in Tobacco Use and Lung Cancer Death Rates* in the US



*Age-adjusted to 2000 US standard population.

Source: Death rates: US Mortality Data, 1960-2009, US Mortality Volumes, 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention. Cigarette consumption: US Department of Agriculture, 1900-2007.

Lung Cancer Survival by Stage

Five-year Relative Survival Rates* (%) by Stage at Diagnosis, 2002-2008

	All Stages	Local	Regional	Distant		All Stages	Local	Regional	Distant
Breast (female)	89	98	84	24	Ovary	44	92	72	27
Colon & rectum	64	90	70	12	Pancreas	6	23	9	2
Esophagus	17	38	20	3	Prostate	99	100	100	28
Kidney#	71	91	64	12	Stomach	27	62	28	4
Larynx	61	76	42	35	Testis	95	99	96	73
Liver#	15	28	10	3	Thyroid	98	100	97	54
Lung & bronchus	16	52	25	4	Urinary bladder#	78	70	33	6
Melanoma of the skin	91	98	62	15	Uterine cervix	68	91	57	16
Oral cavity & pharynx	62	82	57	35	Uterine corpus	82	95	67	16

*Rates are adjusted for normal life expectancy and are based on cases diagnosed in the SEER 18 areas from 2002-2008, followed through 2009.
#Includes renal pelvis. #Includes intrahepatic bile duct. §Rate for in situ cases is 96%.

Local: an invasive malignant cancer confined entirely to the organ of origin. Regional: a malignant cancer that 1) has extended beyond the limits of the organ of origin directly into surrounding organs or tissues; 2) invades regional lymph nodes by way of lymphatic system; or 3) has both regional extension and involvement of regional lymph nodes. Distant: a malignant cancer that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis to distant organs, tissues, or via the lymphatic system to distant lymph nodes.

Source: Howlader N, Noone AM, Krapcho M, et al. (eds). *SEER Cancer Statistics Review, 1975-2009*, National Cancer Institute, Bethesda, MD, www.seer.cancer.gov/csr/1975_2009/, 2012.

American Cancer Society, Surveillance Research 2013

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Lung Cancer Survival by Stage

- The 5-year survival for small cell lung cancer (6%) is lower than that for non-small cell (18%).
- 5-year survival rate for all stages combined is only 16%.
- Only 15% of lung cancers are diagnosed at a localized stage, for which the 5-year survival rate is 52%.
- 1-year relative survival for lung cancer increased from 37% in 1975-1979 to 44% in 2005-2008, largely due to improvements in surgical techniques and combined therapies.

Cancer Facts & Figures 2013

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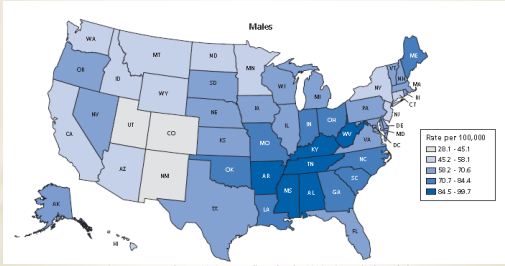
Geographic Patterns in Lung Cancer Death Rates* by State, US, 2005-2009: Males



Cancer Facts & Figures 2013, *Age adjusted to the 2000 US standard population.
Source: US Mortality Data, National Center for Health Statistics, Centers for Disease Control and Prevention. American Cancer Society, Surveillance Research, 2013

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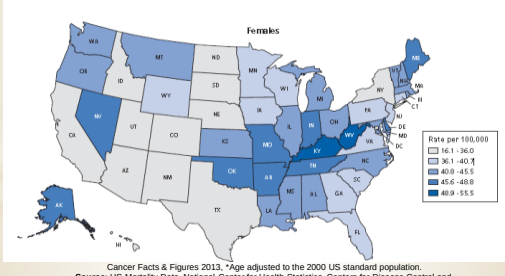
Geographic Patterns in Lung Cancer Death Rates* by State, US, 2005-2009: Females



Cancer Facts & Figures 2013, *Age adjusted to the 2000 US standard population.
Source: US Mortality Data, National Center for Health Statistics, Centers for Disease Control and Prevention. American Cancer Society, Surveillance Research, 2013

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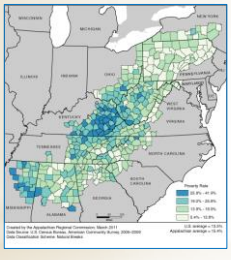
Appalachia and Major U.S. Rivers



Poverty Rates in Appalachia, 2005-2009
http://arc.gov

Mississippi River, Ohio River, Missouri River
http://voanews.com

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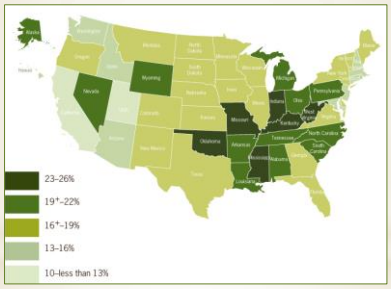
U.S. Adult Smoking Rates



Adult Smoking Rates
http://www.cdc.gov

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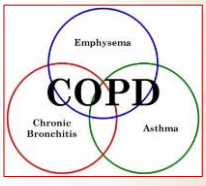
Signs and Symptoms

Symptoms may include persistent cough, sputum streaked with blood, shortness of breath, wheezing, chest pain, voice change, and recurrent pneumonia or bronchitis, hoarseness, pain when swallowing, high pitched sound when breathing.



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Signs and Symptoms

- Persistent cough
- Unexplained dyspnea (SOB)
- Sputum with blood (Hemoptysis)
- Excessive sputum production
- Weight loss & fatigue & anorexia
- Hoarseness or change in voice
- Shoulder or other joint pain
- Chest, back or arm pain
- Recurring episodes of pleural effusion, pneumonia or bronchitis

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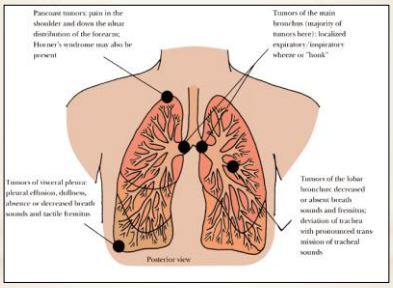
Signs and Symptoms



http://www.yalemedicalgroup.org/stw/images/36570.jpg

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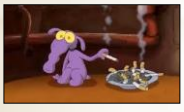
Risk Factors

- Cigarette smoking
- Other tobacco smoking
- Passive smoking - 2nd hand smoke
- Occupational carcinogens
  - Asbestos exposure
- Residential carcinogens
  - Radon exposure
- Having had certain other cancers
- Family member with lung cancer
- Having had other lung disease
- TB, bronchitis & emphysema
- Nutritional deficiencies
- Air pollution
- Viruses



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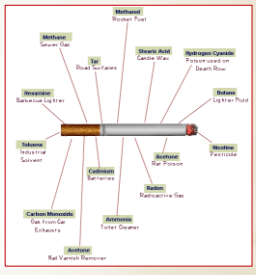
Tobacco Use

- Smoking main contributor
- Cigarette smoke contains over **69** known carcinogens
  - Radioisotopes
  - Nitrosamine
  - Benzene
  - Acetone
  - Cadmium

http://media-cache-ak0.pinimg.com/736x/01/cd/77/01cd77817267eba08e038775b735391d.jpg



http://wordpress.com/cigarette

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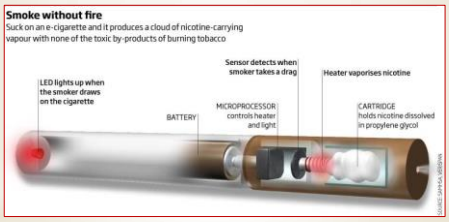
Tobacco Use



http://www.awesomevapor.com

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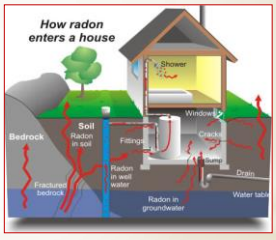
Radon Gas



http://premierradon.net

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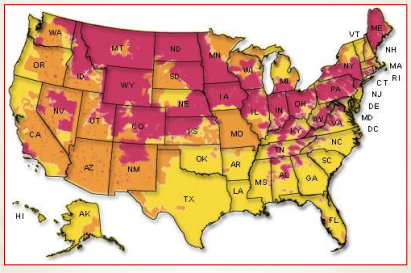
Radon Gas



http://pillartopost.com/epa

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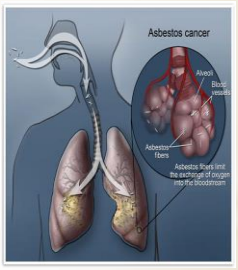
Asbestos

- Asbestos and lung cancer
- Asbestos and mesothelioma



http://www.mesothelioma.com/asbestos-cancer

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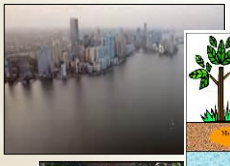
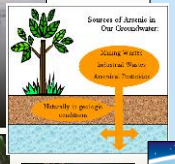
Air and Water Pollution

- High levels of air pollution
- Drinking water containing high levels of arsenic





http://www.bing.com/images/search?q=florida+water+arsenic+level&FORM=HDRSC2

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Viruses

- Implicated viruses include Human Papilloma Virus (HPV), Simian Virus (SV40), cytomegalovirus (CMV).
- These viruses may effect the cell cycle allowing uncontrolled cell division

http://abcnews.go.com/Health/story?id=4728594

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Lung Anatomy

http://www.omnimedicalsearch.com/conditions-diseases/images/lung-cancer.jpg

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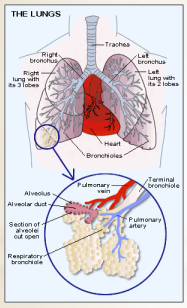
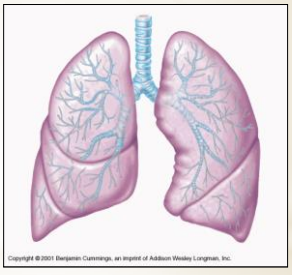
Lung Anatomy



http://www.damav.com/mare/lung/



http://legacy.owensboro.kctcs.edu

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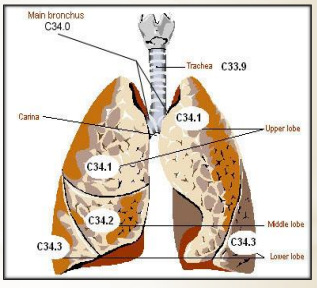
Lung Anatomy

* C34.0 Main bronchus
* C34.1 Upper lobe, lung
* C34.2 Middle lobe, lung (right lung only)
* C34.3 Lower lobe, lung
* C34.8 Overlapping lesion
* C34.9 Lung, NOS

* Source: SEER Training: ICD-O-3 Site Codes



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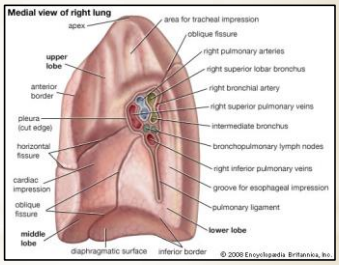
Lung Anatomy

The **hilum** is the space in each lung where the bronchus and blood vessels enter the lung.

The **apex** is the rounded area at the top of each lung.



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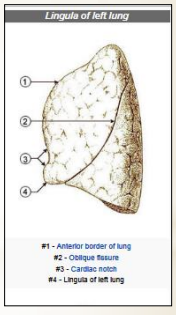
Lung Anatomy

The **lingula,** found only in the left lung, is a projection of the upper lobe of the left lung thought to be a remnant of an ancient middle lobe of the left lung.



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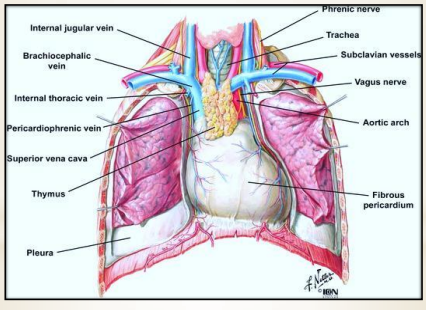
Lung Anatomy

Great Vessels



Source: Springer Images. Figure adapted from Atlas of Human Anatomy, 2nd ed. Contents of the superior and middle mediastinum. http://www.springerimages.com/Images/MedicineAndPublicHealth/1-10.1007_978-1-60327-372-5_4-9

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Lung Anatomy

Laterality

- Code laterality for all lung sub-sites except carina
- Code the laterality for the lung in which the tumor originated
- Count cancer in both lungs as separate primaries unless metastasis from one side to the other is documented
- Always check that multiple pulmonary nodules are not metastasis from another primary site
- If both lungs have nodules or tumors and the lung of origin is not known, assign code 4.
- Diffuse bilateral lung nodules is the only time when laterality = 4
- Always check that multiple pulmonary nodules are not metastasis from another primary site

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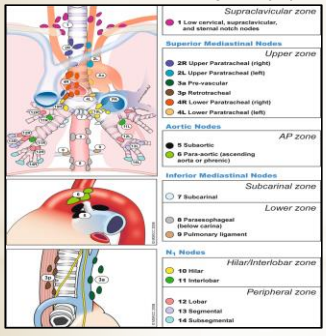
Lung Anatomy

Regional Lymph Nodes



* **NX** Regional lymph nodes cannot be assessed
* **N0** No regional lymph node metastases
* **N1** Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension
* **N2** Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
* **N3** Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)

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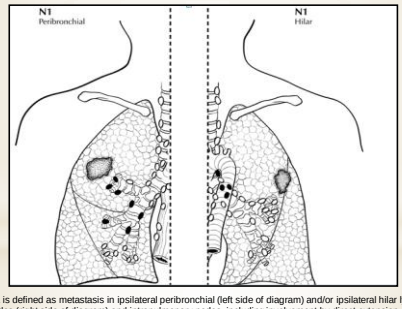
Lung Anatomy

Regional Lymph Nodes



N1 is defined as metastasis in ipsilateral peribronchial (left side of diagram) and/or ipsilateral hilar lymph nodes (right side of diagram) and intrapulmonary nodes, including involvement by direct extension of the primary tumor.

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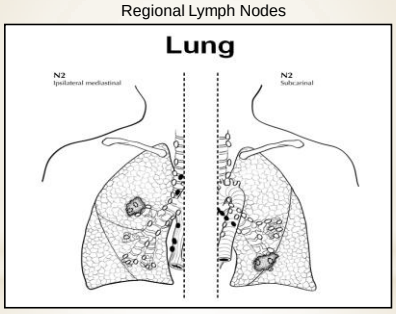
Lung Anatomy

Regional Lymph Nodes



N2 is defined as metastasis in ipsilateral mediastinal (left side of diagram) and/or subcarinal lymph node(s) (right side of diagram).

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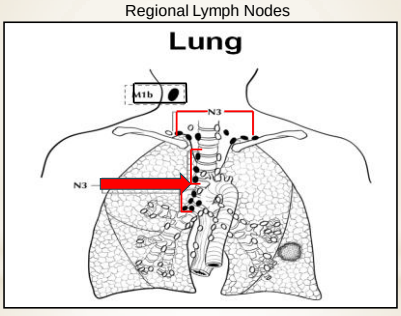
Lung Anatomy

Regional Lymph Nodes



N3 is defined as metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s), whereas M1b is defined as distant metastasis (in extrathoracic organs), and this would include distant lymph nodes.

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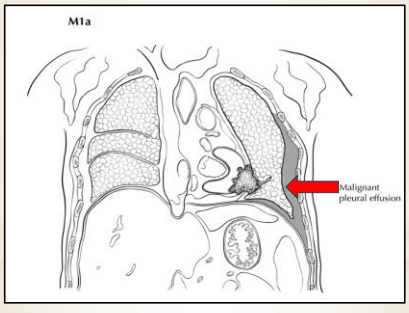
Lung Anatomy

Pleural Effusion



M1a is defined as separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural (or pericardial) effusion. This is an image of tumor with malignant pleural effusion.lymph nodes.

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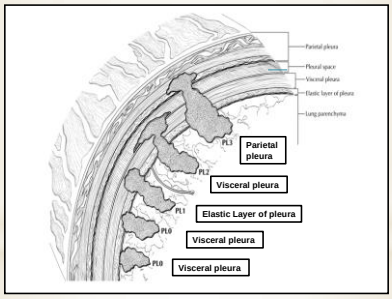
Lung Anatomy

Layers of the Pleura



A tumor that falls short of completely traversing the elastic layer of the visceral pleura is defined as PL0. A tumor that extends through the elastic layer is defined as PL1 and one that extends to the surface of the visceral pleural as PL2. Extension of the tumor to the parietal pleura is defined as PL3.

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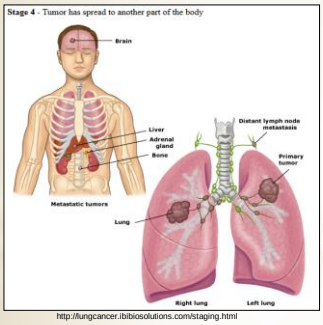
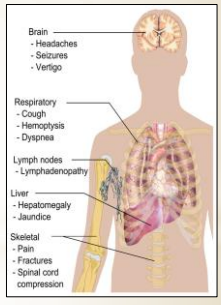
Lung Anatomy

Metastatic Sites



http://lungcancer.ibibiosolutions.com/staging.html



www.landesbioscience.com

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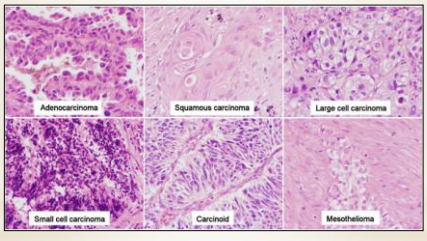
Types of Lung Cancer



http://sciencedirect.com

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Lung Cancer Type

- World Health Organization (WHO) divides lung cancer into two major classes based on histology, therapy and prognosis.
- The main classes of lung cancer are:
  - **Small Cell Lung Cancer (SCLC)**
  - **Non-Small Cell Lung Cancer (NSCLC)**
    - Large Cell Carcinoma
      - Large Cell Neuroendocrine Carcinoma
    - Squamous Cell Carcinoma
    - Adenocarcinoma
      - Bronchoalveolar Carcinoma

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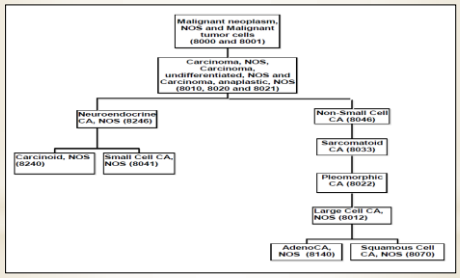
Lung Cancer Type



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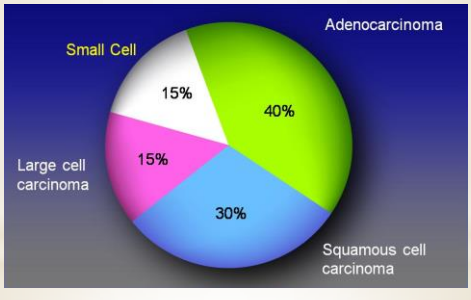
Lung Cancer Type



Wahbah M, et al. Ann Diagn Pathol. 2007; 110:89-96

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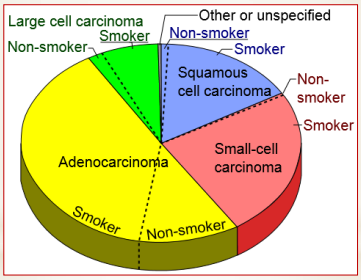
Lung Cancer Type



Kenfield SA, Wei EK, Stampfer MJ, Rosner BA, Colditz GA (2008), Tobacco Control 17 (3): 198-204

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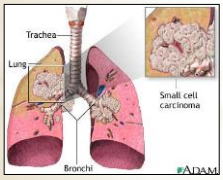
Small Cell Lung Carcinoma

(SCLC)

* A type of lung cancer made up of small, round cells.
* Small cell lung cancer is less common than non-small cell lung cancer
* Often grows more quickly
* The name is often shortened to SCLC. Another name for SCLC is oat cell cancer because the cancer cells may look like oats (Flat shape) when viewed under a microscope, grows rapidly and quickly spreads to other organs



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Source: webmd.com

Non-Small Cell Lung Carcinoma

(NSCLC)

* Non-Small Cell Lung Cancer is the most common type of Lung Cancer
* Is usually grows and spreads more slowly than small cell lung cancer

Non-small cell lung cancer is divided into 3 subcategories

- ✓ Large cell carcinomas make up a group of cancers that look large and abnormal under a microscope.
- ✓ Squamous cell carcinoma originates in the thin, flat cells that line the passages of the respiratory tract.
- ✓ Adenocarcinoma begins in the cells that form the lining of the lungs.

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Non-Small Cell Lung Carcinoma
(NSCLC)

* **Squamous** or **epidermoid** (807_3)--least likely to recur after resection; frequently a central or bronchial lesion.
* **Adenocarcinoma** (814_3)--usually slow-growing, but can metastasize widely; usually a peripheral lesion.
* **Bronchioloalveolar** (82503)--a very specific subtype adenocarcinoma with a distinct characteristic presentation and behavior. These tumors arise in the alveolar sacs in the lungs.
* **Large cell carcinoma** (80123)--also called giant cell or clear cell.
* **Other subtypes** of adenocarcinoma are acinar, papillary, and mucinous.
* **Adenosquamous carcinoma** (85603)--a specific histologic variant containing both epithelial (squamous and glandular (adeno-) cells
* **Carcinoids** (824_3)--arise from neuroectoderm (which generates supporting structures of lung).
* **Melanomas**, **sarcomas** and **lymphomas** may also arise in the lung.
* **Mesothelioma** (905_3)--linked to asbestos exposure; usually involves the pleura, not the lung.
* **Non-small cell carcinoma** (80463)--a general term used sloppily to separate small cell from the "non-small cell" types (such as adenocarcinoma, Squamous cell carcinoma, large cell, etc.).
* **Only use 8046/3 when there is no other type of non-small cell carcinoma contained in the source documents.**

Source: FCDS Monthly Memo Nov 2003

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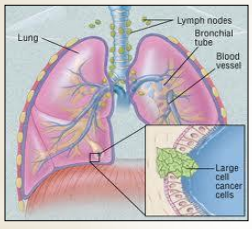
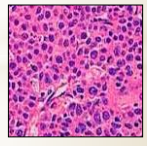
Large Cell Carcinoma



- Incidence: 15%
- More often peripheral mass; either single or multiple masses; may be central
- Named for the large, round cells seen in this cancer
- Grow quickly and spread so usually are diagnosed in later stage
- Often grows to large tumor
- Growth rate: rapid growth



Source: http://www.drugs.com/health-guide/large-cell-cancer-of-the-lung.html

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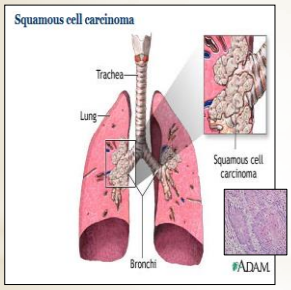
Squamous Cell Carcinoma



- Arises from bronchial epithelium (i.e. major bronchi), confined to bronchial wall with no lymph node metastases
- As growth occurs, cavitation may develop in lung distal to tumor.
- Tumor may occur in apex & upper respiratory zone
- Growth rate: slow growth
- Five year survival is 90% or more if no 2nd SCC present

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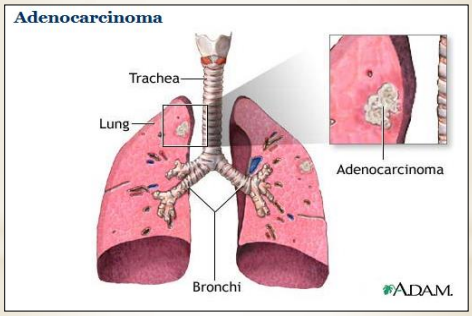
Sources: Adam and Medline Plus

Adenocarcinoma



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Adenocarcinoma

- Majority Arises from terminal bronchioles
- Tend to be located in the periphery of the lung
- Cancer that begins in the cells that line the alveoli and make substances such as mucous.
- 80% contain mucin
- A slow growing cancer that can take years to develop into invasive cancer
- Most common subtype in nonsmokers
- In US, 50% of lung carcinomas in women are adenocarcinoma

- Incidence: >40%

Clinical features

- May be associated with scarring
- Grows slower than SCC
- 5 year survival:
  - Stage I - 69%
  - Stage II - 40%
  - Stage IIIA - 17%
  - Stage IIIB - 5%
  - Stage IV - 8%

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Adenocarcinoma

Gross description

- Poorly circumscribed gray-yellow lesions, single or multiple, may be mucoid
- 77% involve visceral pleura producing puckering/pleural retraction, 65% are peripheral
- Usually not cavitary
- Often associated with a peripheral scar or honeycombing (scar appears to be response to tumor)
- Rarely spreads into pleural space to coat visceral and parietal pleura and resemble diffuse mesothelioma

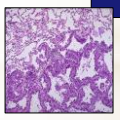
This is a peripheral adenocarcinoma of the lung

54 http://www.pathologyoutlines.com

Bronchoalveolar Adenocarcinoma

Travis Classification

- Adenocarcinoma in situ (AIS) (formerly Bronchioalveolar Carcinoma - BAC) which is a pre-invasive lesion
- Minimally invasive adenocarcinoma (MIA) <3cm nodule with <5mm invasion
- These neoplasms have a better prognosis than other lung cancers.
- Composed of columnar cells that proliferate along the framework of alveolar septae, a so-called "lepidic" growth pattern. The cells are well-differentiated



This is another type of adenocarcinoma of lung known as adenocarcinoma-in-situ (formerly called bronchoalveolar adenocarcinoma)

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http://www.pathologyoutlines.com

Bronchoalveolar Adenocarcinoma

http://cancergrace.org/lung

- Under the microscope, an image such as that on the left shows thickened walls of the gas-exchanging sacs in the lungs called alveoli.
- The classic description of this pattern is *lepidic*, meaning "scale-like."
- X-rays and other imaging shows a picture that looks remarkably like pneumonia, as shown on the right.
- Patients with BAC are routinely diagnosed as having pneumonia for weeks or months before a diagnosis of cancer is actually established.

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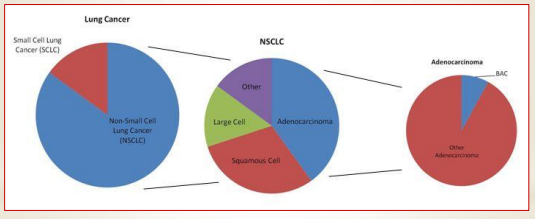
Lung Cancer Histology Groups



http://stageiv.files.wordpress.com

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Lung Cancer Screening

Low Dose Helical CT (LDCT or also known as spiral CT)

http://www.sdirad.com/patient-information/lung-cancer-screening.php

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Lung Cancer Screening

- August 2011 - National Lung Screening Trial (NLST) Results
- Screening with low-dose spiral CT compared to CXR reduced lung cancer deaths among older heavy smokers by 20%.
- Improved detection of lung cancer at early stage is key to increased survival and improved mortality.
- Weigh Benefits/Risk of lung cancer screening using CT scan
- Recommend Screening in High Risk Population:
  - Current/Former Smoker
  - Age 55-74 Years
  - Smoking History of at least 20-30 pack-years (varies by organization)
  - No personal history of lung cancer
- Frequency of Screening - Annual

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Lung Cancer Screening

- Endorsement/Adoption of Guideline
  - American Cancer Society (ACS)
  - American Lung Association (ALA)
  - American College of Chest Physicians (ACCP)
  - American Association for Thoracic Surgery (AATS)
  - ASCO/NCCN Clinical Practice Guidelines (ASCO/NCCN)
  - United States Preventative Services Task Force

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Lung Cancer Screening

* ALA Developing an Educational Portfolio for Patients to Explain:
  * The difference between a screening process and a diagnostic test
    * *Cancer Screening is testing for cancer **before** there are any symptoms*
  * The benefits, risks and costs (emotional, physical and economic)
  * That not all lung cancers will be detected through use of low dose CT scanning
* ALA issued a Call to Action for Hospitals and Screening Centers to:
  * Establish ethical policies for advertising /promoting lung cancer screening svcs
  * Develop educational materials to assist patients in having thoughtful discussions between patients and physicians regarding lung cancer screening
  * Provide lung cancer screening services with access to multidisciplinary teams that can deliver the needed follow-up for evaluation of nodules.

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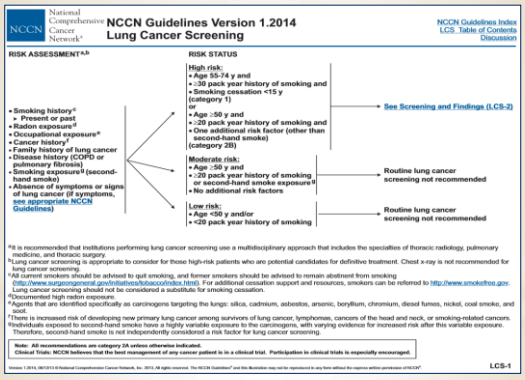

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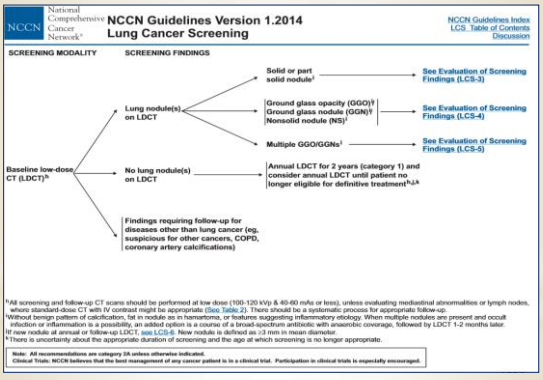

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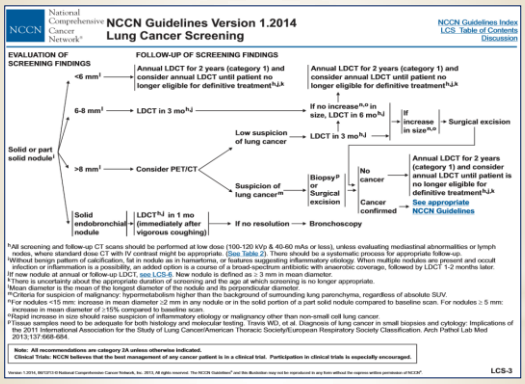

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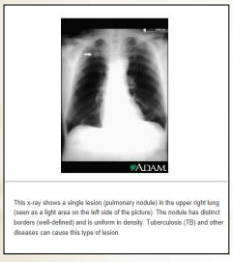
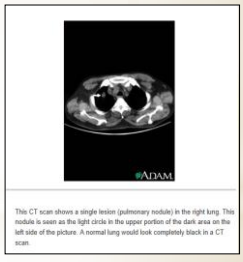
Lung Cancer Workup
Chest X-ray vs. CT





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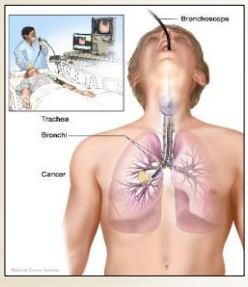
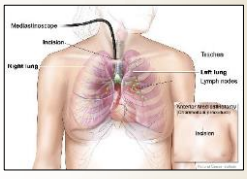
Lung Cancer Workup



http://www.urmc.rochester.edu/encyclopedia

Mediastinoscopy



If a mediastinal mass or mediastinal adenopathy is reported on x-ray or mediastinoscopy, assume that mediastinal lymph nodes are involved.

www.cancernews.com

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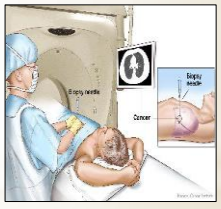
Lung Cancer Workup

Endoscopic ultrasound (EUS)

Illustration www.health.uab.edu

CT-Guided Needle Aspiration Biopsy



http://www.urmc.rochester.edu/encyclopedia

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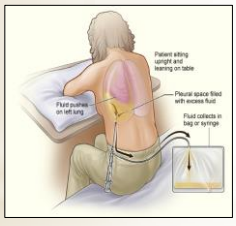
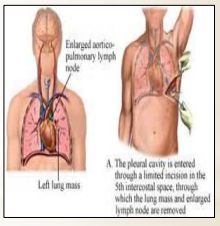
Lung Cancer Workup

Thoracentesis



Thoracotomy



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Lung Cancer Workup

Biomarkers

* Data show that targeted therapy is potentially very effective in patients with specific gene mutations or rearrangements.

* Several biomarkers have emerged as prognostic (patient survival) and predictive (therapeutic efficacy) for NSCLC.

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Lung Cancer Workup
Biomarkers

* EGFR
  * Epidermal Growth Factor Receptor
* ERCC1
  * Endonuclease of the nucleotide excision repair complex
* K-ras oncogene
* RRM1
  * Regulatory subunit of ribonucleotide reductase
* EML4-ALK Fusion Oncogene

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Lung Cancer Workup
Immunohistochemical Stains (IHC)

- TTF-1 is very important in distinguishing primary from metastatic adenocarcinoma.
- Most primary lung adenocarcinomas are TTF-1 positive.
- Squamous cell lung carcinomas are often TTF-1 negative
- Other squamous cell IHC tests - p63 positive and cytokeratin positive
- Other adenocarcinoma IHC tests - CEA, B72.3, BER-EP4, and MOC3.
  - These stains are negative for mesothelioma.
- Thyroglobulin is present in tumors from patients with thyroid cancer, but it is negative in lung cancer tumors.
- Pulmonary adenocarcinoma is usually CK7+ and CK20-, whereas metastatic adenocarcinoma of the colorectum is usually CK7- and CK20+.

NCCN Guidelines

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Lung Cancer Workup
Small Cell Lung CA Biomarkers

* Nearly all SCLCs are immunoreactive for keratin, epithelial membrane antigen, and thyroid transcription factor-1 (TTF-1).
* Most SCLCs also stain positive for markers of neuroendocrine differentiation, including chromogranin A, neuron-specific enolase, neural cell adhesion molecule (NCAM; CD56) and synaptophysin.
* However, these markers alone cannot distinguish SCLC from NSCLC because approximately 10% of NSCLC will be immunoreactive for at least one of these neuroendocrine markers.

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Lung MPH Rules
Terms and Definitions

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Lung Equivalent Terms, Definitions, Charts, Tables and Illustrations
C340-C349
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Introduction
Use these rules only for cases with primary lung cancer.

Lung carcinomas may be broadly grouped into two categories, small cell and non-small cell carcinoma.
Frequently a patient may have two or more tumors in one lung and may have one or more tumors in the contralateral lung. The physician may biopsy only one of the tumors. Code the case as a single primary (See Rule M1, Note 2) unless one of the tumors is proven to be a different histology. It is irrelevant whether the other tumors are identified as cancer, primary tumors, or metastases.

Equivalent or Equal Terms
- Low grade neuroendocrine carcinoma, carcinoid
- Tumor, mass, lesion, neoplasm (for multiple primary and histology coding rules only)
- Type, subtype, predominantly, with features of, major, or with ___differentiation

Obsolete Terms for Small Cell Carcinoma (Terms that are no longer recognized)
- Intermediate cell carcinoma (8044)
- Mixed small cell/large cell carcinoma (8045) (Code is still used; however current accepted terminology is combined small cell carcinoma)
- Oat cell carcinoma (8042)
- Small cell anaplastic carcinoma (No ICD-O-3 code)
- Undifferentiated small cell carcinoma (No ICD-O-3 code)

Definitions

Adenocarcinoma with mixed subtypes (8255): A mixture of two or more of the subtypes of adenocarcinoma such as acinar, papillary, bronchoalveolar, or solid with mucin formation.

Adenosquamous carcinoma (8560): A single histology in a single tumor composed of both squamous cell carcinoma and adenocarcinoma.

Bilateral lung cancer: This phrase simply means that there is at least one malignancy in the right lung and at least one malignancy in the left lung. Do not base multiple primary decision on this phrase; bilateral does not mean this is a single primary. Use the multiple primary rules to decide whether to code bilateral lung cancers as a single or multiple primary.

Combined small cell carcinoma (8045): A small cell carcinoma that is combined with a non-small cell carcinoma. The combinations are small cell and adenocarcinoma, or squamous cell carcinoma, or large cell carcinoma.

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Lung Terms and Definitions

Lung Equivalent Terms, Definitions, Charts, Tables and Illustrations
C340-C349
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Large cell carcinoma (8012): Large cell is a diagnosis that is used when the tumor is a non-small cell carcinoma that is undifferentiated. Because the tumor is undifferentiated, the pathologist cannot find glandular (adeno), or squamous differentiation.

Large cell neuroendocrine carcinoma (8013): A non-small cell carcinoma with neuroendocrine differentiation proven by immunohistochemical stain, currently classified as large cell carcinoma. These tumors require further study before being included as a separate category in a histologic classification.

Most invasive: The tumor with the greatest continuous extension.

Neuroendocrine carcinoma (8246): Neuroendocrine carcinoma is a group of carcinomas that include typical carcinoid tumor and small cell carcinoma. Code the specific histology when given. Code neuroendocrine carcinoma, NOS (8246) when no specific histology is documented.

Non-small cell carcinoma (8046): The term non-small cell is used two ways, as a group term describing all carcinomas that are not small cell; and as a default diagnosis when there isn't enough tissue to classify the tumor beyond the exclusion of small cell.

Pancoast tumor: An anatomic designation (not a specific histology) for a lung cancer that starts in the upper lobe of the lung and extends outward to destroy the ribs and vertebrae. The tumor may compress or directly invade the brachial plexus (nerve bundles) of the neck, causing pain. Pancoast tumor may also be called **superior sulcus tumor**.

Pleomorphic carcinoma (8022): A poorly differentiated non-small cell carcinoma (squamous cell carcinoma, adenocarcinoma, or large cell carcinoma) containing spindle cells and/or giant cells or, a carcinoma containing only spindle cells and giant cells. These fall under the general category of **sarcomatoid carcinoma**.

Sarcomatoid carcinoma: A group of tumors that are non-small cell in type and contain spindle cells and/or giant cells. Depending on the histologic features the tumor may be designated: pleomorphic carcinoma (8022); spindle cell carcinoma (8032); giant cell carcinoma (8031), carcinosarcoma (8980); or pulmonary blastoma (8972)

Small cell carcinoma: Malignant epithelial tumor consisting of small cells. There are many types of lung cancer, but most can be categorized into one of two basic types, "small cell carcinoma" or "non-small cell carcinoma"

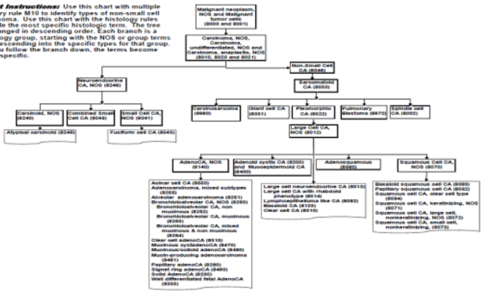
Undifferentiated carcinoma (8020): A high grade malignancy lacking glandular structures or other specific features that can be used to better classify the tumor. Undifferentiated carcinoma is used by pathologists when they believe the tumor is a carcinoma (not lymphoma, melanoma, or sarcoma) but they are not sure if the tumor is small cell or non-small cell.

Lung Equivalent Terms, Definitions, Charts, Tables and Illustrations
C340-C349
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Chart 1 – Lung Histology Groups and Specific Types

Note: This chart is based on the *WHO Classification of Tumors* for tumors of the lung. The chart is not a complete listing of histologies that may occur in the lung.

Chart Instructions: Use this chart with multiple primary rule M10 to identify types of non-small cell carcinoma. Use this chart with the histology rules to code the most specific histologic term. The tree is arranged in descending order. Each branch is a histology group, starting with the NOS or group terms and descending into the specific types for that group. As you follow the branch down, the terms become more specific.



Lung MPH Rules
Multiple Primary Rules

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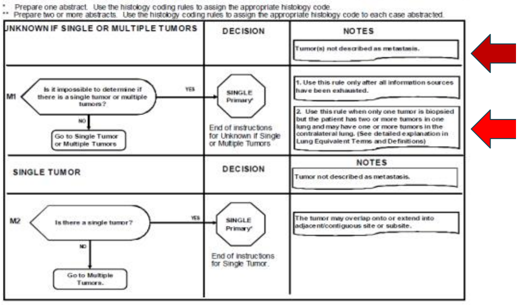
Lung Multiple Primary Rules - Flowchart
(C340 - C349)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.



Lung MP

January 1, 2007

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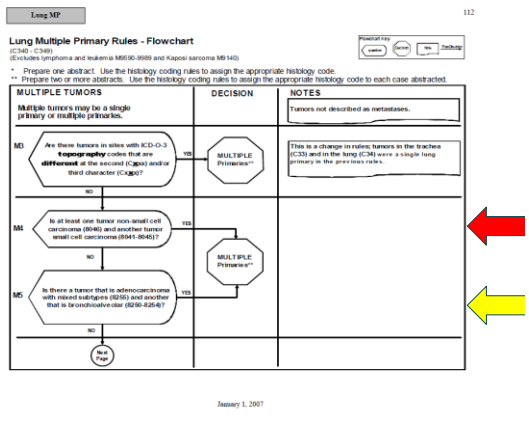
Lung MP
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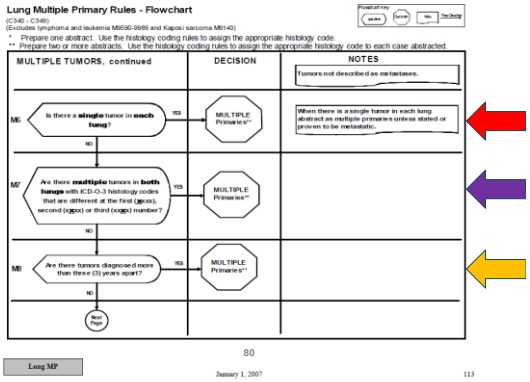
Lung Multiple Primary Rules - Flowchart
(C340 - C349)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)
* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.
MULTIPLE TUMORS
DECISION
NOTES
Multiple tumors may be a single primary or multiple primaries.
Tumors not described as metastases.
M3
Are there tumors in sites with ICD-O-3 topography codes that are different at the second (C2xx) and/or third character (Cxxx)?
YES
MULTIPLE Primaries**
This is a change in rules: tumors in the trachea (C33) and in the lung (C34) were a single lung primary in the previous rules.
NO
M4
Is at least one tumor non-small cell carcinoma (8046) and another tumor small cell carcinoma (8041-8045)?
YES
NO
MULTIPLE Primaries**
M5
Is there a tumor that is adenocarcinoma with mixed subtypes (8255) and another that is bronchioalveolar (8250-8254)?
YES
NO
Next Page
January 1, 2007


Lung Multiple Primary Rules - Flowchart
(C340 - C349)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)
* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.
MULTIPLE TUMORS, continued
DECISION
NOTES
Tumors not described as metastases.
M6
Is there a single tumor in each lung?
YES
MULTIPLE Primaries**
When there is a single tumor in each lung abstract as multiple primaries unless stated or proven to be metastatic.
NO
M7
Are there multiple tumors in both lungs with ICD-O-3 histology codes that are different at the first (2xxx), second (x2xx) or third (xx2x) number?
YES
MULTIPLE Primaries**
NO
M8
Are there tumors diagnosed more than three (3) years apart?
YES
MULTIPLE Primaries**
NO
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Lung MP
January 1, 2007
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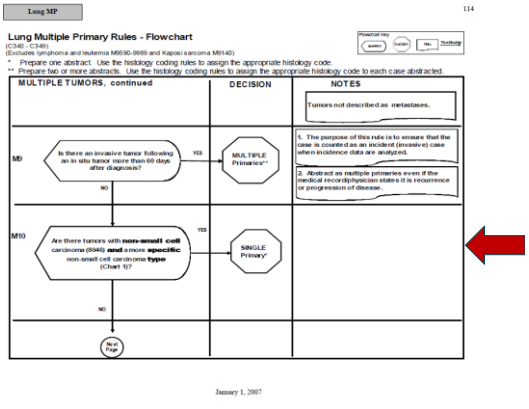
Lung MP
114
Lung Multiple Primary Rules - Flowchart
(C340 - C349)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)
* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.
MULTIPLE TUMORS, continued
DECISION
NOTES
Tumors not described as metastases.
M9
Is there an invasive tumor following an in situ tumor more than 60 days after diagnosis?
YES
MULTIPLE Primaries**
1. The purpose of this rule is to ensure that the case is counted as an incident (invasive) case when incidence data are analyzed.
2. Abstract as multiple primaries even if the medical record/physician states it is recurrence or progression of disease.
NO
M10
Are there tumors with non-small cell carcinoma (8046) and a more specific non-small cell carcinoma type (Chart 1)?
YES
SINGLE Primary*
NO
Next Page
January 1, 2007

Lung MPH Rules
Histology Coding Rules

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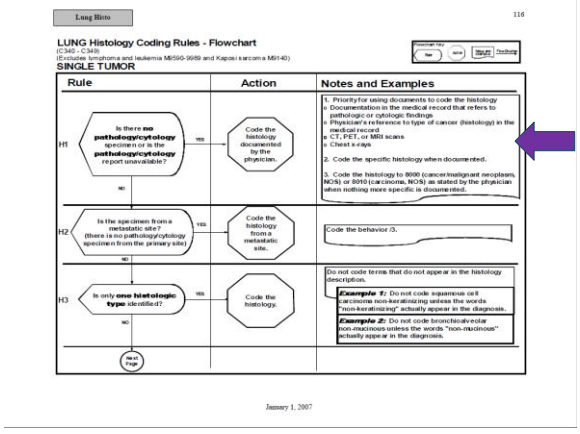

Lung Hist

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LUNG Histology Coding Rules - Flowchart

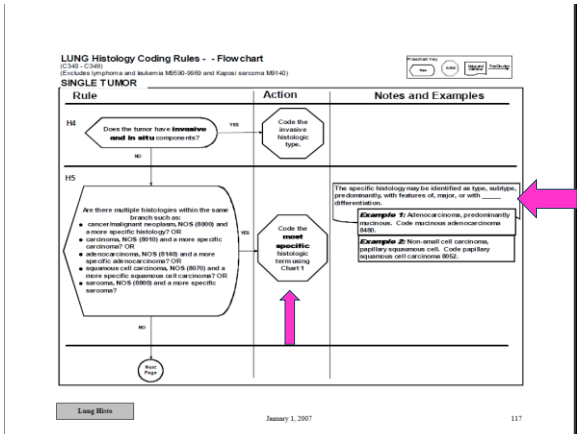
(C340 - C349)

(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

SINGLE TUMOR

Rule	Action	Notes and Examples
H1 Is there **no pathology/cytology** specimen or is the **pathology/cytology** report unavailable?	YES: Code the histology documented by the physician.	1. Priority for using documents to code the histology a Documentation in the medical record that refers to pathologic or cytologic findings b Physician's reference to type of cancer (histology) in the medical record c CT, PET, or MRI scans d Chest x-rays 2. Code the specific histology when documented. 3. Code the histology to 8000 (cancer/malignant neoplasm, NOS) or 8010 (carcinoma, NOS) as stated by the physician when nothing more specific is documented.
H2 Is the specimen from a metastatic site? (there is no pathology/cytology specimen from the primary site)	YES: Code the histology from a metastatic site.	Code the behavior /3.
H3 Is only **one histologic type** identified?	YES: Code the histology.	Do not code terms that do not appear in the histology description. ***Example 1:*** Do not code squamous cell Carcinoma non-keratinizing unless the words "non-keratinizing" actually appear in the diagnosis. ***Example 2:*** Do not code bronchioalveolar non-mucinous unless the words "non-mucinous" actually appear in the diagnosis.

January 1, 2007



LUNG Histology Coding Rules - - Flowchart

(C340 - C349)

(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

SINGLE TUMOR

Rule	Action	Notes and Examples
H4 Does the tumor have **invasive and in situ** components?	YES: Code the invasive histologic type.	
H5 Are there multiple histologies within the same branch such as: • cancer/malignant neoplasm, NOS (8000) and a more specific histology? OR • carcinoma, NOS (8010) and a more specific carcinoma? OR • adenocarcinoma, NOS (8140) and a more specific adenocarcinoma? OR • squamous cell carcinoma, NOS (8070) and a more specific squamous cell carcinoma? OR • sarcoma, NOS (8800) and a more specific sarcoma?	YES: Code the **most specific** histologic term using Chart 1	The specific histology may be identified as type, subtype, predominantly, with features of, major, or with _____ differentiation. ***Example 1:*** Adenocarcinoma, predominantly mucinous. Code mucinous adenocarcinoma 8480. ***Example 2:*** Non-small cell carcinoma, papillary squamous cell. Code papillary squamous cell carcinoma 8052.

Lung Hist

January 1, 2007

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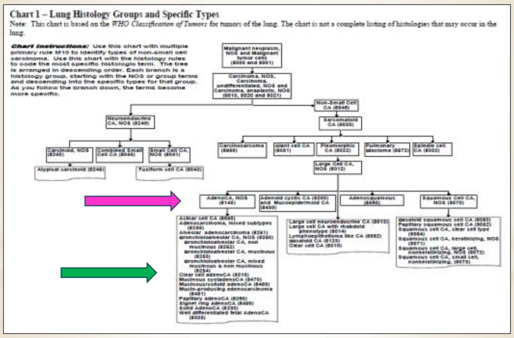
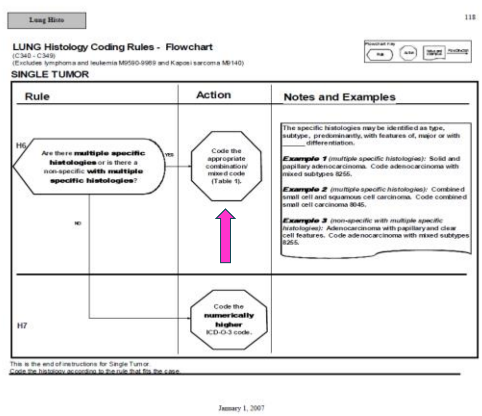
Lung Cancer Histology Groups



85



Lung Equivalent Terms, Definitions, Charts, Tables and Illustrations
C340-C349
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

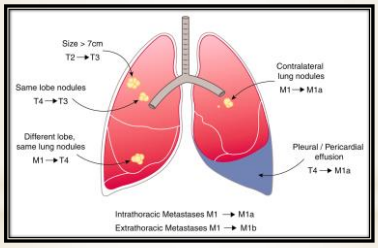
Table 1 –Combination/Mixed Codes for Lung Histologies

Table Instructions: Use this table to select combination/mixed histology codes. Compare the terms in the diagnosis to the terms in columns 1 and 2. If the terms match, abstract the case using the ICD-O-3 histology code in column 4. Use the combination/mixed codes listed in this table only when the histologies in the tumor match the histologies listed below. Use the combination/mixed codes for a **single tumor** when all histologies are present in a single tumor.

Note: This table is not a complete listing of histologies that may occur in the lung.

Column 1: Required Terms	Column 2: Additional Required Terms	Column 3: ICD-O-3 Term	Column 4: ICD-O-3 Code
Giant cell carcinoma AND spindle cell carcinoma		Giant cell and spindle cell carcinoma	8030
Small cell carcinoma AND one of the histologies in Column 2 *Note*: **Diagnosis must be small cell carcinoma (NOS), not a subtype of small cell**	Adenocarcinoma Large cell carcinoma Squamous cell carcinoma	Combined small cell carcinoma Mixed small cell carcinoma	8045
Squamous cell carcinoma* AND large cell nonkeratinizing		Squamous cell carcinoma, large cell, nonkeratinizing	8072
Squamous cell carcinoma AND small cell nonkeratinizing		Squamous cell caricinoma, small cell, nonkeratinizing	8073
Squamous cell carcinoma* AND one of the histologies in Column 2	Spindle cell carcinoma Sarcomatoid	Squamous cell carcinoma, spindle cell Squamous cell carcinoma, sarcomatoid	8074
A combination of at least two of the histologies in Column 2**	Acinar Bronchioloalveolar carcinoma Bronchioloalveolar carcinoma non mucinous (Clara cell/type II pneumocyte) Bronchioloalveolar carcinoma mucinous (goblet cell) Bronchioloalveolar carcinoma mixed mucinous and non-mucinous Clear cell adenocarcinoma Papillary adenocarcinoma Solid adenocarcinoma Well-differentiated fetal adenocarcinoma	Adenocarcinoma with mixed subtypes**	8255**

Staging Lung Cancer



Nair A et al. Radiographics 2011;31:215-238

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COLLABORATIVE STAGE DATA COLLECTION SYSTEM

Collaborative Stage Version 2

TNM 7 Schema List (v.02.04)

Natural Order • **Alphabetical Order**

AdnexalUterineOther	GIST SmallIntestine	MelanomaLarynxGlottic	PalateHard
AdrenalGland	GIST Stomach	MelanomaLarynxOther	PalateSoft
AmpullaVater	GumLower	MelanomaLarynxSubglottic	PancreasBodyTail
Anus	GumOther	MelanomaLarynxSupraglottic	PancreasHead
Appendix	GumUpper	MelanomaLipLower	PancreasOther
BileDuctsDistal	HeartMediastinum	MelanomaLipOther	ParotidGland
BileDuctsIntraHepat	HemeRetic	MelanomaLipUpper	Penis
BileDuctsPerihilar	Hypopharynx	MelanomaMouthOther	Peritoneum
BiliaryOther	IllDefinedOther	MelanomaNasalCavity	PeritoneumFemaleGen
Bladder	IntracranialGland	MelanomaNasopharynx	PharyngealTonsil
Bone	KaposiSarcoma	MelanomaOropharynx	PharynxOther
Brain	KidneyParenchyma	MelanomaPalateHard	Placenta
Breast	KidneyRenalPelvis	MelanomaPalateSoft	Pleura
BuccalMucosa	LacrimalGland	MelanomaPharynxOther	Prostate
CarcinoidAppendix	LacrimalSac	MelanomaSinusEthmoid	Rectum
Cervix	LarynxGlottic	MelanomaSinusMaxillary	RespiratoryOther
CNSOther	LarynxOther	MelanomaSinusOther	Retinoblastoma
Colon	LarynxSubglottic	MelanomaSkin	Retroperitoneum
Conjunctiva	LarynxSupraglottic	MelanomaTongueAnterior	SalivaryGlandOther
CorpusAdenosarcoma	LipLower	MelanomaTongueBase	Scrotum
CorpusCarcinoma	LipOther	MerkelCellPenis	SinusEthmoid
CorpusSarcoma	LipUpper	MerkelCellScrotum	SinusMaxillary
CysticDuct	Liver	MerkelCellSkin	SinusOther
Eye	Lung	MerkelCellVulva	Skin
EndocrineOther	Lymphoma	MiddleEar	SkinEyelid
EpiglottisAnterior	LymphomaOcularAdnexa	MouthOther	SmallIntestine
Esophagus	MelanomaBuccalMucosa	MycosisFungoides	SoftTissue
EsophagusGEJunction	MelanomaChoroid	MyelomaPlasmaCellDisorder	Stomach

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Collaborative Stage for TNM 7 - Revised 10/28/2011

Lung

Lung

C34.0-C34.3, C34.8-C34.9

- C34.0 Main bronchus
- C34.1 Upper lobe, lung
- C34.2 Middle lobe, lung
- C34.3 Lower lobe, lung
- C34.8 Overlapping lesion of lung
- C34.9 Lung, NOS
- Note: Laterality must be coded for this site (except carina).

CS Tumor Size	CS Site-Specific Factor 7 = 988
CS Extension	CS Site-Specific Factor 8 = 988
CS Tumor Size/Ext Eval	CS Site-Specific Factor 9 = 988
CS Lymph Nodes	CS Site-Specific Factor 10 = 988
CS Lymph Nodes Eval	CS Site-Specific Factor 11 = 988
Regional Nodes Positive	CS Site-Specific Factor 12 = 988
Regional Nodes Examined	CS Site-Specific Factor 13 = 988
CS Mets at DX	CS Site-Specific Factor 14 = 988
CS Mets Eval	CS Site-Specific Factor 15 = 988
CS Site-Specific Factor 1	CS Site-Specific Factor 16 = 988
Separate Tumor Nodules - Ipsilateral Lung	CS Site-Specific Factor 17 = 988
CS Site-Specific Factor 2	CS Site-Specific Factor 18 = 988
Pleural/Elastic Layer Invasion (PL) by H and E or Elastic Stain	CS Site-Specific Factor 19 = 988
	CS Site-Specific Factor 20 = 988
CS Site-Specific Factor 3 = 988	CS Site-Specific Factor 21 = 988
CS Site-Specific Factor 4 = 988	CS Site-Specific Factor 22 = 988
CS Site-Specific Factor 5 = 988	CS Site-Specific Factor 23 = 988
CS Site-Specific Factor 6 = 988	CS Site-Specific Factor 24 = 988
	CS Site-Specific Factor 25 = 988
	Histology Inclusion Table AJCC 7th ed.
	Histology Exclusion Table AJCC 6th ed.
	AJCC TNM 7 Stage
	AJCC TNM 6 Stage

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Collaborative Stage for TNM 7 - Revised 10/25/2011 [Schema]

Lung

CS Extension

- Note 1: Direct extension to or other involvement of structures considered M1 in AJCC staging is coded in the data item CS Mets at DX. This includes: sternum; skeletal muscle; skin of chest; contralateral lung or mainstem bronchus; separate tumor nodule(s) in contralateral lung.
- Note 2: Distance from Carina: Assume tumor is greater than or equal to 2 centimeters (cm) from carina if lobectomy, segmental resection, or wedge resection is done.
- Note 3: Opposite Lung: If no mention is made of the opposite lung on a chest x-ray, assume it is not involved.
- Note 4: Bronchopneumonia: Bronchopneumonia is not the same thing as obstructive pneumonitis and should not be coded as such. Bronchopneumonia is an acute inflammation of the walls of the bronchioles, usually a result of spread of infection from the upper to the lower respiratory tract. Obstructive pneumonitis is a combination of atelectasis, bronchiectasis with mucous plugging, and parenchymal inflammation that develops distal to an obstructing endobronchial lesion.
- Note 5: Pulmonary Artery/Vein: An involved pulmonary artery/vein in the mediastinum is coded to 700 (involvement of major blood vessel). However, if the involvement of the artery/vein appears to be only within lung tissue and not in the mediastinum, it is not coded to 700.
- Note 6: Vocal cord paralysis (resulting from involvement of recurrent branch of the vagus nerve), superior vena cava (SVC) obstruction, or compression of the trachea or the esophagus may be related to direct extension of the primary tumor or to lymph node involvement. The treatment options and prognosis associated with these manifestations of disease extent fall within the T4-Stage IIIB category; therefore, generally use code 700 for these manifestations. However, if the primary tumor is peripheral and clearly unrelated to vocal cord paralysis, SVC obstruction, or compression of the trachea or the esophagus, code these manifestations as mediastinal lymph node involvement (code 200) in CS Lymph Nodes, unless there is a statement of involvement by direct extension from the primary tumor.
- Note 7: Pleural effusion and pericardial effusion are coded in CS Mets at DX.
- Note 8: In some cases, the determination of the T category for TNM 6 or 7 staging is based on this field. CS Tumor Size, CS Mets at DX, and CS Site-Specific Factor 1.
- Note 9: Code to the highest applicable code for CS Extension and then code the absence or presence of separate ipsilateral tumor nodules in CS Site-Specific Factor 1. Separate Tumor Nodules/Ipsilateral lung. Code separate tumor nodules in contralateral lung in CS Mets at Dx.
- Note 10: Specific information about visceral pleura invasion is captured in codes 410-430 and CS Site-Specific Factor 2, Visceral Pleural Invasion (VPI)/Elastic Layer. Elastic layer involvement has prognostic significance for lung cancer.

Code	Description	TNM 7 Map	TNM 6 Map	SS77 Map	SS2000 Map
000	In situ, intraepithelial, noninvasive	^	*	#	**
100	Tumor confined to one lung WITHOUT extension or conditions described in codes 200-800 EXCLUDING primary in main stem bronchus EXCLUDING superficial tumor as described in code 110	^	*	L	**
110	Superficial tumor of any size with invasive component limited to bronchial wall, with or without proximal extension to the main stem bronchus	^	*	L	**

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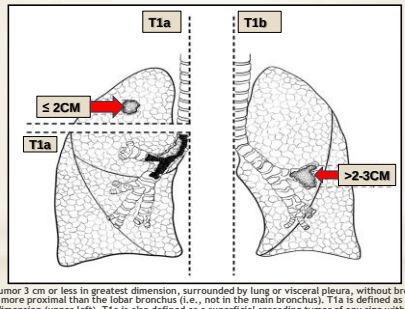
CS and TNM



T1 is defined as a tumor 3 cm or less in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus). T1a is defined as a tumor 2 cm or less in greatest dimension (upper left). T1a is also defined as a superficial spreading tumor of any size with its invasive component limited to the bronchial wall, which may extend proximally to the main bronchus (lower left). T1b is defined as a tumor more than 2 cm but 3 cm or less in greatest dimension (right).

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CS and TNM

Code	Description	TNM 7 Map	TNM 6 Map	SS77 Map	SS2000 Map
000	In situ, intraepithelial, noninvasive	^	*	#	**
100	Tumor confined to one lung WITHOUT extension or conditions described in codes 200-800 EXCLUDING primary in main stem bronchus EXCLUDING superficial tumor as described in code 110	^	*	L	**
110	Superficial tumor of any size with invasive component limited to bronchial wall, with or without proximal extension to the main stem bronchus	^	*	L	**
115	Stated as T1a with no other information on extension	^	*	L	**
120	Stated as T1b with no other information on extension	^	*	L	**
125	Stated as T1[NOS] with no other information on extension	^	*	L	**
200	Extension from other parts of lung to main stem bronchus, NOS EXCLUDING superficial tumor as described in code 110 Tumor involving main stem bronchus greater than or equal to 2.0 cm from carina (primary in lung or main stem bronchus)	^	*	L	**
210	Tumor involving main stem bronchus, NOS (Distance from carina not stated and no surgery as described in Note 2)	^	*	L	**

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CS Ext – Code 100 vs 300

* Can you please clarify the difference between the two codes. For example, you are staging a case based on x-ray findings and the MD states there is a mass in RUL. He gives no further information on extension. I would think code 100 would apply. If so, when would be the proper time to use code 300?

* Code 100 is generally used when there is a tumor size and the lesion/mass is clearly confined to the lung. Code 300 would be used when you have limited information, such as this case. Do you have a size from the x-ray or any other type of report?

* If you can find a size, then you could use 100 with that size. Based on the information you have given, you would not get a T value on this case unless you can find a tumor size.

* Code 300 would also be used if the only information you had was "tumor confined to lung."

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CS and TNM

300	Localized, NOS	^	*	L	**
400	Atelectasis/obstructive pneumonitis that extends to the hilar region but does not involve the entire lung Or atelectasis/obstructive pneumonitis, NOS	^	*	RE	**
410	Extension to but not into pleura, including invasion of elastic layer BUT not through the elastic layer.	^	*	RE	**
420	Invasion of pleura, including invasion through the elastic layer	^	*	RE	**
430	Invasion of pleura, NOS	^	*	RE	**
440	Pulmonary ligament	^	*	RE	**
450	OBSOLETE DATA RETAINED V0200 Extension to: Pleura, visceral or NOS (WITHOUT pleural effusion) Pulmonary ligament	ERROR	*	RE	**
455	Stated as T2a with no other information on extension	^	*	RE	**
460	Stated as T2b with no other information on extension	^	*	RE	**
465	Stated as T2 [NOS] with no other information on size or extension	^	*	RE	**
500	Tumor of/involving main stem bronchus less than 2.0 cm from carina	^	*	L	**

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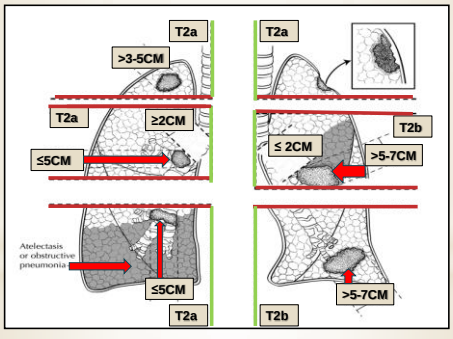
CS and TNM



96

Atelectasis Due to Pleural Effusion

- 15mm mass in left lung apex highly suspicious for malignancy.
- There is massive left sided pleural effusion with atelectasis and collapse of the left lung.
- Would I use code 550 for CS Ext if atelectasis is caused by pleural effusion and the pleural effusion is malignant?
- Extension code 550 is the appropriate code, based on the atelectasis and the collapse of the left lung
- The pleural effusion, now coded in CS Mets at DX, would be code 15 since malignant pleural effusion is on the same side as the primary malignancy.

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CS and TNM

Atelectasis

- The collapse or closure of the lung resulting in reduced or absent gas exchange (not same as pneumothorax)
- May affect part or all of one lung
- May be acute or chronic
- Respiratory distress

Bronchopneumonia

- Acute inflammation of the walls of the bronchioles
- Characterized by multiple foci of isolated, acute consolidation in one or more pulmonary lobules
- **Consolidation** is the swelling (edema or inflammatory exudate) or hardening of the lung tissue

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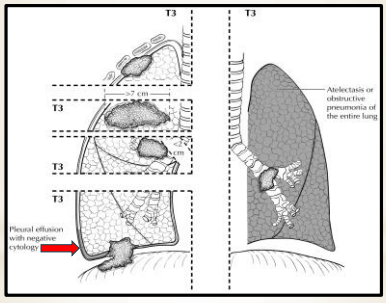
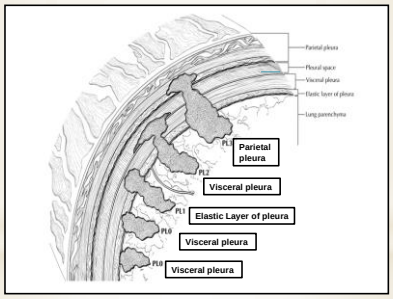
CS and TNM



99

Layers of the Pleura



A tumor that falls short of completely traversing the elastic layer of the visceral pleura is defined as PL0. A tumor that extends through the elastic layer is defined as PL1 and one that extends to the surface of the visceral pleural as PL2. Extension of the tumor to the parietal pleura is defined as PL3.

100

Pleural and Pericardial Effusion

720	OBSOLETE DATA RETAINED V0200 Pleural effusion reclassified as distant metastasis in AJCC 7th Edition, see CS Mets at DX code 15 Malignant pleural effusion Pleural effusion, NOS
760	OBSOLETE DATA RETAINED V0200 Separate pleural tumor foci reclassified as distant metastasis in AJCC 7th Edition, see CS Mets at DX code 24 Pleural tumor foci separate from direct pleural invasion
790	OBSOLETE DATA RETAINED V0200 Pericardial effusion reclassified as distant metastasis, see CS Mets at DX code 20 Pericardial effusion, NOS; malignant pericardial effusion

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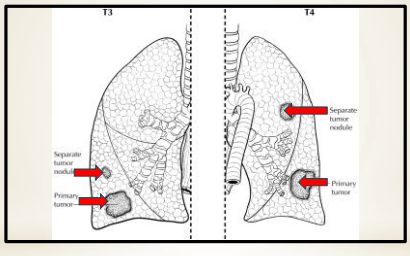
CS and TNM



T3 includes separate tumor nodule(s) in the same lobe. T4 includes separate tumor nodule(s) in a different ipsilateral lobe.

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CS and TNM

590	Invasion of phrenic nerve	^	*	RE	**
600	Direct extension to: Brachial plexus, inferior branches or NOS, from superior sulcus Chest (thoracic) wall Diaphragm Pancoast tumor (superior sulcus syndrome), NOS Parietal pleura Note: For separate lesion in chest wall or diaphragm, see CS Mets at DX.	^	*	D	**
610	Superior sulcus tumor WITH encasement of subclavian vessels OR WITH unequivocal involvement of superior branches of brachial plexus (C8 or above)	T4	*	D	**
650	OBSOLETE DATA RETAINED V0200 Separate tumor nodules reclassified in AJCC 7th Edition, coded in CS SSF 1 Multiple masses/separate tumor nodule(s) in the SAME lobe "Satellite nodules" in SAME lobe	ERROR	*	L	**
680	Tumor confined to carina	T4	*	L	**
700	Blood vessel(s), major (EXCEPT aorta and inferior vena cava, see codes 740 and 770) Azygos vein Pulmonary artery or vein Superior vena cava (SVC syndrome) Carina from lung/mainstem bronchus Compression of esophagus or trachea not specified as direct extension Esophagus Mediastinum, extrapulmonary or NOS Nerve(s): Cervical sympathetic (Horner syndrome)	T4	*	RE	**

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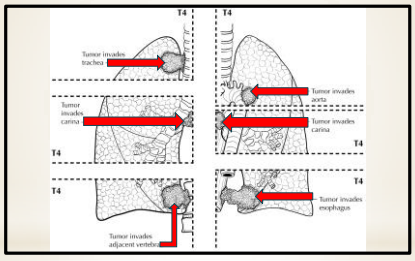
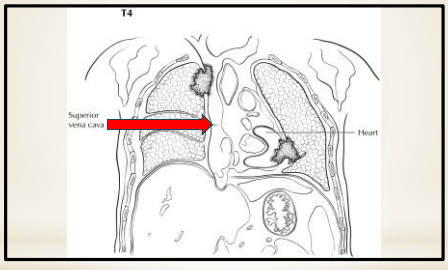
CS and TNM



T4 is defined as tumor of any size that invades any of the following: mediastinum, heart, great vessels (upper right), trachea (upper left), recurrent laryngeal nerve, esophagus (lower right), vertebral body (lower left), carina (middle left and right), separate tumor nodule(s) in a different ipsilateral lobe

104

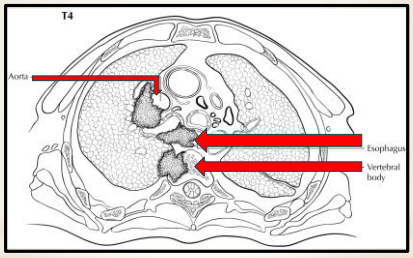
CS and TNM



T4 includes tumor invasion of the superior vena cava and heart.

105

CS and TNM



T4 includes tumor invasion of the aorta, esophagus, and vertebral body.

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CS TS/Ext Eval

Collaborative Stage for TNM 7 - Revised 09/02/2010 [Schema]

Lung

CS Tumor Size/Ext Eval

Code	Description
0	Does not meet criteria for AJCC pathologic staging: Evaluation based on physical examination, imaging examination, or other non-invasive clinical evidence. No surgical resection done.
1	Does not meet criteria for AJCC pathologic staging: Evaluation based on endoscopic examination, diagnostic biopsy, including fine needle aspiration biopsy, or other invasive techniques, including surgical observation without biopsy. No surgical resection done.
2	Meets criteria for AJCC pathologic staging: Evidence derived from autopsy (tumor was suspected or diagnosed prior to autopsy). No surgical resection done.
3	Either meets criteria for AJCC pathologic staging: A. Surgical resection performed WITHOUT pre-surgical systemic treatment or radiation OR surgical resection performed, unknown if pre-surgical systemic treatment or radiation performed AND Evaluation based on evidence acquired before treatment, supplemented or modified by the additional evidence acquired during and from surgery, particularly from pathologic examination of the resected specimen. B. No surgical resection done. Evaluation based on positive biopsy of highest T classification.
5	Does not meet criteria for AJCC y pathologic (yp) staging: Surgical resection performed AFTER neoadjuvant therapy and tumor size/extension based on clinical evidence, unless the pathologic evidence at surgery (AFTER neoadjuvant) is more extensive (see code 6).
6	Meets criteria for AJCC y-pathologic (yp) staging: Surgical resection performed AFTER neoadjuvant therapy AND tumor size/extension based on pathologic evidence, because pathologic evidence at surgery is more extensive than clinical evidence before treatment.
8	Meets criteria for autopsy (a) staging: Evidence from autopsy only (tumor was unsuspected or undiagnosed prior to autopsy)
9	Unknown if surgical resection done Not assessed; cannot be assessed Unknown if assessed Not documented in patient record

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CS Lymph Nodes

Collaborative Stage for TNM 7 - Revised 09/01/2010 [Schema]

Lung

CS Lymph Nodes

- Note 1: Code only regional nodes and nodes, NOS, in this field. Distant nodes are coded in CS Mets at DX. For illustration of nodes stations, see Part I
- Note 2: If all mediastinoscopy is neg, the description in "mass", "adenopathy", or "enlargement" of any of the lymph nodes named as regional in codes 100 and 200, assume that at least regional lymph nodes are involved. If there is any mention of bilateral or contralateral mass, adenopathy or lymph node involvement , use code 600.
- Note 3: The words "no evidence of spread" or "remaining examination negative" are sufficient information to consider regional lymph nodes negative in the absence of any statement about nodes.
- Note 4: Vocal cord paralysis (resulting from involvement of the recurrent branch of the vagus nerve), superior vena cava (SVC) obstruction, or compression of the trachea or the esophagus, may be related to direct extension of the primary tumor or to lymph node involvement. The treatment options and prognosis associated with these manifestations of disease extent fall within the T4 Stage IIIB category, therefore, generally use CS Extension code 700 for these manifestations and not CS lymph nodes. However, if the primary tumor is peripheral and clearly unrelated to vocal cord paralysis, SVC obstruction, or compression of the trachea or the esophagus, code these manifestations as mediastinal lymph node involvement (code 200) in CS Lymph Nodes, unless there is a statement of involvement by direct extension from the primary tumor.

Code	Description	TNM 7 Map	TNM 6 Map	SS77 Map	SS2000 Map
000	No regional lymph node involvement	N0	N0	NONE	NONE
100	Regional lymph nodes, ipsilateral Bronchial Hilar (bronchopulmonary) (proximal lobar) (pulmonary root) Intrapulmonary nodes, including involvement by direct extension Interlobar Lobar Segmental Subsegmental Peribronchial Staled as N1 with no other information on regional lymph nodes	N1	N1	RN	RN
200	Regional lymph nodes, ipsilateral Aortic (above diaphragm), NOS Paraaorta-aortic, NOS Ascending aorta (phrenic) Subaortic (aortico pulmonary window) Carinal (tracheobronchial) (tracheal bifurcation) Mediastinal, NOS	N2	N2	RN	RN

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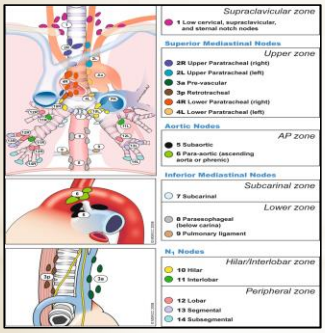
CS Lymph Nodes

REGIONAL LYMPH NODES



* **NX** Regional lymph nodes cannot be assessed
* **N0** No regional lymph node metastases
* **N1** Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension
* **N2** Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
* **N3** Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)

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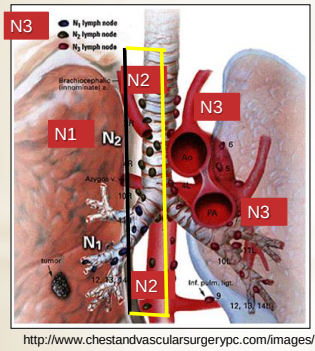
CS Lymph Nodes

REGIONAL LYMPH NODES



* **NX** Regional lymph nodes cannot be assessed
* **N0** No regional lymph node metastases
* **N1** Same side
  * **Direct Extension**
  * **Hilar**Lymph node(s)
  * **Intrapulmonary** Lymph node(s)
  * **Peribronchial** Lymph node(s)
* **N2** Same side
  * Mediastinal Lymph node(s)
  * Subcarinal Lymph node(s)
* **N3** Contralateral
  * Hilar Lymph node(s)
  * Mediastinal Lymph node(s)
  * Any scalene Lymph node(s)
  * Any supraclavicular lymph node(s)

http://www.chestandvascularsurgerypc.com/images/naruke.jpg

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Collaborative Stage for TNM 7 - Revised 11/11/2010 [Schema]

Lung

CS Site-Specific Factor 1
Separate Tumor Nodules - Ipsilateral Lung

- Note 1: Separate tumor nodules in the ipsilateral lung are coded separately from CS Extension. Separate tumor nodules in the contralateral lung are coded in CS Mets at DX.
- Note 2: Separate tumor nodules can be defined clinically (by imaging) and/or pathologically.
- Note 3: If separate tumor nodules are not mentioned in imaging and/or pathological reports, use code 000.

Code	Description
000	No separate tumor nodules noted
010	Separate tumor nodules in ipsilateral lung, same lobe
020	Separate tumor nodules in ipsilateral lung, different lobe
030	020 + 010 Separate tumor nodules, ipsilateral lung, same and different lobe
040	Separate tumor nodules, ipsilateral lung, unknown if same or different lobe
888	OBSOLETE DATA CONVERTED V0200 See code 988 Not applicable for this site
988	Not applicable: Information not collected for this case (May include cases converted from code 886 used in CSv1 for "Not applicable" or when the item was not collected. If this item is required to derive T, N, M, or any stage, use of code 988 may result in an error.)
999	Unknown if separate tumor nodules Separate tumor nodules cannot be assessed Not documented in patient record

111

Collaborative Stage for TNM 7 - Revised 10/25/2011 [Schema]

Lung

CS Site-Specific Factor 2
Pleural/Elastic Layer Invasion (PL) by H and E or Elastic Stain

- Note 1: AJCC Staging Manual 7th Edition includes a standardized and precise definition of pleural/elastic layer invasion (PL). There are four categories:
  PL0 - Tumor that is surrounded by lung parenchyma or invades superficially into the pleural connective tissue beneath the elastic layer but falls short of completely traversing the elastic layer of the pleura
  PL1 - Tumor that invades beyond the elastic layer
  PL2 - Tumor that extends to the surface of the visceral pleura
  PL3 - Tumor that invades the parietal pleura
  Categories PL1 and PL2 are considered pleural invasion for staging and are classified as at least a T2. PL3 is classified as at least a T3. PL0 is not considered pleural invasion for TNM staging, and the T category is assigned based on other criteria. Other criteria can also raise the T category for PL1-3 tumors.
- Note 2: Pathologists usually by assessing the relationship of the tumor to the elastic layer on routine hematoxylin and eosin (H and E) stains; they may perform a special elastic stain to make the determination.
- Note 2: Code results as stated on the pathology report. Code 998 if no histologic examination of pleura to assess pleural layer invasion.
- Note 3: If pleural/elastic layer invasion (PL) is not mentioned on the pathology report, code 999.
- Note 4: An FNA is not a histologic specimen and is not adequate to assess pleural layer invasion. If only an FNA is available, use code 998.
- Note 5: Metastasis to the pleura, that is pleural tumor foci or nodules separate from direct invasion, are coded in CS Mets at Dx (code 24).

Code	Description
000	PL 0 No evidence of visceral pleural invasion (PL) Tumor does not completely traverse the elastic layer
010	PL 1 Invasion beyond the visceral elastic pleura, but limited to the pulmonary pleura Tumor extends through the elastic layer
020	PL 2 Invasion to the surface of the pulmonary pleura Tumor extends to the surface of the visceral pleura
030	PL 3 Tumor extends to the parietal pleura
040	Invasion of pleura, NOS
888	OBSOLETE DATA CONVERTED V0200 See code 988 Not applicable for this site
988	Not applicable: Information not collected for this case (May include cases converted from code 888 used in CSv1 for "Not applicable" or when the item was not collected. If this item is required to derive T, N, M, or any stage, use of code 988 may result in an error.)

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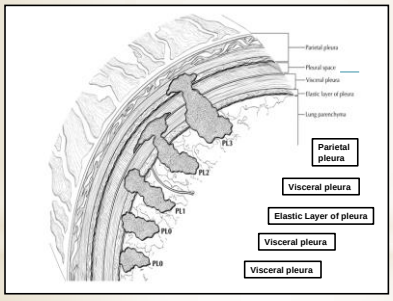
Layers of the Pleura



Parietal pleura (PL3)
Pleural space
Mesothelial cells on basement membrane (single layer) (PL2)
Submesothelial connective tissue (PL1)
Elastic fibers (Elastic layer) (single layer or double layer separated by fibrous connective tissue)
Connective tissue layer on thin basement membrane (PL0)
Lung parenchyma

A tumor that falls short of completely traversing the elastic layer of the visceral pleura is defined as PL0. A tumor that extends through the elastic layer is defined as PL1 and one that extends to the surface of the visceral pleural as PL2. Extension of the tumor to the parietal pleura is defined as PL3.

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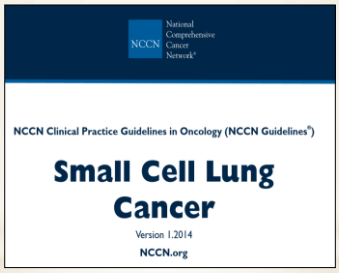
Treatment Options

http://livingwithcancerfacts.com

114



115

Small Cell Lung Cancer

LIMITED STAGE	EXTENSIVE STAGE
Any T Any N M0 Confined to Chest Exception: T3-4 due to multiple lung nodules that do not fit in a tolerable radiation field	Any T Any N M1a M1b Includes: T3-4 due to multiple lung nodules or tumor/nodal volume too large to be encompassed in a tolerable radiation plan

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Small Cell Lung Cancer

LIMITED STAGE	EXTENSIVE STAGE
* Combination chemotherapy and radiation therapy to the chest. * Combination chemotherapy for patients with lung problems or who are very ill. * Surgery followed by chemotherapy or chemotherapy plus radiation therapy to the chest. * Clinical trials of new chemotherapy, surgery, and radiation treatments	* Combination chemotherapy. * Radiation therapy to the brain, spine, bone, or other parts of the body where the cancer has spread, as palliative therapy to relieve symptoms and improve quality of life. * Clinical trials of new chemotherapy treatments.

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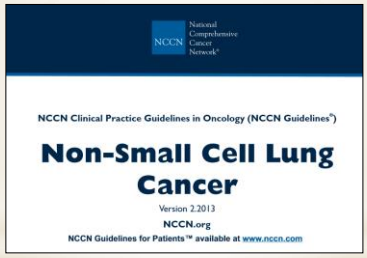

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Lung Treatment Options by Stage

Stage I Non-Small Cell Lung Cancer

- Surgery (wedge resection, segmental resection, sleeve resection, or lobectomy).
- External radiation therapy (for patients who cannot have surgery or choose not to have surgery).
- A clinical trial of chemotherapy or radiation therapy following surgery.
- A clinical trial of surgery followed by chemoprevention.
- A clinical trial of treatment given through an endoscope, such as photodynamic therapy (PDT).

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Lung Treatment Options by Stage

Stage II Non-Small Cell Lung Cancer

- Surgery (wedge resection, segmental resection, sleeve resection, lobectomy, or pneumonectomy).
- Chemotherapy followed by surgery.
- Surgery followed by chemotherapy.
- External radiation therapy (for patients who cannot have surgery or choose not to have surgery).
- A clinical trial of radiation therapy following surgery.

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Non-Small Cell Lung Cancer

Source: National Cancer Institute Cancer Topics NSCLC

Stage (TNM Staging Criteria)	Standard Treatment Options
Occult NSCLC	Surgery
Stage 0 NSCLC	Surgery
	Endobronchial therapies
Stage I NSCLC	Surgery
	Radiation therapy
Stage II NSCLC	Surgery
	Neoadjuvant chemotherapy
	Adjuvant chemotherapy
	Radiation therapy

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Lung Treatment Options by Stage:

Stage IIIA Non-Small Cell Lung Cancer

- Surgery followed by chemotherapy.
- Chemotherapy followed by surgery.
- Surgery followed by chemotherapy combined with radiation therapy.
- Surgery followed by radiation therapy.
- A clinical trial of new combinations of treatments

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Lung Treatment Options by Stage

Cancer Cannot be Removed w/ Surgery

- Chemotherapy and radiation therapy given as separate treatments over the same period of time.
- External radiation therapy alone (for patients who cannot be treated with combined therapy, as palliative treatment to relieve symptoms / improve quality of life).
- Internal radiation therapy or laser surgery, as palliative treatment to relieve symptoms and improve the quality of life.
- A clinical trial of new combinations of treatments

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Non-Small Cell Lung Cancer

Source: National Cancer Institute Cancer Topics NSCLC

Stage (TNM Staging Criteria)		Standard Treatment Options
Stage IIIA NSCLC	Resected or resectable disease	Surgery
		Neoadjuvant therapy
		Adjuvant therapy
	Unresectable disease	Radiation therapy
		Chemoradiation therapy
	Superior sulcus tumors	Radiation therapy alone
		Radiation therapy and surgery
		Concurrent chemotherapy with radiation therapy and surgery
		Surgery alone (for selected patients)
	Chest wall tumors	Surgery
		Surgery and radiation therapy
		Chemotherapy combined with radiation therapy and/or surgery

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Non-Small Cell Lung Cancer

Source: National Cancer Institute Cancer Topics NSCLC

Stage (TNM Staging Criteria)	Standard Treatment Options
Stage IIIB NSCLC	Sequential or concurrent chemotherapy and radiation therapy
	Chemotherapy followed by surgery (for selected patients)
	Radiation therapy alone
Stage IV NSCLC	Combination chemotherapy
	Combination chemotherapy with bevacizumab or cetuximab
	Epidermal growth factor receptor tyrosine kinase inhibitors (for patients with EGFR mutations)
	Maintenance therapy following first-line chemotherapy
	External-beam radiation therapy (for palliation)
	Endobronchial laser therapy and/or brachytherapy (for obstructing lesions)

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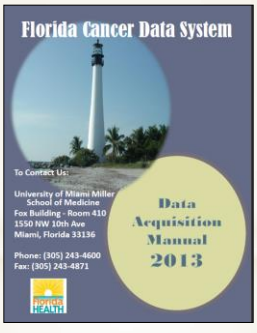
Coding Lung Cancer Surgery



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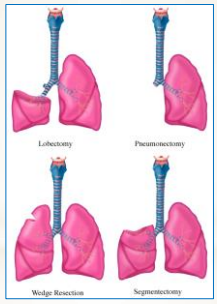
Surgical Removal



http://www.cts.usc.edu

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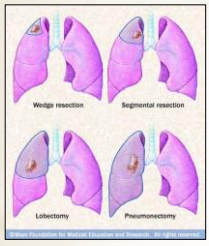
Surgical Removal



Wedge or Segmental Resection
Removal of one or more lung segment

Lobectomy
Removal of entire lobe of the lung

Pneumonectomy
Removal of entire lung

Note: If a lobectomy was performed, assume that the tumor was more than 2 cm distal to the carina.

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Surgery Codes DAM Appendix F

SURGERY OF PRIMARY SITE

Codes

00 None; **no surgery** of primary site; **autopsy** ONLY

19 **Local** tumor **destruction** or excision, NOS
Unknown whether a specimen was sent to **pathology** for surgical events coded 19

15 Local tumor destruction, NOS
12 Laser ablation or cryosurgery
13 Electrocautery; fulguration (includes use of hot forceps for tumor destruction)
No specimen sent to **pathology** from surgical events 12-13 and 15

20 Excision or resection of less than one lobe, NOS
23 Excision, NOS
24 Laser excision
25 Bronchial sleeve resection ONLY
21 Wedge resection
22 Segmental resection, including lingulectomy

30 **Resection** of [at least one] **lobe** or **bilobectomy**, but less than the whole lung (partial pneumonectomy, NOS)
The lymph node dissection should also be coded *under Scope of Regional Lymph Node Surgery*
33 Lobectomy WITH mediastinal lymph node dissection
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).

45 Lobe or bilobectomy extended, NOS
46 WITH chest wall
47 WITH pericardium
48 WITH diaphragm

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Surgery Codes DAM Appendix F

55 Pneumonectomy, NOS
[***NOTE:*** Code 55 includes complete pneumonectomy, Sleeve pneumonectomy, Standard pneumonectomy, Total pneumonectomy, Resection of whole lung]

56 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).

65 Extended pneumonectomy

66 Extended pneumonectomy plus pleura or diaphragm

70 Extended 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).
[***NOTE:*** An extended radical pneumonectomy is a radical pneumonectomy (including removal of mediastinal nodes) and the removal of other tissues or nodes]

80 Resection of lung, NOS
Specimen sent to pathology from surgical events 20–80.

90 Surgery, NOS

99 **Unknown** if surgery performed; **death certificate** ONLY

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Text Documentation

- Avoid non-standard text
- Keep it simple
- No repetition
- Justify coded items
- FCDS DAM Appendix L

➢ DEFENSIVE ABSTRACTING
➢ CYA-Cover your abstract
➢ Support ALL codes and **dates** with text - primary site, histology, staging workup, tumor size, nodal status, stage of disease, first course of RX

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Text Documentation

- **Date**(s) – include date(s) references – this allows the reviewer to determine event chronology
- **Date**(s) – note when date(s) are estimated [i.e. Date of DX 3/15/2011 (est.)]
- **Location** – include facility/physician/other location where the event occurred (test/study/treatment/other)
- **Abbreviated text** -Be brief but complete – use **abbreviations** correctly.
- **Text fields** If information is missing from the record, state that it is missing type **not available (NA)**
- **Edit your text** documentation
- **DO NOT REPEAT** INFORMATION from section to section
- **Operative text -** DO not enter the pathology info in the Op TEXT
  Ex 8/26/12 ABC Facility Liver biopsy this **should be part of pathology**
- **Pathology text -**
  Example 8/26/12 ABC facility Liver biopsy metastatic adenocarcinoma

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References

* National Cancer Institute
* FCDS Data Acquisition Manual
* American Society of Clinical Oncology
* American Society for Radiation Oncology
* 2013 Cancer Facts and Figures, American Cancer Society
* Collaborative Stage Data Collection System
* 2007 MPH Rules for Solid Tumors
* National Lung Screening Trial (NLST)

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Questions

http://media.mlive.com/health_impact/photo/9057757-large.jpg

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