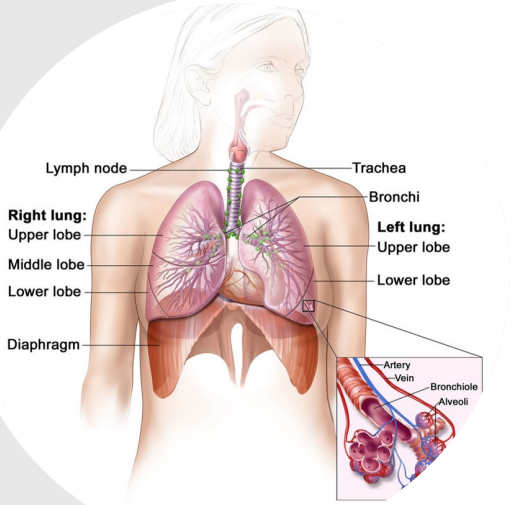

LUNG 2020

NAACCR 2020-2021 WEBINAR SERIES

Q&A

- Please submit all questions concerning the webinar content through the Q&A panel.
- If you have participants watching this webinar at your site, please collect their names and emails.
- We will be distributing a Q&A document in about one week. This document will fully answer questions asked during the webinar and will contain any corrections that we may discover after the webinar.

FABULOUS PRIZES

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GUEST PRESENTERS

- Denise Harrison, BS, CTR
- Kelli Olsen, MS, CTR

4

CASE SCENARIO

6

56 y.o. woman w/persistent cough and chest pain

Imaging:

12/29/2015 CT Chest: Two "ground-glass" nodules (RUL and RLL) noted.

04/19/2018 PET[OSF]: Suspicious for a low grade primary lung malignancy.

09/12/2018 CT[Reporting Hosp]: 1.7cm sub-solid nodule in posterior RUL and 1.3cm ground-glass nodule in superior segment of RLL, both are "concerning for malignancy".

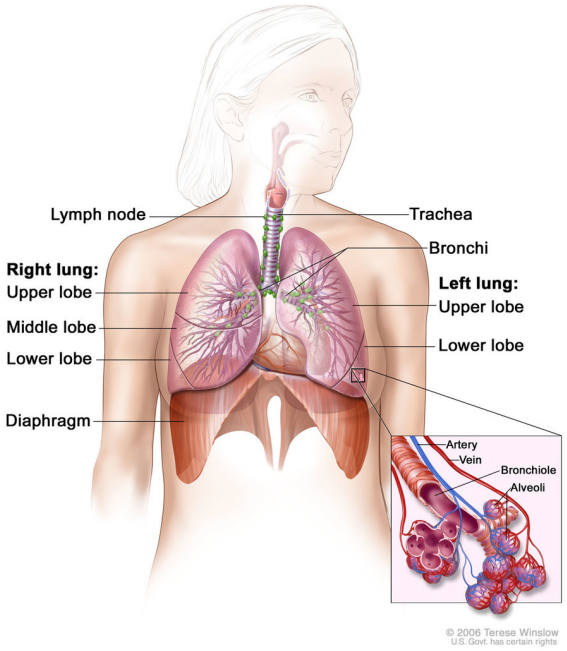
Scopes: None

Surgery: 10/22/2018 RUL wedge and RLL wedge w/two LNs.

Path: Inv well diff Adenoca, acinar predominant, in RUL (2.2cm) and RLL (1.2cm); No visceral pleura invasion; LVI(-); surg margins(-); 0+/2 LNs.

6

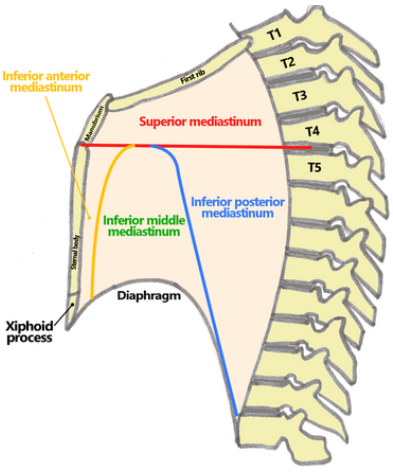
7



8

MEDIASTINUM

- **Superior**:
  - Aortic arch, brachiocephalic veins, esophagus, phrenic nerves, superior vena cava, thoracic duct, (some) thymus, trachea, vagus nerves
- **Inferior**
  - **Anterior**: thymus, sternopericardial ligaments
  - **Middle**: heart, pericardium
  - **Posterior**: descending aorta, esophagus, sympathetic trunk, thoracic duct



https://thegoofyanatomist.weebly.com

SOLID TUMOR RULES 2018

USE SOLID TUMOR RULES BY DATE OF DIAGNOSIS

DO NOT USE RULES FOR METASTASES

EQUIVALENT OR EQUAL TERMS

10

- Adenocarcinoma; carcinoma
- And; with (when describing multiple histologies within a single tumor)
- NSC-CA 8046 = all histo in Table 3 except NET 8041 and NET subtypes (and sarcomas)
- Simultaneous; existing at same time; concurrent; prior to FCOT
- Site; topography
- Squamous cell carcinoma; SCC; epidermoid carcinoma
- Tumor; mass; lesion; neoplasm; nodule
- Type; subtype; variant

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TERMS NOT EQUIVALENT /EQUAL

- Bilateral ≠ single or multiple primaries
- Bronchus ≠ mainstem bronchus
- Component ≠ subtype/type/variant
- Lung primaries ONLY
  - Mucinous ≠ colloid
  - Mucin-producing/mucin-secreting 8481 ≠ mucinous carcinoma 8253
- Multilocular ≠ multinodular
- Phenotype ≠ subtype/type/variant

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TABLE 1: CODING PRIMARY SITE

Terminology	Laterality	Site Term and Code
Bronchus intermedius **Carina** **Hilus of lung** **Perihilar**	Bilateral	Mainstem bronchus **C340** ***Note***: **Bronchus intermedius** is the portion of the **Rt MSB** between the upper lobar bronchus and the origin of the middle and lower lobar bronchi
Lingula of lung	Left	Upper lobe **C341**
Apex **Apex of lung** **Lung apex** **Pancoast tumor** **Superior lobar bronchus** **Upper lobe bronchi**	Bilateral	Upper lobe **C341**

"Bilateral" means the structure occurs on both sides; do not use that terminology to code laterality!

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TABLE 1: CODING PRIMARY SITE

Terminology	Laterality	Site Term and Code
Base of lung **Lower lobar bronchus** **Lower lobe** **Lower lobe bronchi** **Lower lobe segmental bronchi**	Bilateral	Lower lobe **C343**
Overlapping lesion of lung	Bilateral	Overlapping lesion of lung **C348** ***Note***: **One** lesion/tumor which **overlaps two or more** lobes

"Bilateral" means the structure occurs on both sides; do not use that terminology to code laterality!

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TABLE 1: CODING PRIMARY SITE

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

"Bilateral" means the structure occurs on both sides; do not use that terminology to code laterality!

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MULTIPLE PRIMARY RULES (M1-M4)

Unknown if Single or Multiple

M1:Not possible to determine if there is a single tumor or multiple tumors = SP

Single Tumor

M2: Single tumor = SP

Multiple Tumors (Do NOT code multiple primaries based on biomarkers!)

M3: S/N-C* tumors with site codes different at 2nd CXxx or 3rd CxXx = MP

M4: Subsequent tumor after clinically dz-free for > 3 after dx OR recurrence = MP

If recurrence ≤ 3 years, keep reading the rules.

*S/N-C = Separate, non-contiguous

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RULE M5 – MULTIPLE TUMORS, CONT.

M5: ≥ 1 tumor small cell (8041) or variant AND another tumor non-small (8046) or variant = MP

M6 – M8 refer us to Table 3

M6: S/N-C tumors ≥ 2 different subtypes in column 3 of Table 3 = MP

M7: Synchronous S/N-C tumors in the same lung in same row of Table 3 = SP

M8: S/N-C tumors

- in different rows Table 3 = MP
- combo code in Table 2 + code in Table 3 = MP

*S/N-C = Separate, non-contiguous

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RULES M6 - M8: TABLE 3

	Specific or NOS Histology Term and Code	Synonym of Specific or NOS	Subtype/variant of NOS and Code
1	**Sarcoma NOS 8800/3**		Biphasic synovial sarcoma **9043/3**
		M6: Different subtypes = MP Same or Different NOS	Epithelioid cell synovial sarcoma **9042/3**
	M7: Same row = SP (any of the following in the same row) Same Histology:Col. 1 + Col.2; Col. 2 + Col. 2 -or- Col. 1 + 1 sub/var Col. 3 -or- Col. 2 + 1 sub/var Col. 3		Pulmonary artery intimal sarcoma/low-grade malignant myxoid endobronchial tumor **9173/3**
		M8: Different Rows = MP (any column)	Pulmonary myxoid sarcoma with EWSR1 - CREB1 translocation **8842/3**
			Spindle cell synovial sarcoma **9041/3**
			Synovial sarcoma **9040/3**
2	**Small cell carcinoma/neuroendocrine tumors (NET Tumors) 8041**	Reserve cell carcinoma Round cell carcinoma SCLC Small cell carcinoma NOS Small cell neuroendocrine carcinoma	Atypical carcinoid **8249** Combined small cell carcinoma **8045** Large cell neuroendocrine carcinoma/combined large cell neuroendocrine carcinoma **8013** Typical carcinoid **8240**
	Note: Large cell carcinoma with **neuroendocrine differentiation** lacks NE morphology and is coded as large cell carcinoma, **not large cell neuroendocrine** carcinoma		

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RULES M9-M14: MULTIPLE TUMORS

M9: Simultaneous multiple tumors = SP when:
- in both lungs OR
- in same lung OR
- single tumor in one lung; multi tumors in contralateral lung

M10: In situ diagnosed after invasive AND tumors in **same** lung = SP

M11: Single tumor in **each** lung = MP

M12: Invasive tumor ≤ 60 days after in situ in **same** lung = SP

M13: Invasive > 60 days after in situ in **same** lung = MP

M14: None of the rules apply = SP

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HISTOLOGIC TYPE

- Guidelines for ICD-O-3 Updates include:
  - New histologies
  - Changes in behavior
  - New preferred terminology
- STR Editors recommend coding histo using:
  - 2018 Solid Tumor Rules
  - Updated ICD-O histology codes and terms which can be found at: https://seer.cancer.gov/icd-o-3/
  - ICD-O
  - Ask a SEER Registrar
    - When preceding 3 bullets fail to ID a histology code

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IMPORTANT NOTES FOR CODING HISTOLOGY

Code the histology:

- Prior to neoadjuvant therapy
- Using priority list and H rules
- Do not change histo to make the case applicable to staging

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IMPORTANT NOTES FOR CODING HISTOLOGY

Code **most specific** histology from either resection or biopsy:

- Code the **invasive** when in situ and invasive in single tumor
- **Discrepancy** between bx and resection (2 different histos/different rows), code from most representative specimen (>est amount of tumor)

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DOCUMENTATION PRIORITY TO IDENTIFY HISTOLOGY

1. Tissue/path report from primary (listed in priority order)
   - Addendum
   - Final dx/CAP synoptic report
   - CAP protocol
2. Cytology from primary or pleural/pericardial fluid
3. Metastatic tissue
4. Imaging (CT > PET> MRI> CXR)
5. Physician documentation (listed in priority order)
   - Treatment plan
   - Tumor Board
   - Medical record referencing the original pathology, cytology, or scan(s)
   - MD reference to histology

CODING HISTOLOGY

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1. Code the most specific histology or subtype/variant, regardless of whether it is described as:

A. Majority or predominant part of tumor
B. Minority part of tumor
C. A component

Terms A-C must describe a carcinoma or sarcoma

2. Code histo described as differentiation or features only when there is a specific ICD-O code for the NOS w/ features or differentiation

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CODING HISTOLOGY

3. Code histo described by ambiguous terms only when the conditions in A or B are met:

A. The only diagnosis available is **one histology** term described by ambiguous terminology (case accessioned based on ambiguous term and no other histo is available)

B. There is a **NOS histology and a more specific** (subtype/variant) described by ambiguous terminology **AND**

- Specific histo confirmed by a physician **OR**
- Patient is being treated based on the specific histo described by the ambiguous term

CODING HISTOLOGY

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List of Ambiguous Terms		
Apparently	Favor(s)	Probable
Appears	Malignant appearing	Suspect(ed)
Comparable with	Most likely	Suspicious (for)
Compatible with	Presumed	Typical (of)
Consistent with		

4. DO NOT CODE histology when described as:

- Architecture
- Foci; focus; focal
- Pattern

SUMMARY: CODING HISTOLOGY

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Lung	
Tissue/path from primary	1
FNA^	2
Tissue/path from mets	3
Scans CT > PET > MRI > CXR	4
Physician Documentation	5

*must describe a carcinoma or sarcoma
^ from primary site, or pleural/pericardial fluid

Code histology

- Before neoadjuvant therapy
- Using priority list & H rules
- Do not change histo to stage

Multiple Histologies

- Code most specific histo or subtype/variant whether described as majority*, predominant*, minority*, or component*
- Code NOS w/ features or differentiation ONLY when there is a specific code
- Use ambiguous terms ONLY when criteria met
- Do NOT code histology based on pattern architecture, focus/foci/focal

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HISTOLOGY RULES

Single	Multiple	Rule
H1	H10	Code mucinous adenoca as follows (for lung only) 8253/3 when behavior unk or invasive 8257/3 when microinvasive or minimally invasive 8253/2 when preinvasive or in situ
H2	H11	Code non-mucinous adenoca as follows (for lung only) 8256/3 when microinvasive or minimally invasive 8250/2 when preinvasive or in situ
H3	H12	Code specific histo when dx is NSCLC described by ANY ambiguous terminology when histo is: Clinically confirmed by MD (attending, pathologist, oncologist, pulmonologist, etc.) Patient is treated for the histology described by an ambiguous term Case accessioned based on single histo described by ambiguous terminology and no other histology information is available/documented

Note: Mucinous carcinoma mixed w/ another histo, code mucinous ONLY when mucinous is documented to be **> 50%** of the tumor.

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ADENOCA SPECTRUM LESIONS

- CT appearance of peripheral lung adenocarcinomas encompasses a spectrum from ground glass nodules (GGN) to solid mass lesions
  - CT appearance reflects their heterogenous histologic subtypes
  - ~~Single term, BAC, was not adequate to describe this spectrum~~
- Lepidic growth manifests radiologically as GGO
  - On CT, parenchymal structures (airways and vessels) can be seen through the GGO
  - On pathology, lepidic features identified (w/ or w/o an invasive component)
- GGN (lepidic) can evolve to more solid (more likely invasive)
- Data from lung cancer screening literature show
  - Higher rate of malignancy in incidental part-solid nodules compared to incidental solid nodules and the
  - Majority of persistent GGNs represent adenocarcinoma spectrum lesions
- Revised classification more clearly follows the multistep progression that many lung adenocarcinoma spectrum lesions are thought to take

THE REVISED CLASSIFICATION OF LUNG ADENOCARCINOMA

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(I) **Preinvasive lesions**

(i) Adenocarcinoma *in situ* (AIS) —mucinous **8253/2***, nonmucinous **8250/2***, or mixed (see H rules)

(ii) Atypical adenomatous hyperplasia (AAH)

(II) **Minimally invasive lesions**

(i) Minimally invasive adenocarcinomas (MIA) —mucinous **8257/3***, nonmucinous **8256/3***, or mixed (see H rules)

(III) **Invasive adenocarcinoma**

(i) Acinar predominant **8551/3***

(ii) Papillary predominant **8260/3**

(iii) Micropapillary predominant **8265/3**

(iv) Solid predominant with mucin production **8230/3**

(v) Lepidic predominant adenocarcinoma (LPA) **8250/3***

(IV) **Variants of invasive adenocarcinoma**

(i) Invasive mucinous adenocarcinoma **8253/3***

(ii) Colloid **8480/3**, fetal **8333/3**, and enteric **8144/3**

* New code

Table 3: Specific Histologies, NOS, and Subtype/Variants

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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 only is coded as follows: • **8256/3*** when o Microinvasive o Minimally invasive • **8250/2*** when o Preinvasive o In situ	Adenocarcinoma NOS Adenocarcinoma in situ **8140/2** Adenocarcinoma invasive **8140/3** Adenocarcinoma, non-mucinous, NOS	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 **(for lung only)** in situ **8253/2*** invasive **8253/3*** minimally invasive **8257/3*** microinvasive **8257/3*** preinvasive **8253/2*** Micropapillary adenocarcinoma/adenocarcinoma, micropapillary predominant **8265** Mixed invasive mucinous and non-mucinous adenocarcinoma **8254*** Non-mucinous adenocarcinoma **(for lung only)** in situ **8250/2*** microinvasive **8256/3*** minimally invasive **8256/3*** preinvasive **8250/2*** Papillary adenocarcinoma/adenocarcinoma, papillary predominant **8260** Pulmonary intestinal-type adenocarcinoma/enteric adenocarcinoma **8144** Solid adenocarcinoma/adenocarcinoma, solid predominant **8230**

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HISTOLOGY RULES

Single	Multiple	Rule
H4	H13	Code histo when only one histo present
H5	H14	Code invasive histo when in situ and invasive
H6	H15	Code subtype/variant when NOS & **single** subtype
H7		Code histo that comprises greatest amount of tumor when 2 or more of the following histologies are present: Acinar adenoCA / AdenoCA, acinar predominant **8551** Lepidic adenoCA / AdenoCA, lepidic predominant **8250** Micropapillary adenoCA / AdenoCA, micropapillary predominant **8265** Papillary adenoCA / AdenoCA, papillary predominant **8260** Solid adenoCA / AdenoCA, solid predominant **8230** **NOTE**: If percentage unknown, continue through the rules

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HISTOLOGY RULES

Single	Multiple	Rule
H8	H16	Code combo code (Table 2) when multi histologies **AND** Combination is listed in **OR** You received a combo code from Ask A SEER Registrar
H9		Code adenoca with mixed subtypes 8255 for Multiple adenoca subtypes (includes adenoca + ≥ 2 subtypes) **OR** Any combo of histo NOT listed in Table 2

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TABLE 2: COMBO/MIXED HISTO CODES

Required Terms	Combination Histologies and Code
Squamous cell carcinoma (epidermoid carcinoma) **AND** Large cell non-keratinizing squamous cell carcinoma ***Note:*** Squamous cell carcinoma and epidermoid carcinoma are synonyms	Squamous cell carcinoma, large cell, nonkeratinizing **8072**
Squamous cell carcinoma (epidermoid carcinoma) **AND** Small cell nonkeratinizing carcinoma ***Note:*** Squamous cell carcinoma and epidermoid carcinoma are synonyms	Squamous cell carcinoma, small cell, nonkeratinizing **8073**
Squamous cell (epidermoid) carcinoma **AND** **One or both** of the following: • Sarcomatoid carcinoma • Spindle cell carcinoma ***Note 1:*** **Does not include subtypes/variants** of squamous cell. See Table 3 for subtypes/variants ***Note 2:*** Squamous cell carcinoma and epidermoid carcinoma are	Squamous cell carcinoma, sarcomatoid **8074** Squamous cell carcinoma, spindle cell **8074**

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EXERCISE: # OF PRIMARIES, PRIMARY SITE(S), HISTOLOGY(IES), BEHAVIOR

CT Chest: 1.7cm sub-solid nodule in posterior RUL and 1.3cm ground glass nodule in superior segment of RLL, both concerning for malignancy. **PET**: Suspicious for a low grade primary lung malignancy.

Wedge resection of RUL and RLL and LN dissection: Adenoca, acinar predominant, well diff, no invasion of visceral pleura; surg. margins negative; TS 2.2cm and 1.2cm; 0+/2 LNs.

Primaries 1 M7 (synchronous separate non-contiguous tumors in same row in same lung)

Primary site C34.1 There are 2 tumors, but we are basing the staging on the tumor in the RUL. If one the tumors were intrapulmonary mets, we would assign C34.9

Histology 8551 H7 (single histology in all tumors) Adenocarcinoma, acinar predominant

Behavior 3 Invasive

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STAGING LUNG CANCERS

Summary Stage V2.0 (Effective with 2021 Diagnoses)
Extent of Disease V2.0 (Effective with 2021 Diagnoses)
AJCC 8th Edition (Effective with 2018 Diagnoses)

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REMINDERS

- Timing
  - AJCC staging classifications (clinical, pathological, and post-therapy) are based on distinct time-frames
  - SS18 and EOD are clinicopathological staging/data collection systems
    - Based on the most extensive involvement, regardless of timing
    - Use all available information from diagnosis through post-therapy
- Concordance
  - EOD is based on AJCC, so these systems are highly concordant (need TS Summary to derive correct EOD T at central registry)
  - SS18, while generally concordant with AJCC and EOD, may classify T4 tumors as localized (code 1), or LNs that are regional in AJCC and EOD as distant

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SS18 AND EOD

Notes:

- Bronchopneumonia ≠ obstructive pneumonitis
- Atelectasis must be associated w/ an obstructing tumor
- Instructions to assist with coding
  - VPI (PL1, PL2) and PPI (PL3)
  - Separate tumor nodules
  - VC paralysis, SVC syndrome, compression of trachea or esophagus
  - Occult carcinoma
  - Pleural/pericardial effusions
  - Minimally invasive and superficial spreading tumors (EOD only)

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AJCC CLASSIFICATIONS

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Clinical Classification

- cT and cN
  - H&P
  - Imaging studies
  - Staging procedures (scopes)
  - Biopsies/Cytology
  - Exploratory thoracotomy
- cM
  - cM0 if no evidence of mets
  - cM1 if mets NOT microscopically proven during clinical timeframe
  - pM1 if mets microscopically proven during clinical timeframe

Pathological Classification

- pT
  - cT + operative findings + pathological examination of primary **OR**
  - (+) bxs confirming highest T **and** highest N
- pN
  - ≥ 1 LN examined microscopically (also need pT)
  - IASLC recommends at least 6 LN from 6 stations
- pM
  - Microscopic exam of distant LN, tissue, or fluid (found to be POSITIVE)
  - cM0 and cM1 allowed in "pM" field when no positive microscopic findings of mets

AJCC CLASSIFICATIONS

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yc Classification

ycT and ycN **AFTER** completion of neoadjuvant therapy:

- H&P
- Imaging studies
- Staging procedures (scopes)
- Biopsies/Cytology
- Exploratory thoracotomy

- No ycM
  - Use "cM" category assigned PRIOR to neoadjuvant therapy
    - cM0, cM1, and pM1 allowed

yp Classification

AFTER completion of neoadjuvant therapy:

- ypT
  - ycT + operative findings + pathological examination of primary **OR**
  - (+) bxs confirming highest T **and** highest N
- ypN
  - ≥ 1 LN examined microscopically (also need ypT)
  - IASLC recommends at least 6 LN from 6 stations
- No ypM
  - Use "cM" category assigned PRIOR to neoadjuvant therapy
    - cM0, cM1, and pM1 allowed

CLINICAL JUDGMENT OF NON-MALIGNANT CAUSE OF EFFUSION

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Special note in M1a about pleural effusion malignant vs non-malignant

Pleural effusion

- CHF
- Infections (pneumonia, tuberculosis)
- Pulmonary embolism
- Kidney failure
- Autoimmune (lupus, rheumatoid arthritis)
- Other diseases

Pericardial effusion

- Same as pleural PLUS
  - RT with heart in field
  - History of chemo
    - Adria, Cytoxan
  - Hypothyroidism
  - Trauma/puncture near heart
  - Certain drugs (hydralazine, isoniazid, phenytoin)

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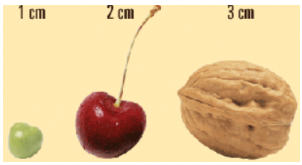
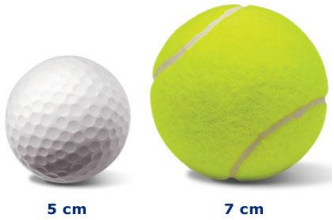
AJCC T CATEGORY

- Multiple descriptions of in situ
- Lepidic pattern measurement important
  - Could be in situ or minimally invasive
- Size matters!
  - Cut points at ≤ 1 cm, 2 cm, 3 cm, 4 cm, 5 cm, 7 cm
- T2 – T4 based on size or extension
  - T2 has subcategories based on TS
  - T3 – T4 include additional descriptions for ipsilateral separate tumor nodules





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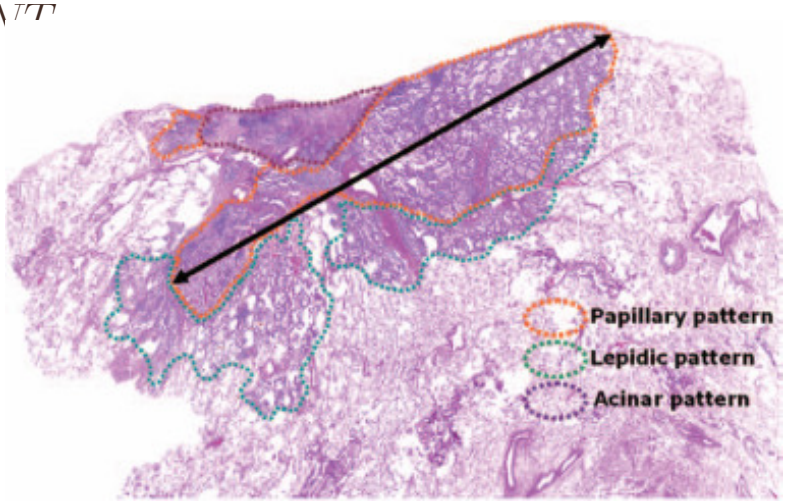
MEASURING TS: LEPIDIC AREA DOESN'T COUNT



Journal of Thoracic Oncology, Vol 8, Issue 1, Jan 2013

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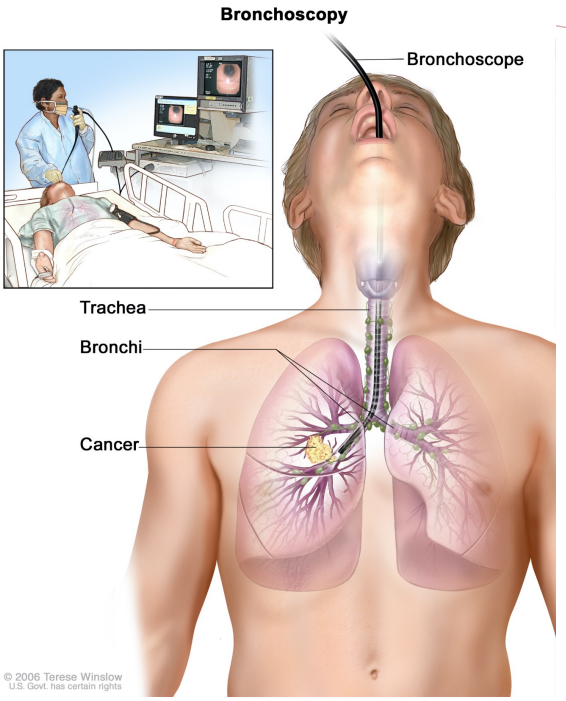

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SS18AND EOD PRIMARY TUMOR

EOD	SS2018	Description
000	0	In situ, intraepithelial, noninvasive
000	0	Adenocarcinoma in situ (AIS): adenocarcinoma with pure lepidic pattern, ≤ 3 cm in greatest dimension
000	0	Squamous cell carcinoma in situ (SCIS)
300	1	Localized only (localized, NOS)
300	1	Confined to lung, NOS
100	1	Minimally invasive adenocarcinoma; Adenocarcinoma tumor W/ predominantly lepidic pattern (AIS) measuring ≤ 3 cm in greatest dimension W/ invasive component measuring ≤ 5 mm in greatest dimension
200	1	Superficial tumor, WITH invasive component limited to bronchial wall WITH or WITHOUT proximal extension to main stem bronchus (these types of tumors are uncommon)
400	1	Adjacent ipsilateral lobe
400	1	Confined to hilus
400	1	Main stem bronchus, NOS (without involvement of the carina) Including extension from other part of lung
600	1	Confined to carina, NOS

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SS18 AND EOD PRIMARY TUMOR

EOD	SS2018	Description
400	2	Atelectasis/obstructive pneumonitis that extends to hilar region, involving part or all of lung
450	2	Pleura, NOS
450	2	Pulmonary ligament
450	2	Visceral pleura invasion (PL1, PL2, or NOS) (**SS18 includes PL3**)
500	2	Brachial plexus (inferior branches or NOS)
500	2	Chest wall (thoracic wall) (separate lesion-see EOD Mets)
500	2	Diaphragm (separate lesion-see code 7) (separate lesion-see EOD Mets)
500	2	Pancoast tumor (superior sulcus syndrome), NOS
500	2	Parietal pericardium
500	2	Parietal pleura
500	2	Pericardium, NOS
500	2	Phrenic nerve
500	2	Separate tumor nodule(s) in same lobe as primary

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SS18 AND EOD PRIMARY TUMOR

EOD	SS2018	Description
650	2	Code 600 (confined to carina) + (any of codes 100 through 500)
650	2	Blood vessel(s) (major)
650	2	Aorta
650	2	Azygos vein
650	2	Pulmonary artery or vein
650	2	Superior vena cava (SVC syndrome)
650	2	Carina from lung (with involvement of any other parts of lung)
650	2	Cervical sympathetic (Horner's syndrome)
650	2	Compression of esophagus or trachea not specified as direct extension
650	2	Esophagus
650	2	Mediastinum, extrapulmonary or NOS
650	2	Nerve(s)
650	2	Recurrent laryngeal (vocal cord paralysis)
650	2	Separate tumor nodule(s) in a different ipsilateral lobe
650	2	Trachea
650	2	Vagus

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SS18 AND EOD PRIMARY TUMOR

EOD	SS2018	Description
675	7	Adjacent rib
675	7	Rib
675	7	Skeletal muscle
675	7	Sternum
700	7	Heart
700	7	Inferior vena cava
700	7	Neural foramina
700	7	Vertebra(e) (vertebral body)
700	7	Visceral pericardium
700	7	Separate tumor nodule(s) in a different ipsilateral lobe
700	7	Further contiguous extension
700	7	Nerve(s)
700	7	Recurrent laryngeal (vocal cord paralysis)
700	7	Separate tumor nodule(s) in a different ipsilateral lobe

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SS18 AND EOD PRIMARY TUMOR

EOD	SS2018	Description
800	9	No evidence of primary tumor
980	9	Tumor proven by presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy
999	9	Unknown; extension not stated
999	9	Primary tumor cannot be assessed
999	9	Not documented in patient record

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EXERCISE: EOD PRIMARY TUMOR, AJCC T, AND SS18

CT Chest: 1.7cm sub-solid nodule in posterior RUL and 1.3cm ground glass nodule in superior segment of RLL, both concerning for malignancy. **PET**: Suspicious for a low grade primary lung malignancy.

Wedge resection of RUL and RLL and LN dissection: Adenoca, acinar predominant, well diff, no invasion of visceral pleura; surg. margins negative; TS 2.2cm and 1.2cm; 0+/2 LNs.

EOD Primary Tumor 300 Any size tumor, confined to lung

AJCC Clinical T cT1b Largest TS = 1.7cm; no evidence of extension outside the lung

AJCC Pathological T pT1c Largest TS = 2.2cm, no VPI or extension outside the lung

SS18 1 Localized only

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AJCC REGIONAL LNS

- Extend from supraclavicular area to diaphragm
- Location determines N description
  - The farther away from the hilum the LN are, the higher the N description
  - Contralateral raises N1 (hilar/interpulmonary) or N2 (mediastinal) to N3
  - Any laterality supraclavicular/scalene LNs are N3
- Do NOT use Table 36.2 to code LN (Exploratory Subcategories)
- If surgeon uses IASLC LN Station descriptions or zones:
  - 1 = supraclavicular, 2 – 9 = mediastinal, 10 – 14 = hilar
  - See Fig. 36.1 and Table 36.1 in AJCC

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REGIONAL LYMPH NODE ZONES AND STATIONS

Zone	Station
Supraclavicular	1 Low cervical, SC, sternal notch
Superior mediastinal nodes	
Upper	2 Upper paratracheal
	3a Prevascular 3p Retrotracheal
	4 Lower paratracheal
Aortopulmonary (AP)	5 Subaortic 6 Para-aortic
Inferior mediastinal nodes	
Subcarinal	7 Subcarinal
Lower	8 Paraesophageal 9 Pulmonary ligament

Zone	Station
Hilar/interlobar	10 Hilar 11 Interlobar
Peripheral	12 Lobar 13 Segmental 14 Subsegmental

See the AJCC Cancer Staging Manual, Eighth Edition for **Fig. 36.1** IASLC lymph node map and **Table 36.1** Anatomic definitions for each lymph node station and station grouping by nodal zones in the map proposed by the IASLC.

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TUMOR LATERALITY AND N CATEGORY BY LN STATION

Tumor in **Right** Lung	Tumor in **Left** Lung
10R – 14R	10L – 14L
2R, 4R, 7, 9R 3A (Rt of midline of trachea) 3P 8 (Rt of midline of esophagus)	2L, 4L, 5, 6, 7, 9L 3A (Lt of midline of trachea) --- 8 Lt of midline of esophagus)
1R, 1L, 2L, 4L, 5, 6, 9L, 10L – 14L 3A (Lt of midline of trachea) --- 8 (Lt of midline of esophagus)	1L, 1R, 2R, 4R, 9R, 10R – 14R 3A (Rt of midline of trachea) 3P 8 (Rt of midline of esophagus)

Mediastinoscopy

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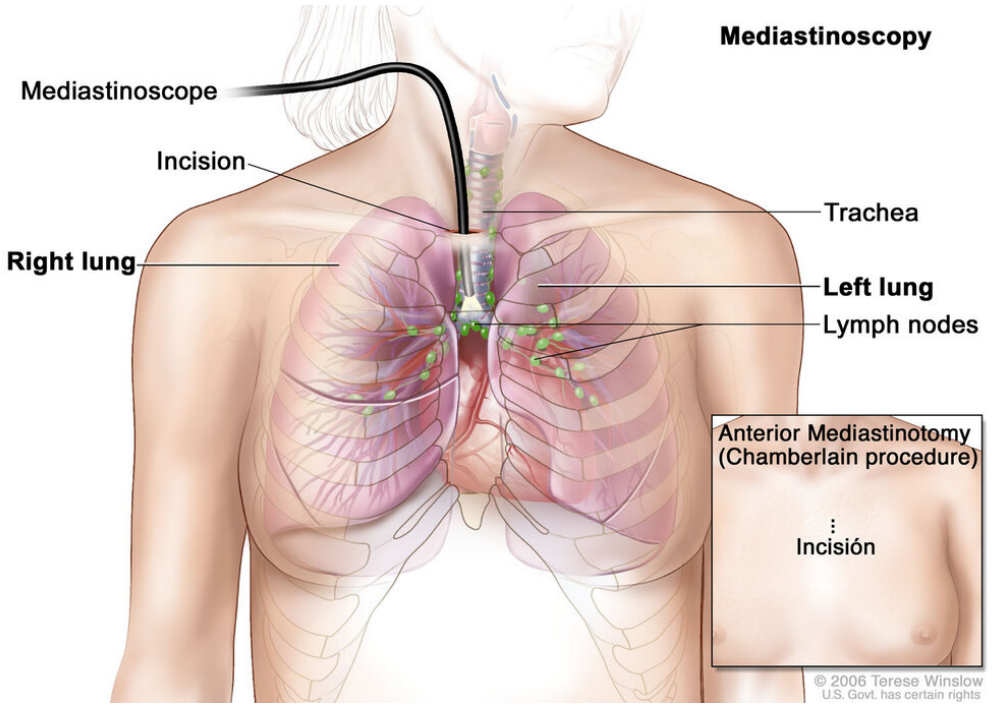
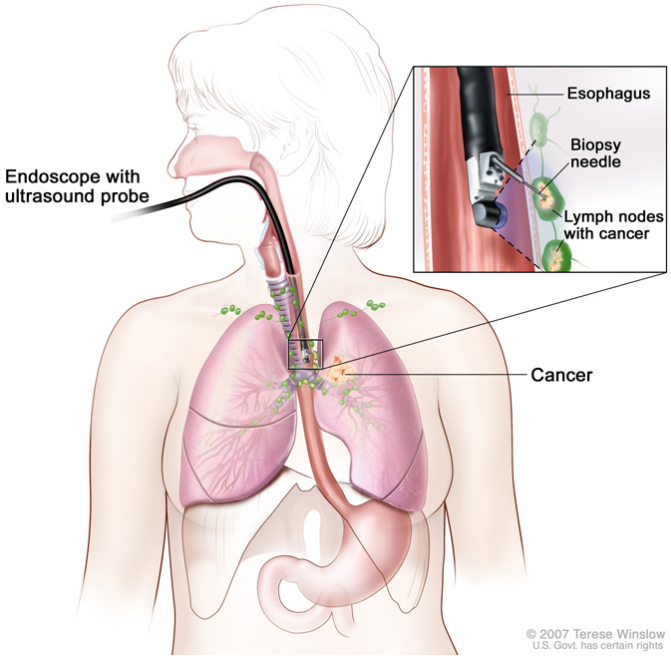


Endoscopic Ultrasound (EUS)

54



SS18 AND EOD REGIONAL NODES

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	EOD	SS2018	EOD	SS2018
IPSI	300	3	400	3
BI/C	700	7	700	7

	Bronchial	Carinal (tracheobronchial) (tracheal bifurcation)	
	Hilar (bronchopulmonary) (proximal lobar) (pulmonary root)	Mediastinal	
		Anterior	**Superior**
		Aortic (above diaphragm), NOS	Paratracheal (Lt, Rt, upper, low, NOS)
	Intrapulmonary	Peri/para-aortic, NOS	Prevascular
	Interlobar	Ascending aorta (phrenic)	Retrotracheal
	Lobar	Subaortic (A-P window)	Periesophageal
	Segmental	**Inferior**	Pericardial
	Subsegmental	Paraesophageal	Peritracheal, NOS
	Peri/parabronchial	Pulmonary ligament	Azygos (lower peritracheal)
		Subcarinal	Precarinal
		Posterior (tracheoesophageal)	Pretracheal, NOS

IPSI/CONTRA	EOD - 600	SS18 - 7	EOD N - N3

Low cervical; Proximal root; Scalene (inferior deep cervical); Sternal notch; Supraclavicular (transverse cervical)

EXERCISE: EOD REGIONAL NODES AND , AJCC N

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CT Chest: 1.7cm sub-solid nodule in posterior RUL and 1.3cm ground-glass nodule in superior segment of RLL, both concerning for malignancy. **PET**: Suspicious for a low grade primary lung malignancy.

RUL & RLL Wedge w/interlobar LNs: Invasive well diff Adenoca, acinar predominant. TS (RUL)= 2.2cm, TS (RLL)= 1.2cm. No VPI or LVI. Margs (-). 0+/2 LNs.

EOD Regional Nodes ___000___ 0+/2 interlobar LNs

AJCC Clinical N ___cN0___ No evidence of abnormal LNs on imaging

AJCC Pathological N ___pN0___ 0/2 interlobar LNs

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SS18 AND EOD METS

EOD	SS2018	Description
00	7	No distant metastasis; Unknown if distant metastasis
10	7	Pericardial effusion or pleural effusion (malignant) (ipsilateral, contralateral, bilateral, NOS) Pleural tumor foci or nodules on ipsilateral lung (separate from direct extension) or contralateral lung Pericardial nodules Contralateral lung/main stem bronchus Contralateral main stem bronchus Separate tumor nodule(s) in contralateral lung
20	7	Single distant lymph node involved Cervical Distant lymph node, NOS
30	7	Single extrathoracic metastasis in a single organ

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SS18 AND EOD METS

EOD	SS2018	Description
50	7	Multiple extrathoracic metastases in a single organ **or** in multiple organs Abdominal organs Skin of chest Separate lesion in chest wall or diaphragm Multiple distant lymph node(s) Cervical Distant lymph node(s), NOS Carcinomatosis Distant metastasis WITH or WITHOUT distant LN(s)
70	7	Distant metastasis, NOS
99	9	Death Certificate Only

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EXERCISE: EOD METS AND AJCC M

CT Chest: 1.7cm sub-solid nodule in posterior RUL and 1.3cm ground glass nodule in superior segment of RLL, both concerning for malignancy. **PET**: Suspicious for a low grade primary lung malignancy.

Wedge resection of RUL and RLL and LN dissection: Adenoca, acinar predominant, well diff, no invasion of visceral pleura; surg. margins negative; TS 2.2cm and 1.2cm; 0+/2 LNs.

EOD Mets 00

AJCC Clinical M cM0

AJCC Pathological M cM0

For all 3 fields: PE and CT negative for mets

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IASLC STAGE GROUPINGS

	N0	N1	N2	N3	M1a	M1b	M1c
T1a	IA1 (incl T1mi)	IIB	IIIA	IIIB	IVA	IVA	IVB
T1b	IA2	IIB	IIIA	IIIB	IVA	IVA	IVB
T1c	IA3	IIB	IIIA	IIIB	IVA	IVA	IVB
T2a	IB	IIB	IIIA	IIIB	IVA	IVA	IVB
T2b	IIA	IIB	IIIA	IIIB	IVA	IVA	IVB
T3	IIB	IIIA	IIIB	IIIC	IVA	IVA	IVB
T4	IIIA	IIIA	IIIB	IIIC	IVA	IVA	IVB

IASLC 2015

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EXERCISE: AJCC STAGE GROUPS AND SS18

AJCC Clinical Prognostic Stage Group ___IA2___ cT1b c0 cM0

AJCC Pathological Prognostic Stage Group ___IA3___ pT1c pN0 cM0

SS18 ___1___ Local Involvement Only

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GRADE FIELDS

For 2021, we have four grade fields!

- Grade Clinical
- Grade Pathological
- Grade Post Therapy Clin (yc)
- Grade Post Therapy Path (yp)

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GRADE TIMEFRAMES ⏱ - 2021

- Grade **Clinical**
  - Info during "clinical" time frame
    - Usually bx or FNA
    - Before any treatment
- Grade Post-Therapy Clin (**yc**)
  - Info after neoadjuvant or primary systemic/RT
  - Bx or FNA

- Grade **Pathological**
  - Info from a primary tumor that has been resected
  - Includes clinical info
- Grade Post-Therapy Path (**yp**)
  - Info from resected tumor POST neoadjuvant
  - Includes yc info

Resection must meet AJCC surgical criteria for cancer site to assign grade pathological and grade post therapy
- Exception for pM1

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GRADE CLINICAL GUIDELINES - 2021

- Cannot be BLANK
- Histological exam is done (FNA, biopsy, needle core biopsy, etc.)
- Assign highest grade from primary tumor during clinical time frame
- *Multiple tumors w/ different grades abstracted as a SP, code the highest grade*
- Code 9 when:
  - Grade from primary site not documented
  - Clinical staging N/A (incidental finding)
  - Grade checked N/A on CAP Protocol
- If only 1 grade available, and unknown grade time frame, assign it to grade clinical, 9 to grade pathological, and blank for grade post therapy clin and path

65

GRADE PATHOLOGICAL GUIDELINES - 2021

Guidelines are listed in priority order. Use the first one that applies.

- Cannot be BLANK
- Surgical resection performed
  - *When site has preferred grading system, but*
    - *Grade clin uses preferred system and grade path does not*
      - *Use generic grade category, if available for that site*
        - *Code 9 when no generic grade categories available*
  - Assign highest grade from PRIMARY tumor
    - *Multiple tumors w/ different grades abstracted as a SP, code the highest grade*

66

GRADE PATHOLOGICAL GUIDELINES - 2021

- Use **Grade Clinical** when:
  - Surgical resection performed and
    - Clinical grade is higher
      - *And behavior for*
        - *Clin and path dx are the same*
        - *Clin is invasive and path is in situ*
    - No grade documented on surgical resection
    - No residual cancer
      - *No surgical resection of primary tumor, but (+) microscopic confirmation of distant mets during clin timeframe*

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GRADE PATHOLOGICAL GUIDELINES - 2021

- Code **9** when:
  - Grade from primary site not documented (and no grade clinical)
  - No resection of primary tumor; clinical case only *(except when (+) distant mets found during clin timeframe)*
  - Neoadjuvant therapy administered
  - Grade checked N/A on CAP Protocol and no other info available
  - Clinical case only
  - Only 1 grade available & unknown if c, p, yc, or yp

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GRADE POST-THERAPY CLIN (YC) GUIDELINES - 2021

- Leave BLANK when:
  - No neoadjuvant therapy
  - Clinical or pathological case only
  - Only 1 grade available & unknown if c, p, yc, or yp
- Assign highest grade from microscopically sampled primary tumor following neoadjuvant or primary systemic/RT
  - Multiple tumors w/ different grades abstracted as a SP, code the highest grade
- Code 9 when microscopic exam done post neoadjuvant tx and:
  - Grade from primary tumor not documented
  - No residual tumor
  - Grade checked N/A on CAP Protocol and no other info available

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GRADE POST-THERAPY PATH (YP) GUIDELINES - 2021

- Leave BLANK when:
  - No neoadjuvant therapy
  - Clinical or pathological case only
  - Only 1 grade available & unknown if c, p, yc, or yp
- Assign highest grade from primary tumor that is resected AFTER neoadjuvant therapy completed
- *Multiple tumors w/ different grades abstracted as a SP, code the highest grade*
- Code 9 when surgical resection done post neoadjuvant tx and:
  - Grade from primary tumor not documented (and no yc grade?)
  - No residual cancer
  - Grade checked N/A on CAP Protocol and no other grade information is available

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GRADE TABLE

Code	Description
1	G1: well differentiated
2	G2: moderately differentiated
3	G3: poorly differentiated
4	G4: undifferentiated, anaplastic
9	Grade cannot be assessed (GX), unk
Blank	Post-therapy grade fields ONLY

EXERCISE: GRADE FIELDS

71

Clinical information: No biopsy

Pathological information: Well differentiated

Grade Clinical	9
Grade Pathological	1
Grade Post-therapy (yc)	Blank
Grade Post-therapy (yp)	Blank

SSDI: SEPARATE TUMOR NODULES

72

- MD statement can be used when no other information
- Note 3: **Ipsilateral** intrapulmonary mets; same histologic type via imaging or pathology (i.e. abstracted as a single primary)
- Note 4: Do **NOT** include second primary tumors, multifocal AIS or MIA, or diffuse pneumonic adenocarcinoma (assign code 0)
- If no mention of separate tumor nodules on resection or relevant imaging or , code 0
- Code 9 when no resection or relevant imaging of the tumor

0	Single tumor; no separate tumor nodules of same histo; intrapulmonary mets not ID'd/present; multiple foci AIS or MIA
	Codes 1-4 Separate tumor nodules of same histologic type in:
1	Same lobe
2	Different lobe
3	Same and different lobe
4	Unknown if same or different lobe
7	Mult. nodules present, not classifiable per notes 3 & 4
8	N/A
9	Not documented in med record; primary is in situ; separate nodules not assessed/unknown if assessed

SSDI: VISCERAL AND PARIETAL PLEURAL INVASION

73

- MD statement can be used when no other information
- Code 0 for in situ
- Surgical resection required to determine pleural involvement
  - Do **NOT** use imaging
- Code 9 when
  - FNA only is performed
  - Surgical resection performed and no mention of pleural invasion

V1.7	2021	Description (Based on surgical resection: do **not** use imaging)
0	0	No evidence of visceral pleural invasion identified Tumor does not completely traverse the elastic layer of the pleura Stated as PL0; (*Table notes instruct to code in situ Tumors here)*
1, 2	4	Invasion of visceral pleura present, NOS Stated as PL1 or PL2
3	5	Tumor invades into or through the parietal pleura OR chest wall Stated as PL3
6	6	Tumor extends to pleura, NOS; not stated if visceral or parietal
8	8	Not applicable: Information not collected for this case
9	9	Not documented in medical record; No surgical resection of primary site is performed; Visceral Pleural Invasion not assessed or unknown if assessed or cannot be determined; *(Table notes instruct us to code FNA only here and when no mention of VPI/PPI is made on the surgical resection path)*

SSDI: ALK REARRANGEMENT – 2021

74

- MD statement of ALK rearrangement for NSCCA can be used when no other information
  - Can be coded for all histologies and stages; primarily performed for NSCCA
- ALK protein expression predicts ALK rearrangement gene which makes the tumor more likely to respond to targeted inhibitor treatment
  - Most common ALK rearrangements are: EML4-ALK, KIF5B-ALK, TFG-ALK, KLC1-ALK
- Code prior to neoadjuvant therapy; can base on post-neoadjuvant when no pre-neoadjuvant results
- Code 9 when insufficient tissue to perform test; results are equivocal; no micro confirmation of tumor; test not done, or unknown if done

Code	Description
0	Normal; ALK negative; Negative for rearrangement, no rearrangement identified, no mutations (somatic) identified, not present, not detected
1	Abnormal Rearrangement identified/detected: EML4-ALK, KIF5B-ALK, TFG-ALK, and/or KLC1-ALK
2	Rearrangement identified/detected: Other ALK Rearrangement not listed in code 1
4	Rearrangement, NOS
7	Test ordered, results not in chart
8	Not applicable: Information not collected for this case
9	Not documented in medical record; ALK Rearrangement not assessed or unknown if assessed

SSDI: EGFR MUTATIONAL ANALYSIS – 2021

75

- MD statement of EGFR can be used when no other information
  - Can be coded for all histologies and stages; primarily performed for NSCCA
- Most common EGFR mutations are: Exon 18 Gly719, Exon 19 deletion, Exon 20 insertion, Exon 20 Thr790Met, Exon 21 Leu858Arg
- Code prior to neoadjuvant therapy; can base on post-neoadjuvant when no pre-neoadjuvant results
- Code 9 when insufficient tissue to perform test; no micro confirmation of tumor; test not done, or unknown if done

Code	Description
0	Normal; EGFR negative, EGFR wild type; Negative for mutations, no alterations, no mutations (somatic) identified, not present, not detected
1	Abnormal (mutated)/detected in exon(s) 18, 19, 20, and/or 21
2	Abnormal (mutated)/detected but not in exon(s) 18, 19, 20, and/or 21
4	Abnormal (mutated)/detected, NOS, exon(s) not specified
7	Test ordered, results not in chart
8	Not applicable: Information not collected for this case
9	Not documented in medical record; EGFR not assessed or unknown if assessed

EXERCISE: SSDI FIELDS

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CT Chest: 1.7cm sub-solid nodule in posterior RUL; 1.3cm ground-glass nodule in superior segment of RLL.

PET: Suspicious for low grade primary malignancy.

Path: Adenoca, Acinar predominant, well diff, no VPI or LVI.

Genetics: RLL showed EGFR L816R mis-sense mutation. RUL: no EGFR mutation detected

Separate Tumor Nodules 0 (single tumor identified)*

V/P Pleural Invasion 0 (no visceral pleura invasion)

ALK Rearrangement 9 (no information)*

EGFR Mutation 0 (no EGFR mutation)*

*Single primary per STR. Coding based on predominant tumor.

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LUNG CANCER TREATMENT

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TREATMENT OVER TIME

- 1970s – Surgery +/- Radiation
  - 1980s – Chemotherapy
    - 1990s – Combination chemotherapy
      - 2000s – Targeted therapy +/- chemotherapy
        - Present – Next generation targeted therapy; immunotherapy

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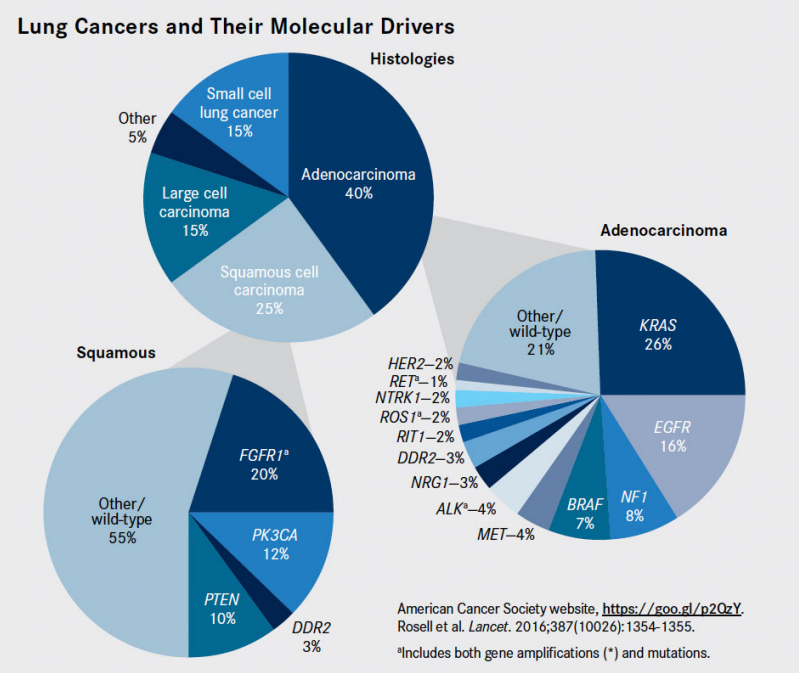

80

TARGETED THERAPIES

Monoclonal antibodies

- Used when receptors are overexpressed on cancer cell surfaces
  - Attach to cell surface receptors to prevent them from interacting with signaling molecules like growth factor receptors
  - Deliver radioactive molecules or toxins to the cell interior by attaching to cellular receptors
  - Activate the body's natural immune response

Small molecule inhibitors

- Target processes within the cell
- Must have sufficiently low molecular weight to enter the cell and interfere with proteins inside and outside the cell
  - Target proteins that code for or inhibit growth

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NAMING TARGETED THERAPIES

MONOCLONAL ANTIBODIES		SMALL MOLECULE INHIBITORS
• -mab (ending letters)	STEM	• -ib (ending letters)
• Source of antibodies	SUBSTEM	• N/A
• Bullseye (target)	TARGET	• Bullseye (target)
• Manufacturer's choice	PREFIX	• Manufacturer's choice
Ri tu xi mab		Ima tin ib

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COMMON SUBSTEMS AND BULLSEYES

- Substems (–mabs ONLY)
  - Identify the source on which the antibodies were generated or cloned
    - -o- Nearly 100% mouse source
    - -xi- Chimeric human mouse
    - -zu- Humanized mouse
    - -u- Fully human (mumab) – ipilimumab

- Bullseyes (targets)
  - -ci-: Cyclin-dependent kinase inhibition
    - Drugs that affect the circulatory or cardiovascular system
  - -tin-: Tyrosine kinase inhibition
  - -tu- or -tum-: drugs used to treat cancer
  - -l(i)-: drugs that impact the immune system (immunomodulators)
  - -zo-: Proteasome inhibition (break down proteins)

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EXAMPLES

MONOCLONAL ANTIBODIES		SMALL MOLECULE INHIBITORS
• -mab: monoclonal antibody	STEM	• -ib: small molecule inhibitor
• -xi: chimeric mouse source	SUBSTEM	• N/A
• -tu: tumor	TARGET	• -tin: Tyrosine kinase inhibition
• Ri: Manufacturer's choice	PREFIX	• Ima: Manufacturer's choice
Ri tu xi mab		Ima tin ib

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TARGETED THERAPIES - CHEMOTHERAPY

Trademark	Generic	Description	Category
Tarceva	erlotinib	tyrosine kinase inhibitor for EGFR (+) tumors	Chemo
Gilotrif	afitinib	tyrosine kinase inhibitor for EGFR (+) tumors	Chemo
Iressa	gefitinib	tyrosine kinase inhibitor for EGFR (+) tumors	Chemo
Tagrisso	osimeritinib	tyrosine kinase inhibitor for EGFR (+) tumors	Chemo
Xalkori	crizotinib	tyrosine kinase inhibitor for ALK (+) tumors	Chemo
Zykadia	ceritinib	tyrosine kinase inhibitor for ALK (+) tumors	Chemo
Alecensa	alectinib	tyrosine kinase inhibitor for ALK (+) tumors	Chemo
Xalkori	crizotinib	tyrosine kinase inhibitor for Ros1 (+) tumors	Chemo
RXDX-101	entrectinib	tyrosine kinase inhibitor for Ros1 (+) tumors	Chemo

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TARGETED THERAPIES - IMMUNOTHERAPY

Trademark	Generic	Description	Category
Avastin	bevacizumab	humanized angiogenesis inhibitor	Immuno
Cyramza	ramucirumab	human angiogenesis inhibitor	Immuno
Portrazza	necitumumab	human antitumor antibody for EGFR (+) tumors	Immuno
Opdivo	nivolumab	human immunomodulator (blocks PD-1)	Immuno
Keturda	pembrolizumab	humanized immunomodulator (blocks PD-1)	Immuno
Tecentriq	atezolizumab	humanized immunomodulator (blocks PD-1)	Immuno
Imfinzi	Durvalumab	human immunomodulator (blocks PD-1)	Immuno
Yervoy	Ipilimumab	human immunomodulator (blocks CTLA-4	Immuno

QUESTIONS

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FABULOUS PRIZES

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COMING UP!

- 12/3/20 Thyroid 2020
  - Melissa Riddle, CTR
  - Jim Hofferkamp, CTR
- 1/7/21 Treatment 2021
  - Wilson Apollo, CTR
  - Jennifer Ruhl, Chair SSDI WG, Public Health Analyst NIH/NCI SEER

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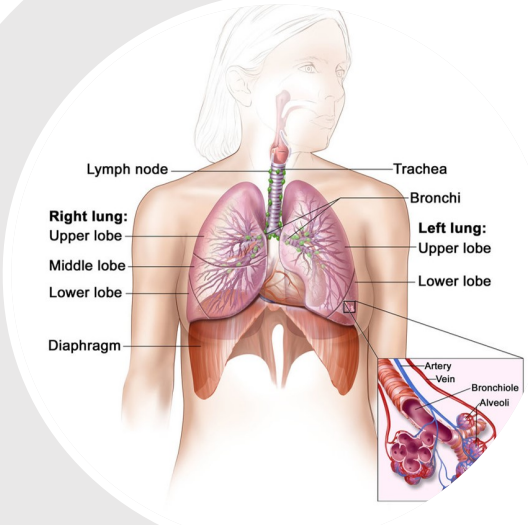
CE'S

- Phrase
- Link
  - https://survey.alchemer.com/s3/5727427/Lung-2020



THANK YOU

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