Society of Thoracic Surgeons

General Thoracic Surgery Database Monthly Webinar

March 13, 2024

STS National Database™
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Agenda

- Welcome and Introduction
- STS Updates
- Education (Ruth Raleigh, GTSD Consultant)
  - Staging Review
- Q&A

STS Updates

- February Training Manual available
  - March training manual to be posted by end of week (3/16)
  - Supplemental Neoadjuvant Training Manual to be posted by end week (3/16)

- GTSD Public Reporting
  - Public Reporting website has been updated in January to include results from the Fall 23 analysis.
  - Next website refresh is scheduled for January 2025 to include results from the Fall 24 analysis.

- Spring 24 Harvest has officially closed as of March 8th
  - Surgery dates 1/1/2021 – 12/31/2023
  - Report posting late Spring/early Summer

- Fall 24 Harvest close is scheduled for September 6th
  - Surgery dates 7/1/2021 – 6/30/2024
  - Opt out date is September 10th

GTSD					
Harvest	Close	Opt-Out	Includes procedures performed through	Report Posting	Comments
Spring 2024	March 8	March 12	December 31,2023	Summer 2024	Star Rating
Fall 2024	September 6	September 10	June 30, 2024	Winter 2024	Star Rating

2024 Harvest Schedule

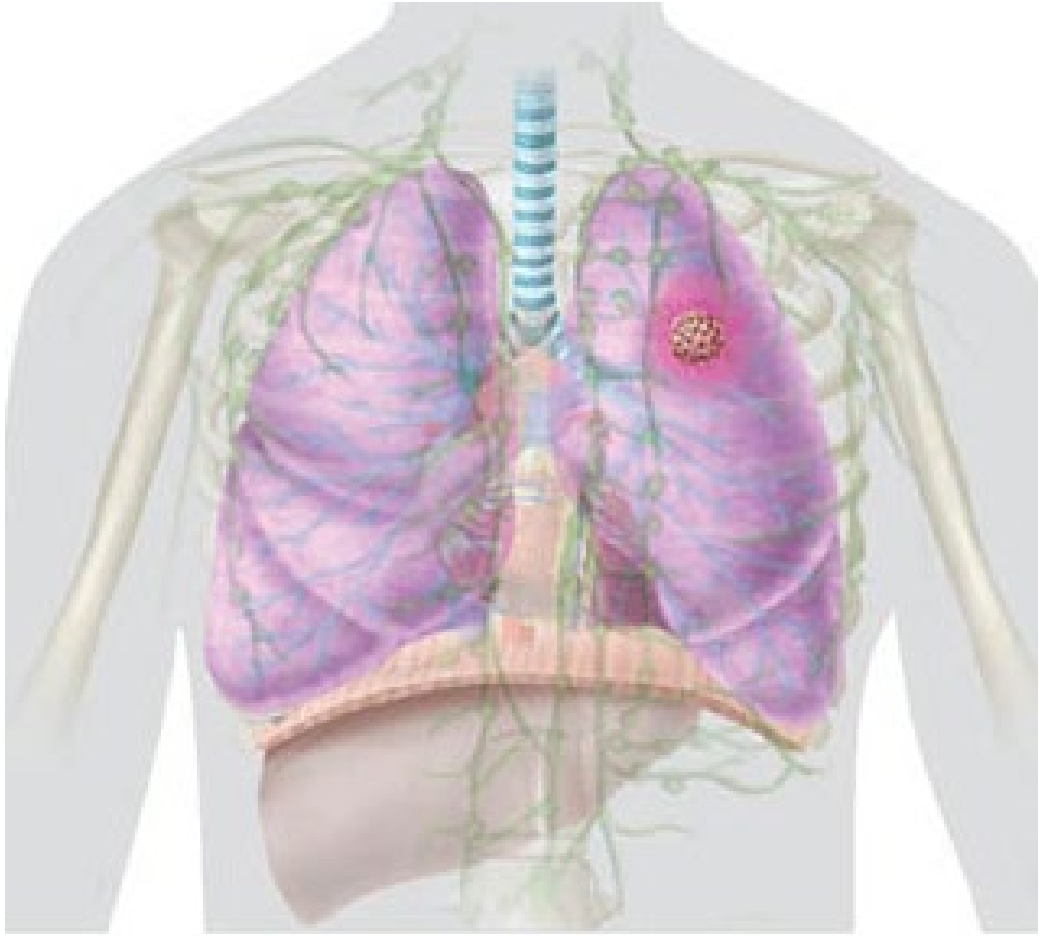
2024 AQO: A Data Managers Meeting

- Join us in Music City: Nashville, Tennessee
- September 11 - 13
- https://www.sts.org/form/sts-aqo-session-proposal-form

STS Education
Ruth Raleigh
(GTSD Consultant)

What is lung cancer staging?

- Lung cancer staging is a way of describing where the lung cancer is located, if or where it has spread, and whether it is affecting other parts of the body.
- Broken down into three parts:
  - T- Tumor
  - N- Node
  - M- Metastasis
- Lung cancer staging can be performed once or twice
  - Clinical Staging – Always performed prior to ANY treatment
  - Pathological Staging – Only performed for patients with therapeutic surgical treatment



Lung Cancer Staging | LUNGevity Foundation

How is clinical stage data used?

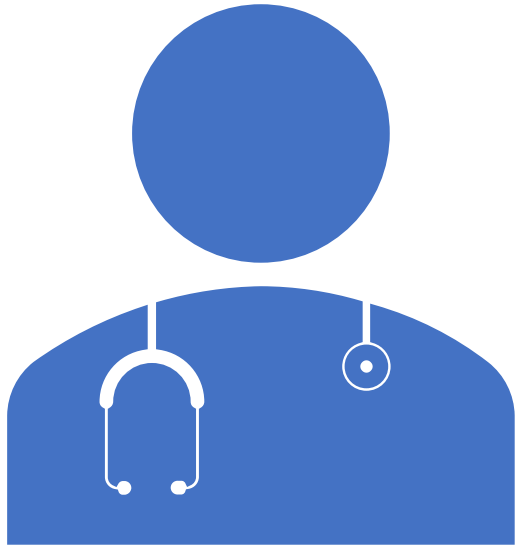
- Determines the best course of treatment for a patient, including eligibility for clinical trials
- Standard Treatment Options:
  - Surgical resection alone
  - Neo-adjuvant or induction therapies followed by surgical resection
  - Surgical resection followed by adjuvant chemotherapy and/or radiation
  - Chemotherapy, immunotherapy or targeted therapies alone
  - Radiation therapy in conjunction with chemotherapy/immunotherapy
  - Radiation therapy alone
  - Palliative care

How Is Clinical Stage Determined?

- CT Scan
- PET/CT Scan or PET Scan
- MRI
- Biopsy
  - EBUS
  - Mediastinoscopy
  - VATS
  - CT-Guided Core Biopsy or Fine Needle Aspiration (i.e. FNA)
  - Bronchoscopy (Traditional, Navigational, Robotic etc.)
  - Thoracentesis

When is Clinical Staging Performed?

- Clinical Stage is determined prior to ANY treatment
- If a patient has repeat imaging studies that occur prior to ANY treatment, use the CT scan closest to the date of first treatment to code clinical T stage



Question 1

Patient X had a CT Scan of the Chest on 1/1 and 3/15 with induction chemotherapy that began on 4/1. They had a CT Chest on 5/30 after completion of induction therapy and prior to surgical resection. Which CT scan is used in the determination of Clinical T-Stage?

A. 1/1

★B. 3/15

C. 5/30

D. All of them

E. None of these

Where is Clinical Stage Documented

- Clinical stage is usually documented in your surgeon's pre-op H&P, but can also be found in oncology or tumor board notes
- Documentation of clinical stage in the EMR is a commission on cancer requirement
- Clinical stage is never included on individual imaging reports. Radiologists do not have a complete picture of the patient's pre-treatment stage from any single study in isolation
- If your surgeon is not documenting clinical stage, discuss this with them. This is their data, they need to provide you with accurate information so that you can represent their work accurately.

Question 2

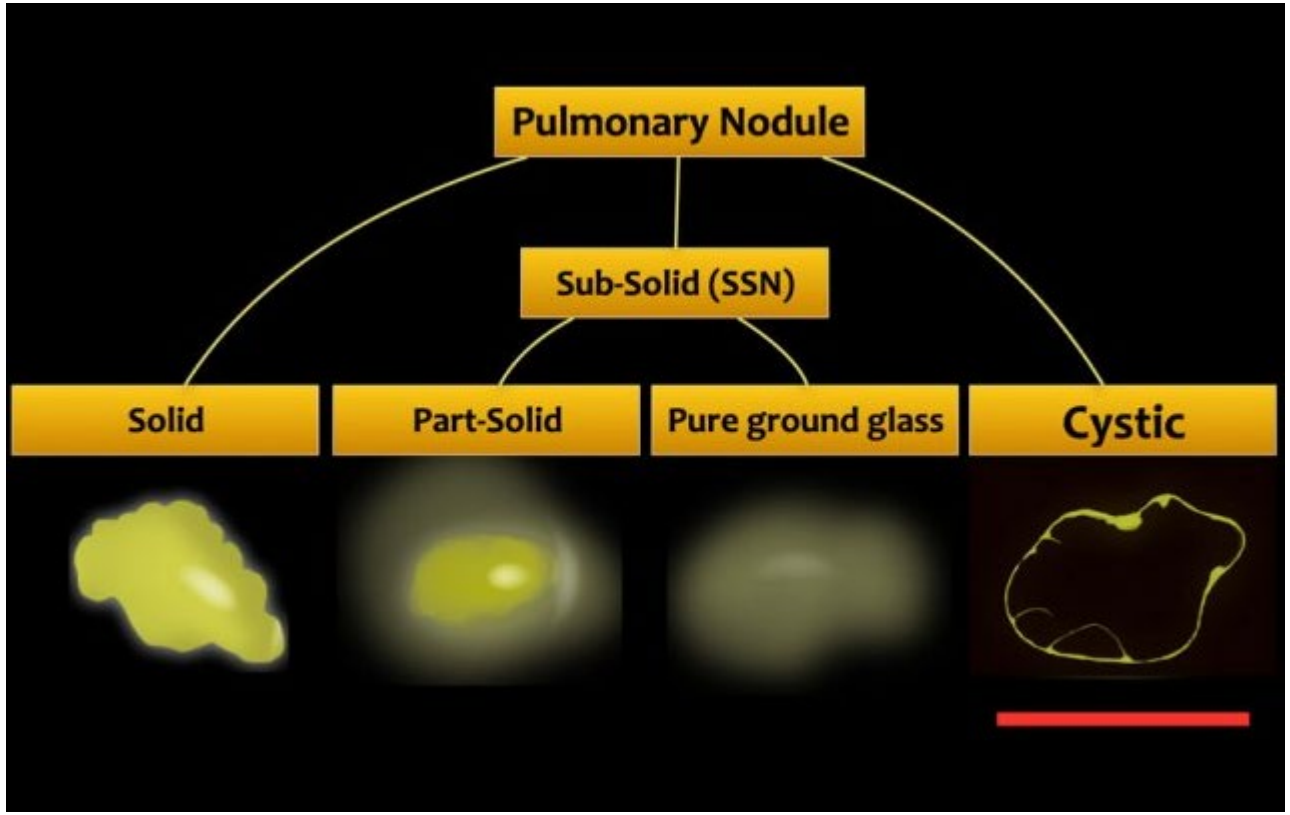
Patient X had a CT scan, PET-CT scan and EBUS. Clinical stage is not documented in any of these reports. Should you leave seq 1810 ‘ClinStageLungTumor’ blank?

A. Yes

★B. No

C. Not sure

Clinical T Stage:
Step One - Determine the type of lesion



https://radiologyassistant.nl/chest/lung-cancer/cystic-lung-cancer

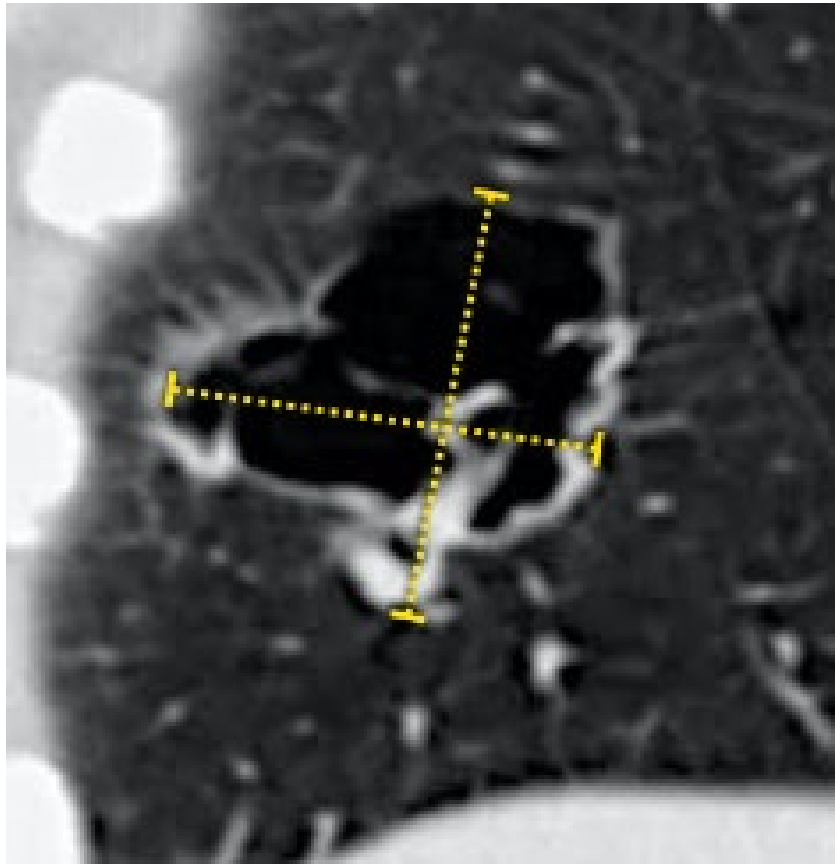
T (primary tumor)	
T0	No primary tumor
Tis	Carcinoma in situ (squamous or adenocarcinoma)
T1	Tumor ≤3 cm
T1mi	Minimally invasive adenocarcinoma
T1a	Superficial spreading tumor in central airways*
T1a	Tumor ≤1 cm
T1b	Tumor >1 but ≤2 cm
T1c	Tumor >2 but ≤3 cm
T2	Tumor >3 but ≤5 cm or tumor involving: visceral pleura,† main bronchus (not carina), atelectasis to hilum†
T2a	Tumor >3 but ≤4 cm
T2b	Tumor >4 but ≤5 cm
T3	Tumor >5 but ≤7 cm or invading chest wall, pericardium, phrenic nerve; or separate tumor nodule(s) in the same lobe
T4	Tumor >7 cm or tumor invading: mediastinum, diaphragm, heart, great vessels, recurrent laryngeal nerve, carina, trachea, esophagus, spine; or tumor nodule(s) in a different ipsilateral lobe

Clinical T Stage – Solid/Cystic Lesions

T-Stage: The size of the primary tumor and if it has grown into adjacent structures

A word on cystic lung cancer

- Despite the unique morphology of cystic lung cancer, staging is performed according to the 'standard' TNM 8th edition, which stages patient groups based on their prognosis.
- Measuring complex cystic lesions on CT may be prone to variability and one may posit that total lesion size (including the sometimes large cystic component) overestimates the total tumor burden, as it is more likely that the invasive solid component relates to the prognosis.
- Identified as an area requiring future investigation



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And a word on separate nodules in the same or different ipsilateral lobe

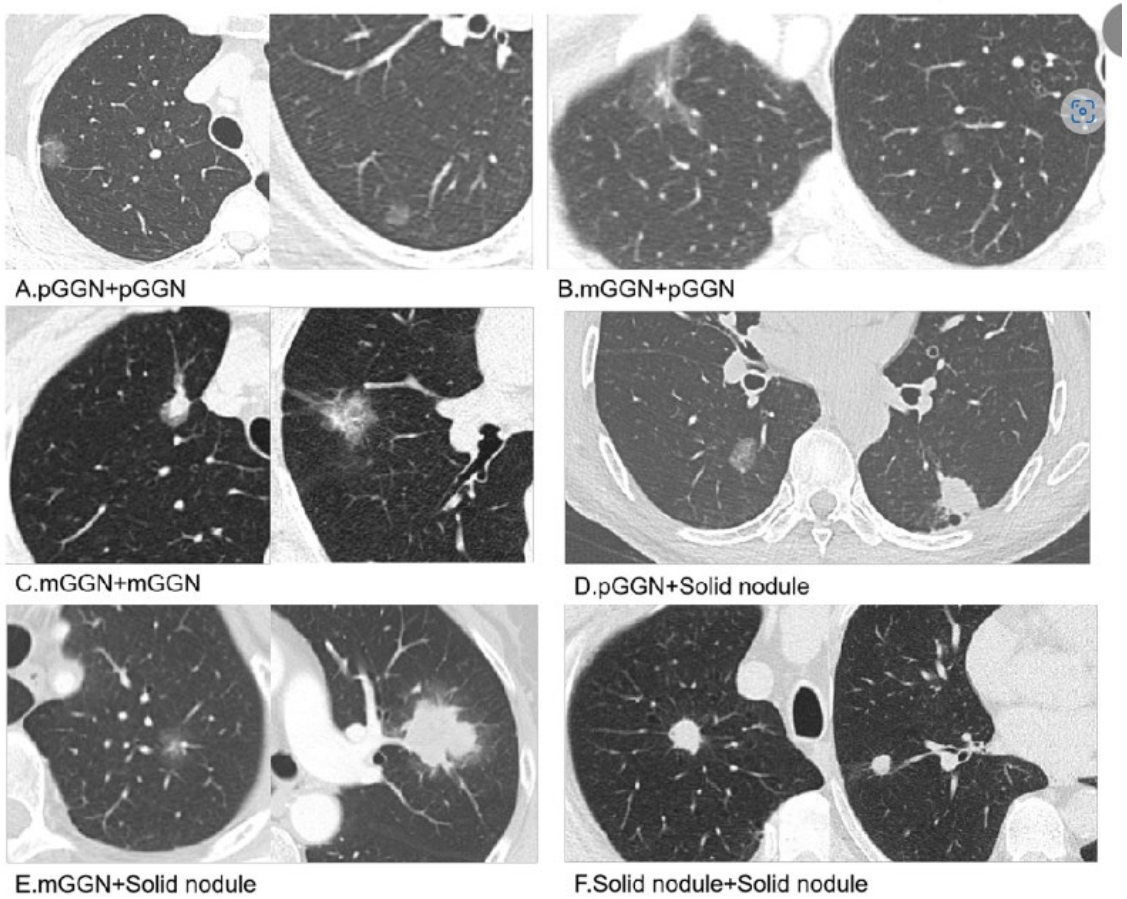
Use your biopsy data and notes to determine if any nodules are presumed benign.

- Solid nodules that have been stable on imaging for greater than 2 years are generally considered benign
- Sub-solid nodules that have been stable on imaging for 5-10 years are generally considered benign

Consider the possibility that your patient may have ‘synchronous primary’ disease meaning that they may have more than one early stage lung cancer occurring at the same time vs cT3 or cT4 disease

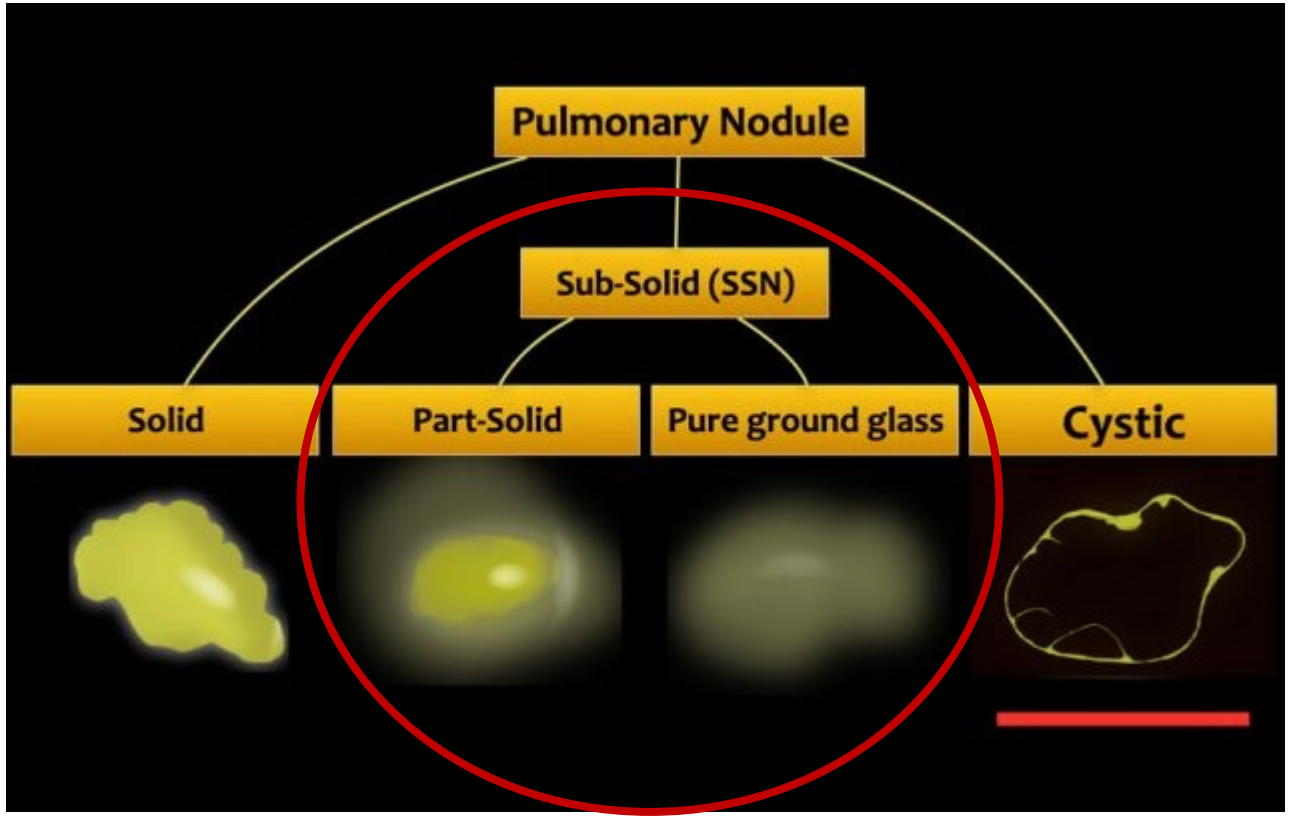
- If this isn’t clear from notes in the EMR, ASK YOUR SURGEON.

Synchronous Primary Adenocarcinomas



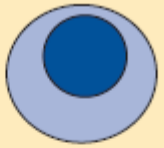
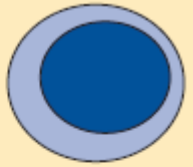
Prognostic Factors for Survival in Multiple Primary Lung Adenocarcinomas: A Retrospective Analysis of 283 Patients - Yuting Zheng, Xiaoyu Han, Ying Wu, Xi Jia, Kailu Zhang, Jun Fan, Heshui Shi, 2023 (sagepub.com)

Clinical T Stage:
Step One - Determine the type of lesion



https://radiologyassistant.nl/chest/lung-cancer/cystic-lung-cancer

Clinical T stage for Part-Solid & Cystic Lesions

cT*	CT image on HRCT						
	Solid part	0 cm	0 cm	≤ 0.5 cm†	0.6–1.0 cm†	1.1–2.0 cm†	2.1–3.0 cm†
	Total tumor size including GG	≤ 0.5 cm	0.6–3.0 cm††	≤ 3.0 cm††	0.6– 3.0 cm††	1.1–3.0 cm††	2.1–3.0 cm††
	Pathologic Differential Diagnosis	AAH†, AIS, MIA	AIS, MIA, LPA	MIA, LPA, AIS	LPA, Invasive AD, MIA	LPA, Invasive AD	Invasive AD
	Clinical Stage*		cTis††	cT1mi††	cT1a	cT1b	cT1c
pT	Invasive part	0 cm	0 cm	≤ 0.5 cm††	0.6–1.0 cm†	1.1–2.0 cm†	2.1–3.0 cm†
	Total tumor size including lepidic growth part	Usually ≤ 0.5 cm†	≤ 3.0 cm††	≤ 3.0 cm††	0.6– 3.0 cm††	1.1–3.0 cm††	2.1–3.0 cm††
	Pathology	AAH	AIS	MIA	Lepidic predominant AD or invasive AD with lepidic component	Invasive AD with lepidic component or lepidic predominant AD	Invasive AD with lepidic component
	Pathologic Stage		pTis††	pT1mi††	pT1a	pT1b	pT1c

https://www.iaslc.org/research-education/publications-resources-guidelines/poster-8th-edition-tnm-classification-lung

It's always in the small print…

Proposed eighth edition of the clinical (cT) and pathologic T (pT) descriptor classification of small (≤3 cm) lung adenocarcinomas (ADs) with a ground glass (GG) and lepidic component by computed tomography (CT) and pathologic diagnosis.* The CT images on high-resolution CT (HRCT) scans can be suggestive of pathologic diagnoses, but they are not specific as GG opacities do not always correspond to lepidic patterns and solid components do not always correlate with invasive components. However, there is a general correlation between GG on CT scans and lepidic pattern microscopically, as well as between solid patterns on CT scans and invasive patterns histologically. A pathologic differential diagnosis is listed for each of the proposed possibilities on CT scans. Final pT staging of these tumors requires complete pathologic examination in resected specimens. (*Tis* [*AIS*]) cT: These lesions typically show pure GG nodules (GGNs) measuring 3 cm or less; however, pure GGNs can also be minimally invasive AD (MIA) or invasive AD.‡‡ pT: These tumors show pure lepidic growth without invasion, measuring 3 cm or less.‡‡ If the pure GGN or lepidic predominant nodule is larger than 3.0 cm, it is classified as lepidic predominant AD (LPA) and should be staged as T1a (see text for explanation). (*T1mi*) cT: MIA usually shows a GG predominant nodule 3 cm or smaller with a solid component that should appear 0.5 cm or smaller.†,‡‡ Although some MIAs have a larger solid component on CT scans because of other benign components such as a scar or organizing pneumonia, these cases can only be diagnosed by pathologic examination. pT: MIA histologically shows an LPA nodule measuring 3 cm or less with an invasive component measuring 0.5 cm or less.†,‡‡ (*T1a*) cT: GG predominant nodules measuring 3.0 cm or less with a solid component measuring 0.6 to 1.0 cm.† pT: When an LPA measuring 3.0 cm or less has an invasive component measuring 0.6 to 1.0 cm, it is classified as pT1a.† (*T1b*) cT: GG predominant nodules measuring 3.0 cm or less with a solid component measuring 1.1 to 2.0 cm.† pT: When an LPA measuring 3.0 cm or less has an invasive component measuring 1.1 to 2.0 cm, it is classified as pT1b.† (*T1c*) cT: GG predominant nodules measuring 3.0 cm or less with a solid component measuring 2.1 to 3.0 cm are classified as T1c. pT: When an invasive AD with a lepidic component measuring 3.0 cm or less has an invasive component measuring 2.1 to 3.0 cm, it is classified as T1c.† Source: Travis et al, *J Thorac Oncol.* 2016;11:1204-1223.

*All of the cT categories are presumptive, assuming the GG versus solid components correspond to lepidic versus invasive components, respectively, on pathologic examination of a resected specimen. cT category applying rule 4 of the TNM classification (when in doubt, opt for the lesser category).

†In cases with multiple foci of solid or invasive components, see text for estimation of invasive size.

‡Size is not the only distinguishing feature between atypical adenomatous hyperplasia (AAH) and AD in situ (AIS).

‡‡If a pure GGN by CT or pure lepidic AD by pathologic pattern is larger than 3 cm, it should be classified as T1a. Similarly, if a GG predominant part-solid nodule has a solid component 0.5 cm or less, or if a tumor meets pathologic criteria for MIA but the total size is larger than 3 cm, it should be staged as cT1a or pT1a, respectively.

††If the total tumor size is larger than 3.0 cm, depending on the invasive size these categories can be classified as T1a, T1b or T1c.

Clinical N Stage

Clincal N Stage data is often obtained from:

- CT
- PET
- Mediastinoscopy
- EBUS
- Other bronchoscopic biopsy of lymph nodes

All lymph nodes greater than 1 cm on CT or PET/CT are considered positive. All PET positive nodes are considered positive. However, Pathology results overrule radiological findings.

Question 3

PET/CT scan obtained on 1/15/2023 is positive for lymph nodal metastases only at station 10. An EBUS is performed on 1/25/2023. The pathology for station 10 returns negative. How would you code Seq 1820: ‘ClinStageLungN’?

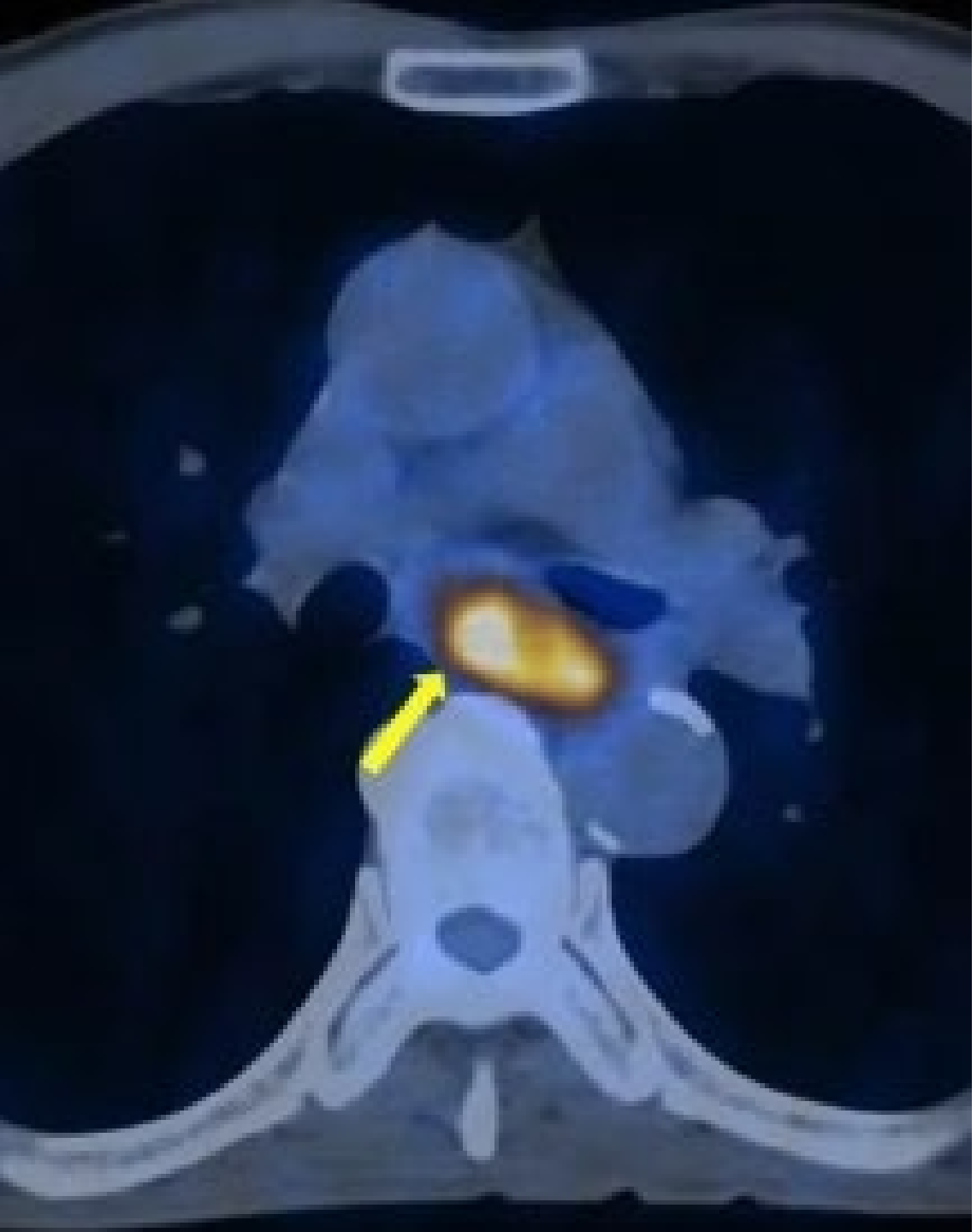
A. N1

B. N2

C. N3

★ D. N0

E. I’m not sure



Question 4

Patient MB had a single EBUS positive station 7 lymph node on 3/15. They subsequently had neo-adjuvant immunotherapy. The most recent PET shows no positive lymph nodes. How would you code Seq 1820: 'ClinStageLungN'?

A. N1

★B. N2

C. N3

D. N0

E. I'm not sure

Question 5

My surgeon's pre-op H&P says the patient clincal stage is cT2a cN0 cM0, but they have two lymph nodes that are larger than 1cm on CT and PET positive. I can't find a biopsy report that indicates these lymph nodes were negative for cancer. What do I do?

A. Ask my Surgeon
B. Submit an FAQ
C. Code positive lymph nodes
D. Log-off for the day and binge netflix

Overall Stage

A patient's overall stage is based on various combinations of T, N and M.

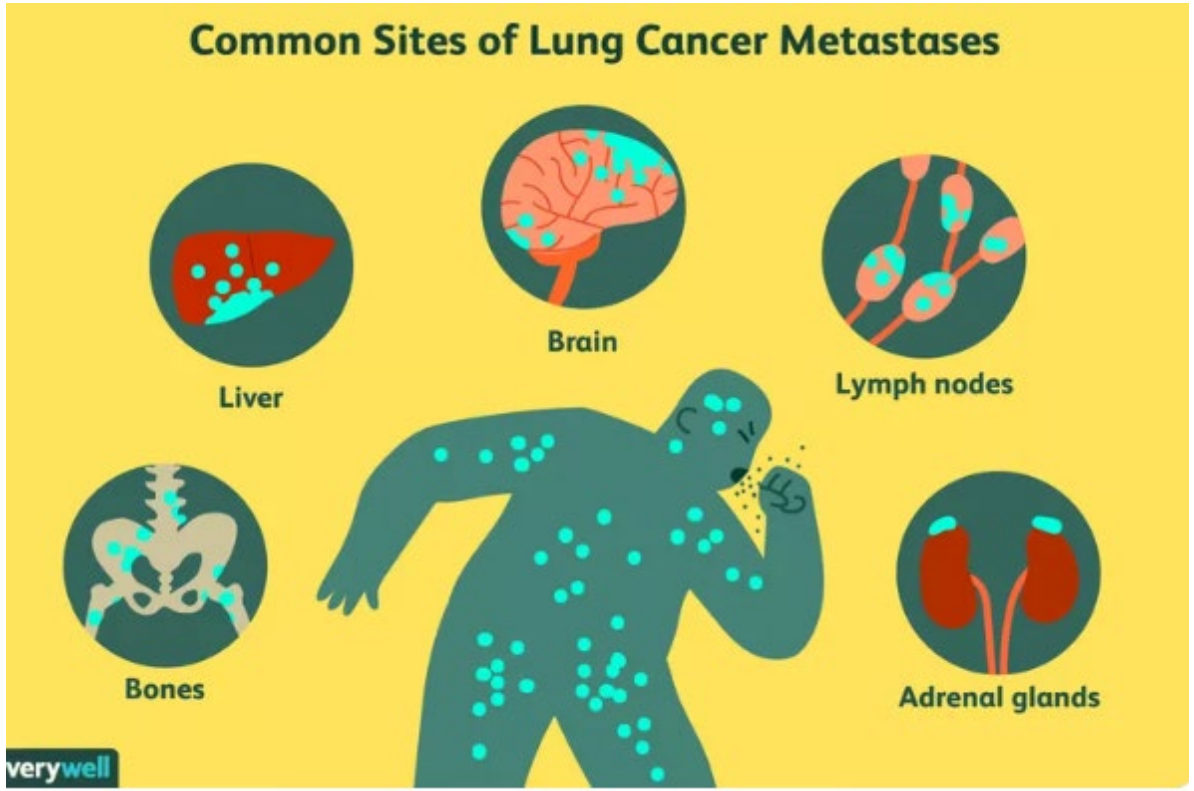
Your surgeon may use this terminology in notes, it is not specific enough for you to determine clinical T,N,M without other information.

T/M	Subcategory	N0	N1	N2	N3
T1	T1a	IA1	IIB	IIIA	IIIB
	T1b	IA2	IIB	IIIA	IIIB
	T1c	IA3	IIB	IIIA	IIIB
T2	T2a	IB	IIB	IIIA	IIIB
	T2b	IIA	IIB	IIIA	IIIB
T3	T3	IIB	IIIA	IIIB	IIIC
T4	T4	IIIA	IIIA	IIIB	IIIC
M1	M1a	IVA	IVA	IVA	IVA
	M1b	IVA	IVA	IVA	IVA
	M1c	IVB	IVB	IVB	IVB

The eighth edition TNM stage classification for lung cancer: What does it mean on main street? (jtcvs.org)

Clinical M Stage: Don’t Assume

- You cannot assume cM0 for every patient
- The overwhelming majority of patients will be cM0.
- Read your brain imaging reports and complete PET scan result. Metastatic disease is primarily captured on these studies.
- If something is noted to be positive on PET, look for the work-up of those findings. If there is no work-up, ask your surgeon.



Clinical M Stage

- A patient with ‘oligometastic’ disease, which is defined as ‘A type of metastasis in which cancer cells from the original (primary) tumor travel through the body and form a small number of new tumors (metastatic tumors) in one or two other parts of the body’, is still sometimes a good candidate for a therapeutic lung resection in conjunction with treatment to the metastatic sites.
- Patients with metastasis to the contralateral lung are considered to have cM1a disease. Again, important to understand if you have synchronous primaries vs metastatic disease

A Final Word on Clinical Staging

- Your surgeon has always (at least mentally) clinically staged patients prior to elective, therapeutic lung resections for lung cancer
- Encourage them to document it in a place where you can find it!
- Clinical staging from imaging reports and test results takes lots of practice, ask your surgeon to confirm that you are correctly abstracting their cases every time you are unsure

Upcoming GTSD Webinars

Monthly Webinars

- April 10 @ 2:30pmET (1:30pm CT)
- May 8 @ 2:30pmET (1:30pm CT)
- June 12 @ 2:30pmET (1:30pm CT)

Open Discussion

Please use the Q&A Function.

We will answer as many questions as possible.

We encourage your feedback and want to hear from you!

Contact Information

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