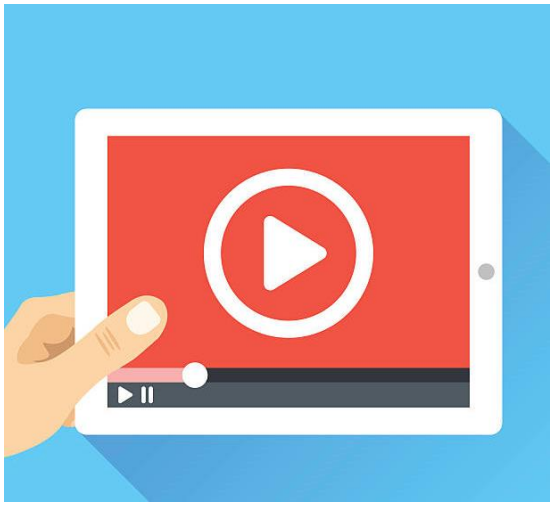


LUNG

ANATOMY & SOLID TUMOR RULES

PRESENTED BY MELISSA RIDDLE, ODS-C

SHRI VIDEO TRAINING SERIES | IOWA CANCER REGISTRY

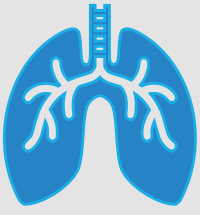
MARCH 2025

1

OVERVIEW

- Anatomy review
- Lung STR
  - Use latest STR Manual:

https://seer.cancer.gov/tools/solidtumor/



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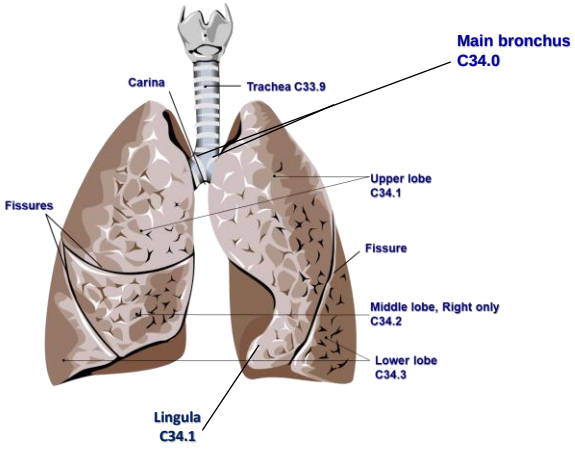
ANATOMY SHOWING ICDO-3 CODES



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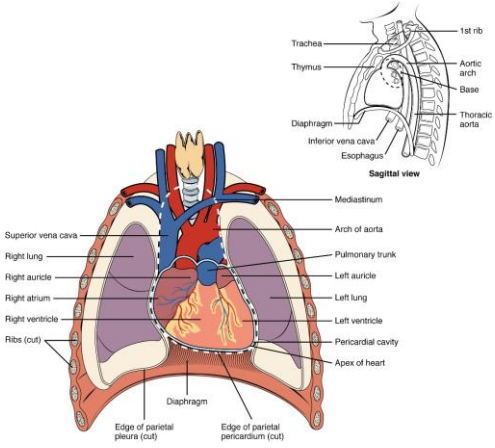
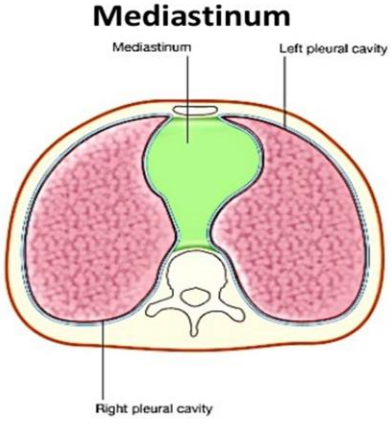
LUNG ANATOMY - MEDIASTINUM





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LUNG ANATOMY - MEDIASTINUM

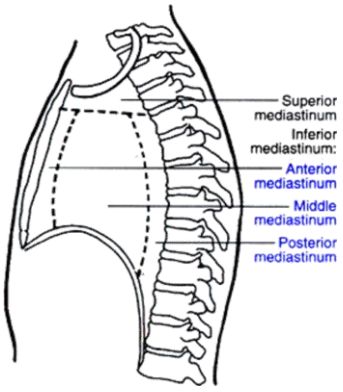

image source: http://ect.downstate.edu/courseware/haonline/labs/thorax.htm

- Anterior:
  - Space between pericardium and sternum
- Middle:
  - Pericardium and heart
- Posterior:
  - Space between pericardium and vertebral column

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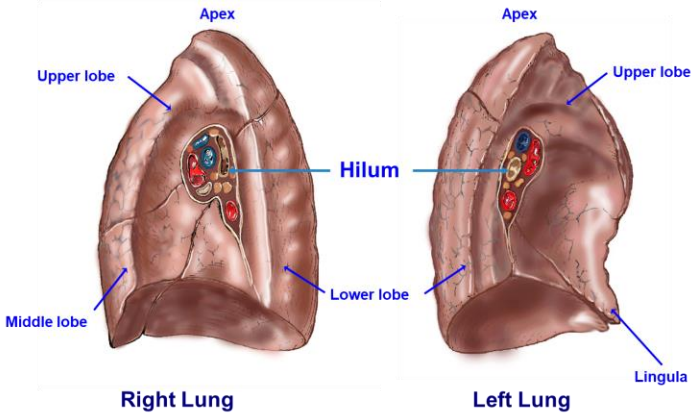
IMPORTANT ANATOMICAL LANDMARKS



Graphics source: Mediclip, Williams and Wilkins.

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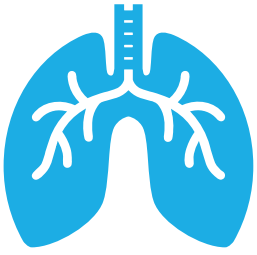
ANATOMY DEFINITIONS



- **Bronchogenic:** An anatomic designation (not a specific histology) for a lung cancer arising in a bronchus. C349
- **Contiguous tumor:** A single tumor that involves, invades, or bridges adjacent or connecting sites or subsites. C348
- **Central tumor**
  - Squamous cell carcinoma
  - Arises in hilum, bronchus
- **Peripheral tumor**
  - Often adenocarcinoma or large cell tumors
  - Alveoli
  - Lung tissue

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STR LUNG: TABLE 1

Terminology	Laterality	Site Term and Code
Bronchus intermedius **Carina** **Hilus of lung** **Perihilar**	Bilateral Left or Right	Mainstem bronchus **C340** ***Note 1:*** Mainstem bronchus starts at the trachea and extends only a few centimeters into the lung where it divides into secondary bronchi at the carina. ***Note 2***: **Bronchus intermedius** is the portion of the **right mainstem bronchus** between the upper lobar bronchus and the origin of the middle and lower lobar bronchi ***Note 3:*** Code to mainstem bronchus C340 when it is specifically stated in the operative report and/or documented by a physician.
Lingula of lung	Left	Upper lobe **C341**
Apex **Apex of lung** **Lung apex** **Pancoast tumor** **Superior lobar bronchus** **Upper lobe bronchi**	Bilateral Left or Right	Upper lobe **C341**

Code C34.0 when described as Hilar Mass

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Terminology	Laterality	Site Term and Code
Middle lobe **Middle lobe bronchi**	Right	Middle lobe **C342**
Base of lung **Lower lobar bronchus** **Lower lobe** **Lower lobe bronchi** **Lower lobe segmental bronchi**	Bilateral Left or Right	Lower lobe **C343**
Overlapping lesion of lung	Bilateral L or R	Overlapping lesion of lung **C348** ***Note*: One** lesion/tumor which **overlaps two or more** lobes
Bronchus NOS **Bronchogenic** **Extending up to the hilum** **Extending down to the hilar region** **Infrahilar NOS** **Lung NOS** **Pulmonary NOS** **Suprahilar NOS**	Bilateral Left or Right	Lung NOS **C349** ***Note*:** Includes • Multiple tumors in different lobes of ipsilateral lung • Multiple tumors in ipsilateral lung; unknown if same lobe or different lobe • Tumor in bronchus, unknown if mainstem or lobar bronchus • Tumor present, unknown which lobe • Multiple tumors abstracted as a single primary
Lobar bronchi NOS **Lobar bronchus NOS**	Bilateral L or R	Code the lobe in which the lobar bronchus tumor is present **C34__** ***Note*:** When **lobe** of origin is **not documented/unknown**, **code** to lung NOS **C349**

Code C34.9 when described as infra-hilar tumor

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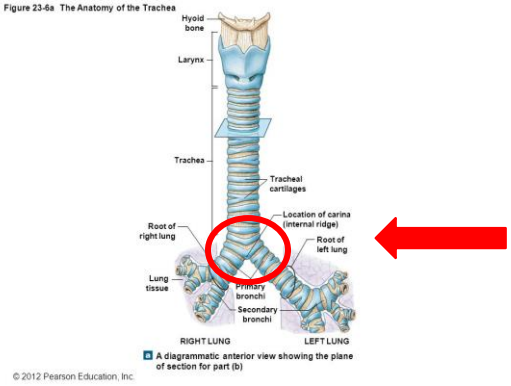
LUNG ANATOMY – CARINA



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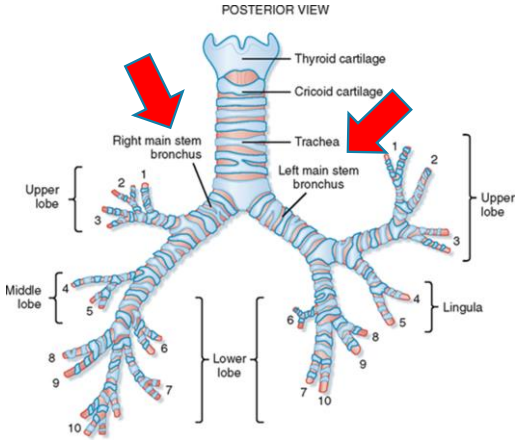
LUNG ANATOMY - MAIN STEM BRONCHI



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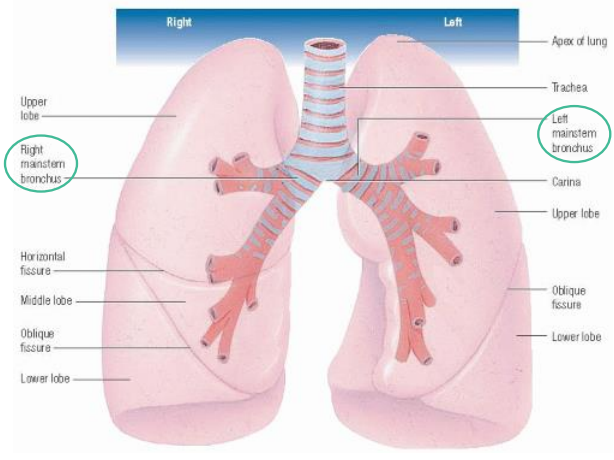
LUNG ANATOMY – MAINSTEM BRONCHUS



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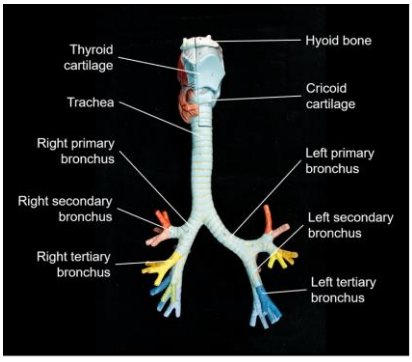
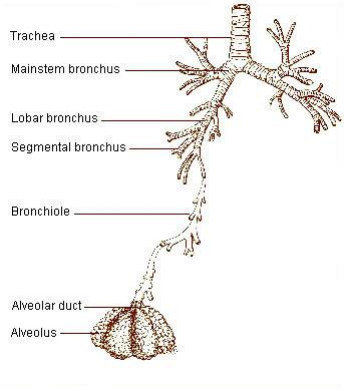
LUNG ANATOMY - BRONCHUS





https://training.seer.cancer.gov/lung/anatomy/respiratory.html

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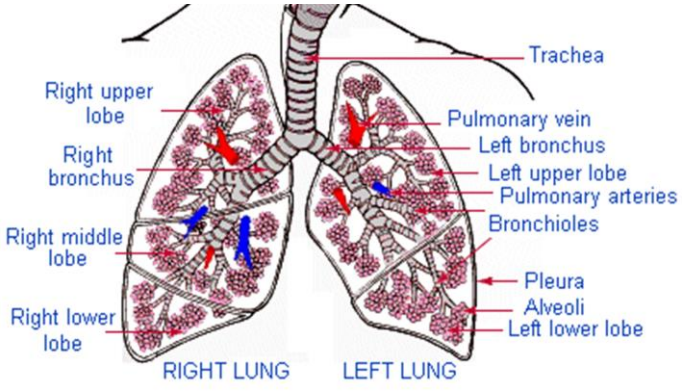
LUNG ANATOMY - ALVEOLI



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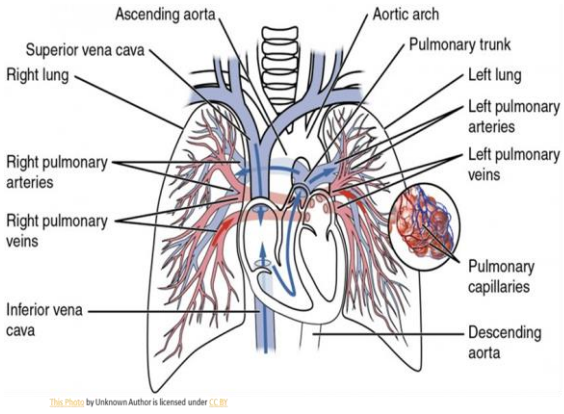
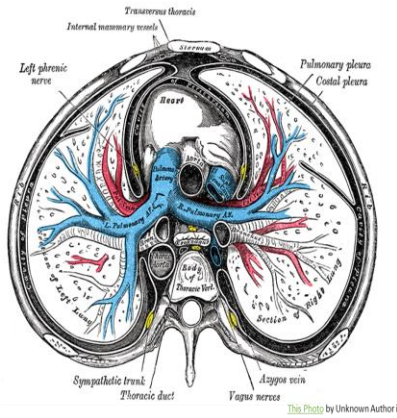
Source: http://www.webschoolsolutions.com/patts/systems/lungs.htm#anatomy

14

LUNG VASCULAR ANATOMY





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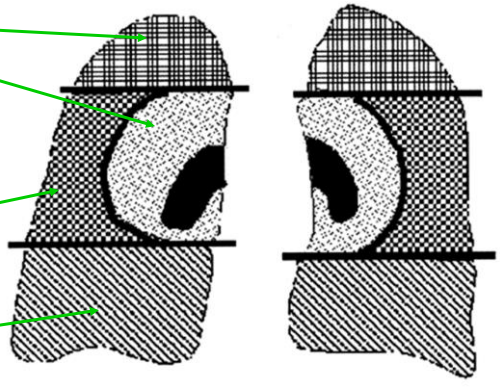
LUNG ANATOMY – IMAGING TERMS

Apex--upper 25%

Central--area surrounding lung hila up to half of distance between hila and lateral border of lung

Peripheral--remaining lateral, anterior and posterior space around central area

Base--lower 25%



Source: *Journal of Nuclear Medicine* Vol. 43 No. 11 1469-1475, 2002.

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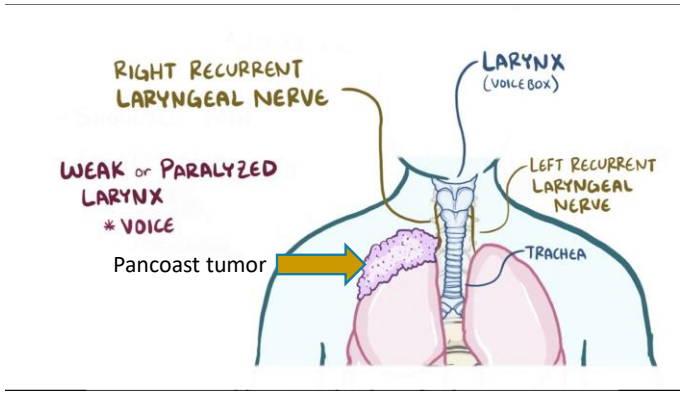
LUNG ANATOMY – PANCOAST TUMOR



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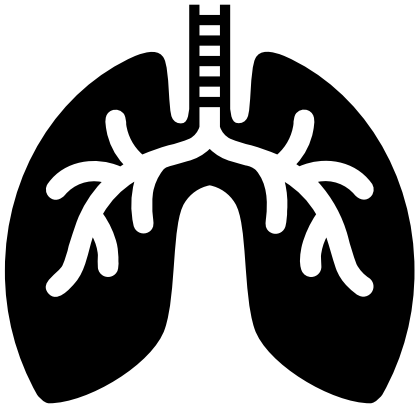

SOLID TUMOR RULES

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GENERAL INSTRUCTIONS

- General Terms & Ambiguous Terms
- How to Navigate STR
- Multiple Primary Rules do NOT apply to mets
- Timing Rules
- Priority order for using documents for histology
- Definitions

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LUNG: INTRODUCTION

- **Tumors dx 1/1/2018 and later use STR**
  - Use the current STR manual as soon as it is released
- **Rule out mets** before abstracting a lung primary
- Multifocal/multiple discrete foci tumors often present in lepidic adenoca. Aka ground glass features.
- Bronchioloaveolar carcinoma (BAC) obsolete. Preferred term mucinous adenoca 8253

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EQUIVALENT OR EQUAL TERMS

- Adenocarcinoma; carcinoma
  - A histology type must be stated for these to be equal
  - Example: Acinar carcinoma and Acinar adenocarcinoma = 8551
- And; with
  - Note: "And" and "with" are used as synonyms <u>when describing multiple histologies within a single tumor</u>.
- **NSCLC 8046**; broad category of all histologies on Table 3 ***EXCEPT***:
  - NET/NEC and all subtypes
  - Large cell NEC/combined Large cell NEC
  - Sarcoma NOS (not a carcinoma) 8800 and all subtypes

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EQUIVALENT OR EQUAL TERMS

- Tumor, mass, tumor mass, lesion, neoplasm, nodule:
  - Disregard terms unless there is a physician's statement that the term is malignant/cancer.
  - Terms used **ONLY** to determine multiple primaries
  - **Do not** use these terms for casefinding or determining reportability

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TERMS NOT EQUIVALENT

- Bronchus is not always MSB
  - Code MSB C340 when specifically stated in op report and/or documented by a physician
  - Only called bronchus, code to the lobe in which it is located
- Carcinoma NOS 8010 is not equal to Adenocarcinoma 8140
- Mucinous is not equivalent to Colloid
  - Lung only
  - New codes for mucinous adenocarcinoma were implemented

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TERMS NOT EQUIVALENT

- Mucin-producing/Mucin-secreting carcinoma 8481 is **not equivalent** to mucinous carcinoma 8253 (new code for lung primaries)
  - Tumors that produce mucin are labeled mucin-producing or mucin-secreting but there isn't enough information to be classified as mucinous carcinoma
    - These histologies are still reportable (8481)

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LUNG STR – TABLE 2 COMBINATION HISTOLOGY

- *Note 1*: Do NOT use Table 2 in the following situations:
  - Tumors with both invasive and in situ behavior – see Histology rules
  - One histology is described as differentiation or features
  - Terms are NOS and a subtype/variant of that NOS – see Histology rules
- *Note 2*: Some combinations can be either in situ or invasive
  - When a code is limited to /2 (in situ), both components are in situ
  - When a code is limited to /3 (invasive), both components are invasive
- *Note 3*: Not a complete listing of all histology combinations

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TABLE 2: COMBINATION/MIXED HISTOLOGY

Required Terms	Combo Histology & Code
Mucinous carcinoma, invasive **AND** Non-mucinous carcinoma, invasive	Mixed invasive mucinous and non-mucinous carcinoma **8245/3**
Squamous cell carcinoma, keratinizing **AND** Squamous cell carcinoma, non-keratinizing	Squamous cell carcinoma NOS **8070**

Single Abstract

- **ONLY** use the Table when instructed by histology rules
  - **Single** tumor: H8
  - Multiple tumors abstract as **single**: H16
- Compare terms in Column 1 (required) to those in pathology report
  - Terms match code the histology in column 2
- Last row Table 2 – Adenocarcinoma mixed subtypes 8255, use as a **LAST** resort

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LUNG STR – TABLE 3 HISTOLOGY

- Rare histologies may not be on the table
  - See ICD-O and all updates
  - Submit a question to Ask a SEER Registrar if not on ICD-O and updates
- Behavior codes are listed **ONLY** when term has only one possible behavior
  - If it could be either /2 or /3, then no behavior listed
- **ONLY** use histology code from table when the diagnosis is EXACTLY the term listed
- Sarcomatoid carcinoma frequently tumor of mediastinum and not in this table

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TABLE 3 SPECIFIC HISTOLOGIES, NOS AND SUBTYPE/VARIANT

- ***Important Note 1***: NSCLC is a broad group of cancers which includes all carcinoma types in Table 3 ***EXCEPT***:
  - NET, NEC
  - Large cell NEC/combined large cell NEC
  - Sarcoma NOS (not a carcinoma) and all subtype/variants
- ***Important Note 2***: Small cell NEC row was deleted in 2024; replaced with 2 new rows:
  - Neuroendocrine carcinoma (NEC)
  - Neuroendocrine tumor (NET)

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LUNG STR – TABLE 3 HISTOLOGY

- **ONLY** use the Table when instructed by histology rules
  - Use when getting a working histology as you work through the multiple primary rules
- **Column 1**: Specific and NOS histology terms
  - Specific: No subtypes/variants
  - NOS: Has subtypes/variants
- **Column 2**: Synonym of term in column 1
- **Column 3**: Subtypes/Variants of column 1

Specific/NOS	Synonym	Subtype/Variant
Neuroendocrine carcinoma (NEC) 8246		Combined small cell carcinoma **8045** Small cell carcinoma/small cell NEC **8041**
Neuroendocrine tumor (NET) 8240	Bronchial adenoma, carcinoid Carcinoid, NOS Carcinoid tumor, NOS NET, grade 1	Atypical carcinoid/NET grade 2 or grade 3/NEC, mod differentiated **8249**
Pleomorphic carcinoma 8022 *Note 1*: Definition of pleomorphic ca is a subtype of sarcomatoid carcinoma *Note 2*: components of adenoca and large cell ca, also squamous ca		

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MULTIPLE PRIMARY RULES

LUNG

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Unknown if Single or Multiple Tumors	**M1** – Single Primary	
Single Tumor	**M2** – Single tumor = Single Primary (Abstract)	Tumor may overlap onto or extend into adjacent site/subsites
		Tumor may have both invasive and in-situ behaviors
		Tumor may have 2+ histologic components
Multiple Tumors	**M3 – M14**	Number of primaries determined by each rule

MULTIPLE PRIMARY RULES - CATEGORIES

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MP RULES: MULTIPLE TUMORS

M3

- **MULTIPLE PRIMARIES**
  - Separate, non-contiguous tumors with different site code at second C**X**xx and/or third Cx**X**x

M4

- **MULTIPLE PRIMARIES**
  - Disease free *greater than 3 years* after original or last recurrence
    - NED in same lung on follow-up; scans WNL
    - Recurrence less than 3 years of diagnosis, time starts over; calculate from last dz recurrence
    - Unknown if recurrence use date of diagnosis

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MP RULES: MULTIPLE TUMORS

M5

- **MULTIPLE PRIMARIES**
  - At least one tumor with NEC or s/v **OR** NET or s/v **AND**
  - Another tumor is NSCLC

M6

- **MULTIPLE PRIMARIES**
  - Separate/non-contiguous tumor that are 2+ different s/v, Table 3
    - Same or different NOS
    - May be different behaviors

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MULTIPLE TUMORS – M6 EXAMPLE

Specific or NOS Histology Term and Code	Synonym of Specific or NOS	Subtype/variant of NOS and Code
Adenocarcinoma 8140 **Note 1:** Mucinous adenocarcinoma for lung only is coded as follows: • **8253/3*** when o Behavior unknown/not documented (use staging form to determine behavior when available) o Invasive • **8257/3*** when o Microinvasive o Minimally invasive • **8253/2*** when o Preinvasive o In situ **Note 2:** Non-mucinous adenocarcinoma for lung	Adenocarcinoma NOS Adenocarcinoma in situ **8140/2** Adenocarcinoma invasive **8140/3** Adenocarcinoma, non-mucinous NOS Invasive non-mucinous adenocarcinoma **8140/3** Minimally invasive adenocarcinoma NOS **8140/3**	Acinar adenocarcinoma/adenocarcinoma, acinar predominant **(for lung only) 8551*** Adenoid cystic/adenocystic carcinoma **8200** Colloid adenocarcinoma **8480** Enteric adenocarcinoma/pulmonary intestinal-type adenocarcinoma **8144** Fetal adenocarcinoma **8333** Lepidic adenocarcinoma/adenocarcinoma, lepidic predominant **8250/3*** Mucinous carcinoma/adenocarcinoma **(for lung only; See Note 3)** in situ **8253/2***; invasive **8253/3*** minimally invasive **8257/3*** microinvasive **8257/3*** preinvasive **8253/2***

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MULTIPLE TUMORS – M6 EXAMPLE

Specific or NOS Histology Term and Code	Synonym of Specific or NOS	Subtype/variant of NOS and Code
Adenocarcinoma 8140 **Note 1:** Mucinous adenocarcinoma for lung only is coded as follows: • **8253/3*** when o Behavior unknown/not documented (use staging form to determine behavior when available)	Adenocarcinoma NOS Adenocarcinoma in situ **8140/2** Adenocarcinoma invasive **8140/3**	Acinar adenocarcinoma/adenocarcinoma, acinar predominant **(for lung only) 8551*** Adenoid cystic/adenocystic carcinoma **8200** Colloid adenocarcinoma **8480** Fetal adenocarcinoma **8333** Lepidic adenocarcinoma/adenocarcinoma, lepidic predominant **8250/3*** Mucinous carcinoma/adenocarcinoma
Squamous cell carcinoma 8070	Epidermoid carcinoma Epidermoid carcinoma NOS Squamous carcinoma Squamous cell carcinoma NOS Squamous cell epithelioma Squamous cell carcinoma in situ **8070/2**	Basaloid carcinoma/basaloid squamous cell carcinoma **8083** Keratinizing squamous cell carcinoma **8071** Non-keratinizing carcinoma **8072**

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MP RULES: MULTIPLE TUMORS

M7

- **SINGLE PRIMARY**
  - Synchronous, separate/non-contiguous tumor in **SAME** lung on **SAME** row Table 3
    - Same histology **OR**
    - Term column 1 and the other is a synonym **OR**
    - NOS and other is s/v

M8

- **MULTIPLE PRIMARIES**
  - Separate/non-contiguous tumors are:
    - Different rows Table 3
    - Combo histology Table 2 and a code from Table 3

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MP RULES: MULTIPLE TUMORS

- **M9 – SINGLE PRIMARY**
  - Simultaneous multiple tumors:
    - Both lungs (multiple in R and multiple in L) **OR**
    - Same lung **OR**
    - Single in one lung and multiple in other lung
      - ***EXCEPTION*** – Do not apply this rule if:
        - Pathology from biopsy/resection proves tumors are different histologies (see M8)
        - Physician unequivocally that tumors are different primaries
    - See Notes for this rule in manual for great examples and definitions

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MP RULES: MULTIPLE TUMORS

M10

- **SINGLE PRIMARY**
  - In Situ tumor is diagnosed AFTER an invasive tumor AND tumors in SAME lung

M11

- **MULTIPLE PRIMARIES**
- Single tumor in EACH lung
  - EXCEPTION:
    - Proof that one tumor is metastatic
- Bilateral is not a synonym for a single primary – simply a statement that tumors are in both lungs
- Doesn't have to be diagnosed at the same time

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MP RULES: MULTIPLE TUMORS

M12
- **SINGLE PRIMARY**
  - Invasive tumor diagnosed less than or equal to 60 days after an In Situ tumor – SAME Lung

M13
- **MULTIPLE PRIMARIES**
  - Invasive tumor diagnosed more than 60 days after In Situ tumor – SAME Lung

M14
- **SINGLE PRIMARY**
  - None of the previous rules apply
  - Rule of last resort – review the rules again to ensure that you didn't miss one

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HISTOLOGY RULES

LUNG

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HISTOLOGY – DOCUMENT PRIORITY ORDER

- Code the histology **prior to neoadjuvant therapy**
  - ***EXCEPTION***: initial diagnosis is based on histology from FNA, smears, cytology, or from regional/metastatic site and neoadjuvant therapy given and followed by resection of primary which identifies a different or specific histology – **code from primary site**
- Priority list is used for single primaries including multiple tumors abstracted as a single primary
- Most specific histology from either resection or biopsy
  - Most specific usually refers to a s/v
  - Discrepancy between biopsy and resection (2 distinctly different histologies) code based on the most representative specimen (greater amount of tumor)

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HISTOLOGY – HIERARCHICAL LIST SOURCE DOCUMENTATION

1. Tissue or pathology report from primary site

Addendum and/or comments	Final diagnosis/synoptic report required by CAP	CAP Protocol

2. **Cytology** (FNA/biopsy from primary, pleural fluid, or pericardial fluid)

3. **Tissue/Path from metastatic site** (behavior = /3)

When it is the only tissue available

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HISTOLOGY – HIERARCHICAL LIST SOURCE DOCUMENTATION

4. Scan/Imaging in the following order:			
CT	PET	MRI	Chest X-ray

5. Histology documented by the physician in the following order:			
Treatment plan	Tumor board documentation	Reference to original path, cytology, or scan	Physician's reference to histology type

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CODING HISTOLOGY

- *Note 1*: Code most specific histology. Do not use Breast histology for this site
- *Note 2*: Only use this section for one or more histologies within a single tumor.
- *Note 3*: Do not use this section in place of H rules.

1. Code most specific subtype/variant, regardless of whether described as
   - A. Majority or predominant part of tumor
   - B. Minority of tumor
   - C. Component
     - See Examples, Notes in manual

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CODING HISTOLOGY

2. Code histology described as differentiation or features/features of ONLY when there is a specific ICD-O code for the "NOS with _____features" or "NOS with _____differentiation"

Note: **Do not** code differentiation or features when there is ***no specific ICD-O code***.

3. Ambiguous terminology rules on page 216 and parameters to code an ambig histology.

4. **Do Not** Code histology described as:

- Architecture
- Foci; focus; focal
- Pattern (exception: see Rule H7)

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HISTOLOGY RULES – SINGLE TUMOR

H1 – Mucinous Adenocarcinoma

- **8253/3** when
  - Invasive; Behavior unknown/not documented
- **8257/3** when
  - Microinvasive; Minimally invasive
- **8253/2** when
  - Preinvasive; in situ

H2 – Non-mucinous Adenocarcinoma

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

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HISTOLOGY RULES – SINGLE TUMOR

H3 – Histology is NSCLC c/w a specific carcinoma – **code specific**

- Histology is clinically confirmed by physician
- Patient is treated for the histology described by ambiguous term
  - If above is not met, then code NSCLC 8046

H4 – One histology present, **code the histology** (Table 3)

H5 – Invasive and in situ histologies – **code invasive histology**

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HISTOLOGY RULES – SINGLE TUMOR

H6 – NOS histology and a single s/v of the NOS; **code s/v**

- Refer to Table 3

H7 – 2+ following histologies are present; **code greatest percentage of tumor**

- Acinar or Acinar predominant **8551**
- Lepidic or Lepidic predominant **8250**
- Micropapillary or Micropapillary predominant **8265**
- Papillary or papillary predominant **8260**
- Solid or solid predominant **8230**
  - ***EXCEPTION*:** CAP protocol allows pathologist to identify histologies as ***pattern*** along with %; code pattern with greatest %

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HISTOLOGY RULES – SINGLE TUMOR

H8 – Code combination when there MULTIPLE histologies AND:

- Combination is listed in *Table 2*
- You receive combination code from Ask a SEER Registrar

H9 – Code mixed subtypes 8255 for:

- Multiple adenocarcinoma subtypes **OR**
- Any combination of histologies **NOT** listed in *Table 2*
  - Histologies from H7 with equal percentages – 8255
  - Does **NOT** apply to SCC
  - This is an "unlikely" histology for lung cases. IF 8255 is the *correct histology* (double check rules) then override inter-field edit 25 (IF25)

Last resort code

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POP QUIZ

- Path report: One tumor with Adenocarcinoma acinar predominant 60%, adenocarcinoma papillary predominant 20%, and adenocarcinoma lepidic predominant 20%.
  - Histology would be coded:

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HISTOLOGY RULES – MULT TUMORS ABST SINGLE

H10 – Mucinous Adenocarcinoma codes

- Similar to H1 for single tumor

H11 – Non-mucinous Adenocarcinoma codes

- Similar to H2 for single tumor

H12 – NSCLC c/w a specific carcinoma – **code specific histology**

- Similar to H3 for single tumor

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HISTOLOGY RULES – MULT TUMORS ABST SINGLE

H13 – One histology in ALL tumors – **code histology**

- See Table 3 and Notes

H14 – **Code invasive histology** when there is both invasive and in situ:

- All tumors may be mixed behaviors OR may be in situ and other invasive
- Tumors may be NOS and s/v
  - If invasive is NOS, code the NOS histology

H15 – NOS histology and s/v of that NOS; **code s/v histology**

- See Table 3 and Notes

H16 – **Code combo code** when ALL tumors have mult histologies **AND**

- Combo code *Table 2* **OR**
- Received combo code from Ask a SEER Registrar

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EXERCISES

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CASE #1

Pt diagnosed with squamous cell carcinoma in 2014 S/P RUL {C341} lobectomy. In 2024 new R lung {C349} mass with BX showing recurrent squamous cell carcinoma. CT does not show any other masses.

New primary?	
Primary Site	
Histology	

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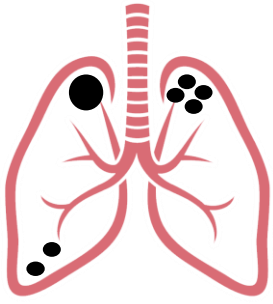
Case #2

Pt had CT 3/12/2024 showing large 5 cm mass in RUL with 2 more masses in RLL along with 4 metastatic lesions in LUL. Physician stated findings c/w bronchogenic carcinoma. No path report available.



How many primaries?	
Primary Site	
Histology	

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CASE #3

3/17/2024 LLL lung biopsy of a single mass: Squamous cell CA (8070) with spindle cell carcinoma (8032) in the LLL.

Primary Site	
Histology	

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Case #4

6/25/2024 LUL lobectomy: Single tumor 3 cm in size, invasive adenocarcinoma, NOS, mucinous subtype in the lung.

Primary Site	
Histology	

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Case #5

2/14/2024 Pt has two R lung tumors: first tumor in RUL shows invasive papillary adenoca {8260/3}. Second tumor mass in RLL shows invasive mucinous CA. {8253/3}

How many primaries?

	Tumor 01	Tumor 02
How many primaries?		
Primary Site		
Histology		

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SEER*EDUCATE

Training | Coding CEs
-Dx 2018-2025 Solid Tumor Rules
Lung 2018-2025
Cases 01-05

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QUESTIONS?
THANK YOU

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