2026 California Thoracic Society Annual Educational Conference

& Chronic Obstructive Pulmonary Disease Symposium

Thursday March 12, 2026-Sunday March 15, 2026

Earn up to 19 CME/CEU/MOC Credits

Jointly Provided by AKH Inc., Advancing Knowledge in Healthcare and the California Thoracic Society

PORTOLA HOTEL & SPA
AT MONTEREY BAY

Thursday March 12, 2026 (6 CME/CEU/MOC Credits)
COPD Symposium
Friday March 13, 2026 (6.5 CME/CEU/MOC Credits):
Advances in Interventional Pulmonary, Remote Monitoring in Pulmonary and Sleep Medicine, Approach to Symptom Management in Chronic Lung Disease and Critical Care
Saturday March 14, 2026 (6.5 CME/CEU/MOC Credits)
Sepsis and Shock, Extracorporeal Membrane Oxygenation, Inpatient Pulmonary Complications of Cancer Care
Sunday March 15, 2026
Fellow and Resident Track Symposium

California Thoracic Society
ATS Chapter Serving California and Arizona

AKH INC.
ADVANCING KNOWLEDGE IN HEALTHCARE

California Thoracic Society
Annual Conference
March 12-15, 2026
Portola Hotel and Spa, Monterey, CA

Friday March 13, 2026

Advances in Interventional Pulmonary

8:00 am – 8:10 am: Welcome and Introduction

8:10 am – 8:55 am: Keynote Address – Evolution of Bronchoscopy in Diagnosing Lung Nodules

- **Christine Argento, MD (Johns Hopkins) -** This speaker will discuss the recent advances in bronchoscopy from radial EBUS, to electromagnetic navigation, to robot technologies, and how advancement has improved lung nodule diagnosis.

8:55 am – 9:20 am: Implications of the new TNM9 staging for lung cancer

- **Colleen Channick, MD (UC Los Angeles) -** This speaker will discuss the new TNM staging system, how staging is currently performed, and how to approach staging in the patient with suspected lung cancer.

9:20 am – 9:45 am: Management of Central Airway Obstruction

- **Raed Alalawi, MD (Arizona-Phoenix)-** This speaker will discuss how interventional pulmonary practitioners can manage and treat central airway obstruction.

9:45 am – 10:10 am: The Changing Landscape of Pleural Disease Management

- **Joon Chang, MD (Stanford) -** This speaker will discuss advances in management of pleural disease by the interventional pulmonologist including when to use an intrapleural catheter, and when to use

10:10 am – 10:20 am: Question and Answer

10:20 am – 10:50 am: Break

Remote Monitoring in Lung Disease and Sleep Medicine

10:50 am – 11:15 am: Developing a home spirometry program

- **Steven Hays, MD (UC San Francisco) -** This speaker will discuss how to approach the development of a home spirometry program to monitor lung disease, how to use digital health technologies to integrate results into the EHR.

11:15 am – 11:40 am: Home Non-Invasive Ventilator Monitoring

- **Christal Hawkins, RRT (UC San Diego) -** This speaker will review how to monitor home non-invasive ventilators for compliance and for adequate control of sleep disordered breathing.

11:40 am – 11:55 am: Pro: Virtual Pulmonary Rehabilitation is Ready for Prime Time

- **Aimee Kizziar, RRT (UC Davis) -** This speaker will argue in favor of virtual pulmonary rehabilitation programs.

11:55 am – 12:10 pm: Con: Virtual Pulmonary Rehabilitation is not ready for Prime Time

- **Julia Rigler, BA. RRT (UC San Francisco) -** This speaker will argue against virtual pulmonary rehabilitation programs.

12:10 pm – 12:20 pm: Question and Answer

12:20 pm – 1:00 pm: Awards Ceremony

1:00 pm – 2:00 pm: Lunch

Hands On Session:

2:00 pm – 3:00 pm: Robotic Bronchoscopy **Raed Alalawi, MD (Arizona-Phoenix) & Joon Chang, MD (Stanford)** Cough Monitoring **Lauren Eggert, MD (UCSF)**; Endobronchial Ultrasound **Pranjal Patel, MD (Stanford)**; Home NIV **Krystle Leung, MD (Stanford)**

3:00 pm – 3:20 pm: Break

Approach to Symptom Management in the Pulmonary Patient

3:20 pm – 3:45 pm: Addressing the Unmet Needs of Refractory Chronic Cough

- **Krishna Sundar, MD FCCP FAASM ATSF (UC Davis) -** This speaker will discuss the etiology behind refractory chronic cough and the treatment approaches for management

3:45 pm – 4:10 pm: Frailty in Pulmonary and Critical Care Medicine

- **Jonathan Singer, MD MPH (UC San Francisco) -** This speaker will discuss the concept of frailty and how it impacts health in patients with lung disease. The speaker will also discuss how frailty can change as lung disease is treated.

4:10 pm – 4:35 pm: Palliative Care for the Patient with Chronic Lung Disease

- **Grace Amadi, MD (UC Davis) -** This speaker will discuss how palliative care teams can benefit patients with chronic various lung disease including ILD, COPD, and pulmonary hypertension.

4:35 pm – 5:00 pm: Palliative Care for the Patient with Critical Illness

- **B. Corbett Walsh, MD, MBE (UC Los Angeles) -** This speaker will discuss how palliative care teams can benefit the inpatient with advancing lung disease, the importance of advance care planning, and palliative care in the intensive care unit.

5:00 pm – 5:10 pm: Question and Answer

5:30 pm – 7:00 pm: Women in Pulmonary, Critical Care, and Sleep Medicine (NON-CME) – Food and beverages will be served

Dr. Channick is a Professor of Medicine at the David Geffen School of Medicine at UCLA, where she specializes in pulmonary interventional care. She serves as the Chief of the Section of Interventional Pulmonology at UCLA and the Program Director for the UCLA IP Fellowship. Dr. Channick earned her MD from Harvard Medical School and completed her residency, pulmonary and critical care fellowship, and interventional pulmonology training at UCSD Medical Center. From 2005 to 2009, she directed the UCSD Interventional Pulmonary Program, and in 2009, she established and led the Massachusetts General Hospital Interventional Pulmonary Program before joining UCLA in 2018. Her contributions extend to the American Thoracic Society, the American College of Chest Physicians, and the American Association of Bronchology and Interventional Pulmonology (AABIP), where she has played a key role in educating healthcare providers at local, national, and international levels. As a member of the AABIP Board of Directors and the Chair of the AABIP Education Committee, she designs, implements, and evaluates educational initiatives that shape the field of interventional pulmonology. Additionally, she is a member of the CHEST Bronchoscopy Domain Task Force.

Implications of the new TNM9 Staging for Lung Cancer

Colleen L. Channick, MD

Chief, Interventional Pulmonology Section

UCLA Medical Center

Clinical Professor of Medicine

David Geffen School of Medicine at UCLA

Disclosures

- I had the following relationships with ACCME defined ineligible companies:
  - **Intuitive, Inc.**
- I **WILL NOT** discuss off-label use and/or investigational use of any drugs or devices.

Learning Objectives

- Describe the structural changes in TNM-9
- Understand implications for EBUS and mediastinal staging
- Apply TNM-9 to real-world lung cancer cases

Why is Staging Important?

- Consistent nomenclature for the anatomic extent of a tumor
- Aid clinician in planning treatment
- Give some indication of prognosis
- Assist in evaluating results of treatment
- Facilitate exchange of information between providers
- Contribute to investigation of cancer

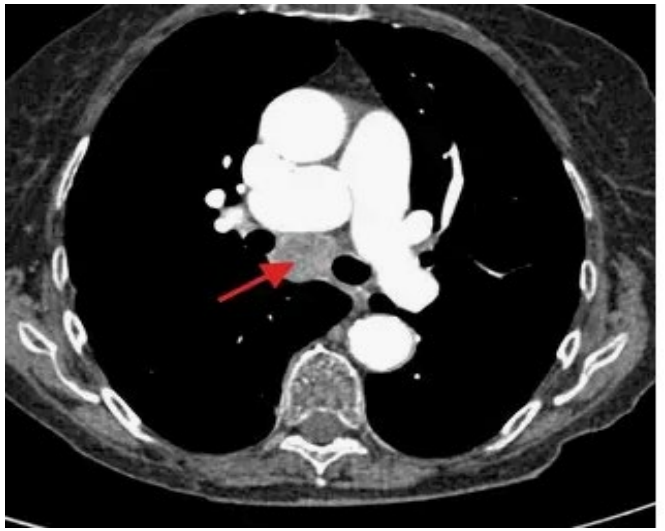
General Structure of TNM System

- T Tumor size, locoregional invasion, endobronchial location, presence of separate tumor nodules
- N Absence or presence and extent of regional lymph node metastasis
- M Absence or presence of intrathoracic or distant metastasis

- "c": clinical staging: history and physical, imaging (CT/PET scans) or invasive staging techniques including mediastinoscopy
- "p": pathological staging: determined by resection

What stage is this—and why does it matter?

- 64-year-old male, 40 pack-years
- 3.5 cm RUL mass, mediastinal LAD on CT
  - EBUS-guided biopsy of 4R and 7 both + adenocarcinoma
- What stage is this patient:
  - Based on 8th edition?
  - Based on 9th edition?
  - What is the difference in 5-year survival?



2nd vs 9th Edition TNM Classification for Lung Cancer

2nd Edition 1974

Stage I

- $T_1\ N_0\ M_0$
- $T_2\ N_0\ M_0$
- $T_1\ N_1\ M_0$

Stage II

- $T_2\ N_1\ M_0$

Stage III

- T_3 — any N, any M
- N_2 — any T, any M
- M_1 — any T, any N

9th Edition 2025

9th Edition TNM Descriptors and Stages

T/M	Categories and Descriptors	N0	N1	N2		N3
				N2a	N2b	
T1	T1a ≤1 cm	IA1	IIA	IIB	IIIA	IIIB
	T1b >1 to ≤2 cm	IA2	IIA	IIB	IIIA	IIIB
	T1c >2 to ≤3 cm	IA3	IIA	IIB	IIIA	IIIB
T2	T2a Visceral pleura / central invasion	IB	IIB	IIIA	IIIB	IIIB
	T2a >3 to ≤4 cm	IB	IIB	IIIA	IIIB	IIIB
	T2b >4 to ≤5 cm	IIA	IIB	IIIA	IIIB	IIIB
T3	T3 >5 to ≤7 cm	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Invasion	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Same lobe separate tumor nodules	IIB	IIIA	IIIA	IIIB	IIIC
T4	T4 >7 cm	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Invasion	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Ipsilateral separate tumor nodules	IIIA	IIIA	IIIB	IIIB	IIIC
M1	M1a Contralateral tumor nodules	IVA	IVA	IVA	IVA	IVA
	M1a Pleural / pericardial effusion, nodules	IVA	IVA	IVA	IVA	IVA
	M1b Single extrathoracic metastasis	IVA	IVA	IVA	IVA	IVA
	M1c1 Multiple metastases in 1 organ system	IVB	IVB	IVB	IVB	IVB
	M1c2 Multiple metastases in >1 organ systems	IVB	IVB	IVB	IVB	IVB

Changes from 7th to 8th Edition: *Major T Changes*

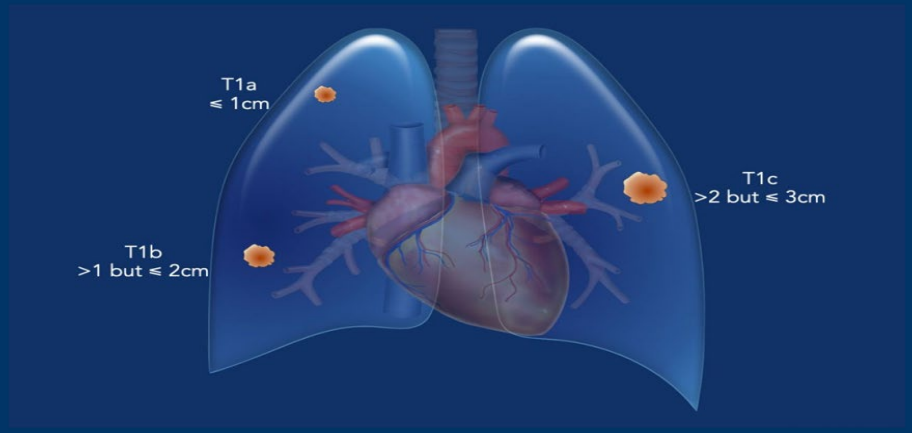
- Subdivision of tumor categories based on size
- Differentiation between local intrathoracic and distant metastatic disease
- Recategorize malignant pleural and pericardial effusions from stage III to IV
- Reclassify separate tumor nodules in same lung and lobe from T4 to T3
- Reclassify separate tumor nodules in same lung but different lobe from M1 to T4

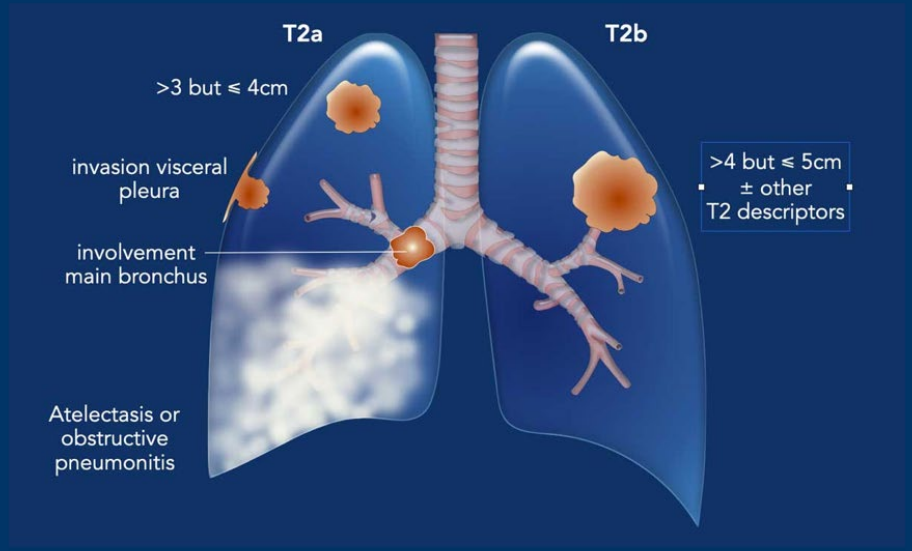
Changes From 8th to 9th Edition:

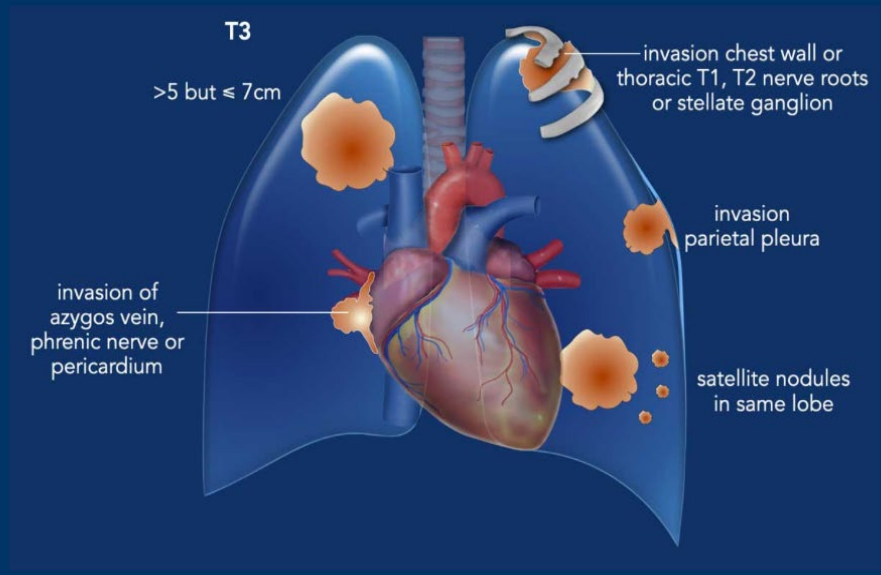
- No changes were implemented for the T-component

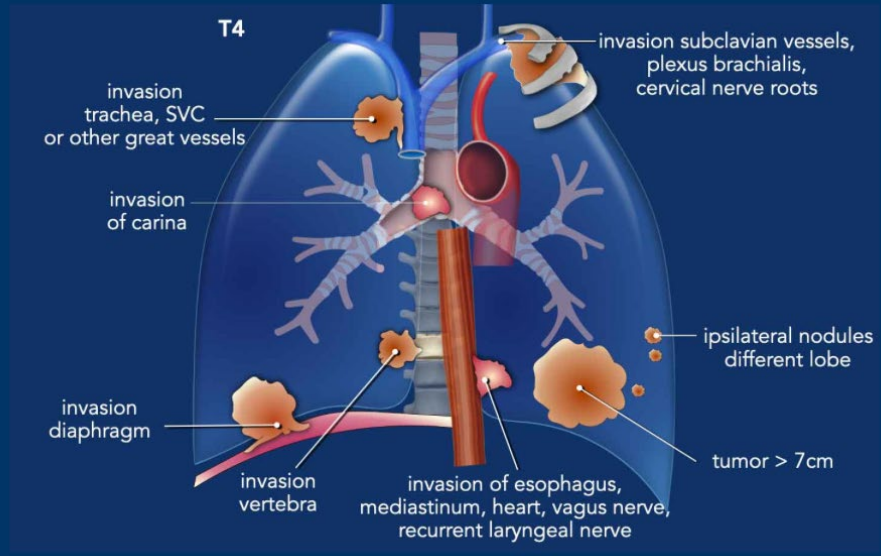
T: Primary tumor	
Tx	Primary tumor cannot be assessed[a]
T0	No evidence of primary tumor
Tis	Carcinoma *in situ*[b]
T1	Tumor surrounded by lung or visceral pleura, or in a lobar or more peripheral bronchus
T1mi	Minimally invasive adenocarcinoma[d]
T1a	Tumor ≤1 cm in greatest dimension
T1b	Tumor >1 cm but ≤2 cm in greatest dimension
T1c	Tumor >2 cm but ≤3 cm in greatest dimension
T2	Tumor with any of the following features:
T2a	• tumor >3 cm but ≤4 cm in greatest dimension; • invades visceral pleura; • invades an adjacent lobe; • involves main bronchus (up to but not including the carina) or is associated with atelectasis or obstructive pneumonitis extending to the hilar region, involving either part of or the entire lung
T2b	Tumor >4 cm but ≤5 cm in greatest dimension
T3	Tumor with any of the following features: • tumor >5 cm but ≤7 cm in greatest dimension; • invades parietal pleura or chest wall; • invades pericardium, phrenic nerve, or azygos vein;[e] • invades thoracic nerve roots (i.e. T1, T2) or stellate ganglion; • separate tumor nodule(s) in the same lobe as the primary
T4	Tumor with any of the following features: • tumor >7 cm in greatest dimension; • invades mediastinum, thymus, trachea, carina, recurrent laryngeal nerve, vagus nerve, esophagus or diaphragm; • invades heart, great vessels (aorta, superior/inferior vena cava, intrapericardial pulmonary arteries/veins), supra-aortic arteries, or brachiocephalic veins; • invades subclavian vessels, vertebral body, lamina, spinal canal, cervical nerve roots, or brachial plexus (i.e. trunks, divisions, cords, or terminal nerves); • separate tumor nodule(s) in a different ipsilateral lobe than that of the primary

T-staging


T1a
≤ 1cm
T1b
>1 but ≤ 2cm
T1c
>2 but ≤ 3cm


T2a
T2b
>3 but ≤ 4cm
invasion visceral pleura
involvement main bronchus
Atelectasis or obstructive pneumonitis
>4 but ≤ 5cm
± other
T2 descriptors


T3
>5 but ≤ 7cm
invasion chest wall or thoracic T1, T2 nerve roots or stellate ganglion
invasion parietal pleura
invasion of azygos vein, phrenic nerve or pericardium
satellite nodules in same lobe


T4
invasion subclavian vessels, plexus brachialis, cervical nerve roots
invasion trachea, SVC or other great vessels
invasion of carina
ipsilateral nodules different lobe
invasion diaphragm
tumor > 7cm
invasion vertebra
invasion of esophagus, mediastinum, heart, vagus nerve, recurrent laryngeal nerve

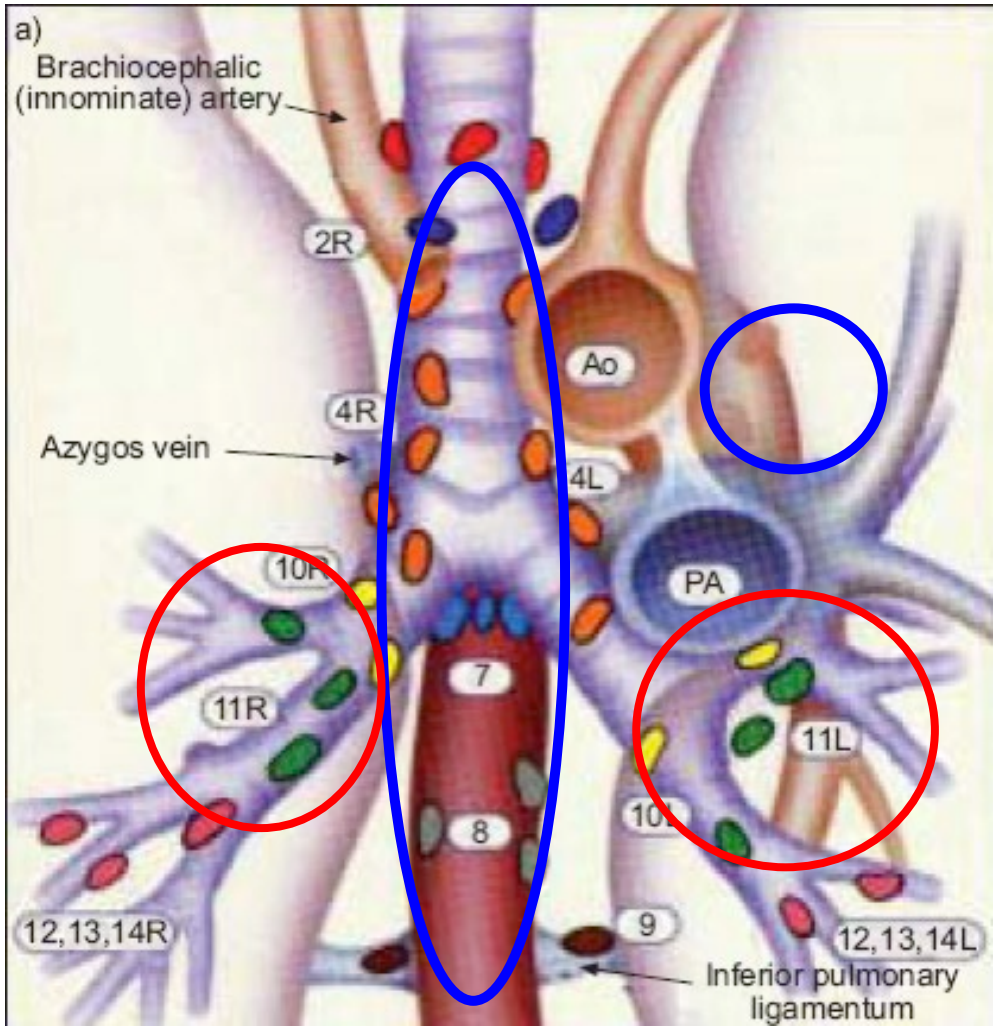
Changes from 8th to 9th Edition: *Major N Changes*

- T category— No changes
- N category — N2 subdivided into
  - N2a- Single-station N2
  - N2b- Multistation N2
- M category
  - M1c1— multiple extrathoracic mets within a single organ system
  - M1c2 — multiple extrathoracic mets across several organ systems

Thoracic Lymph Node Stations

Mediastinal = blue

Hilar = red



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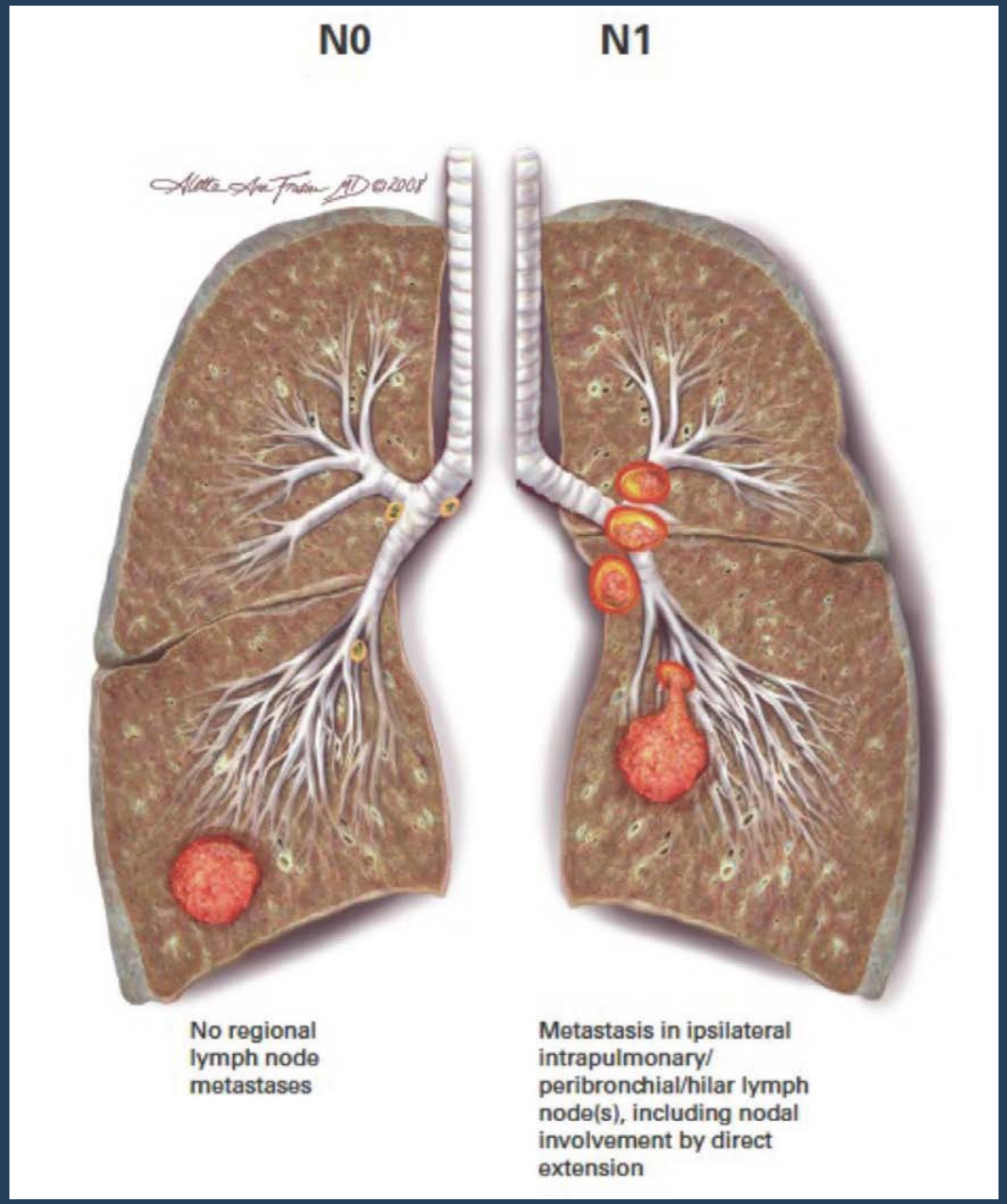


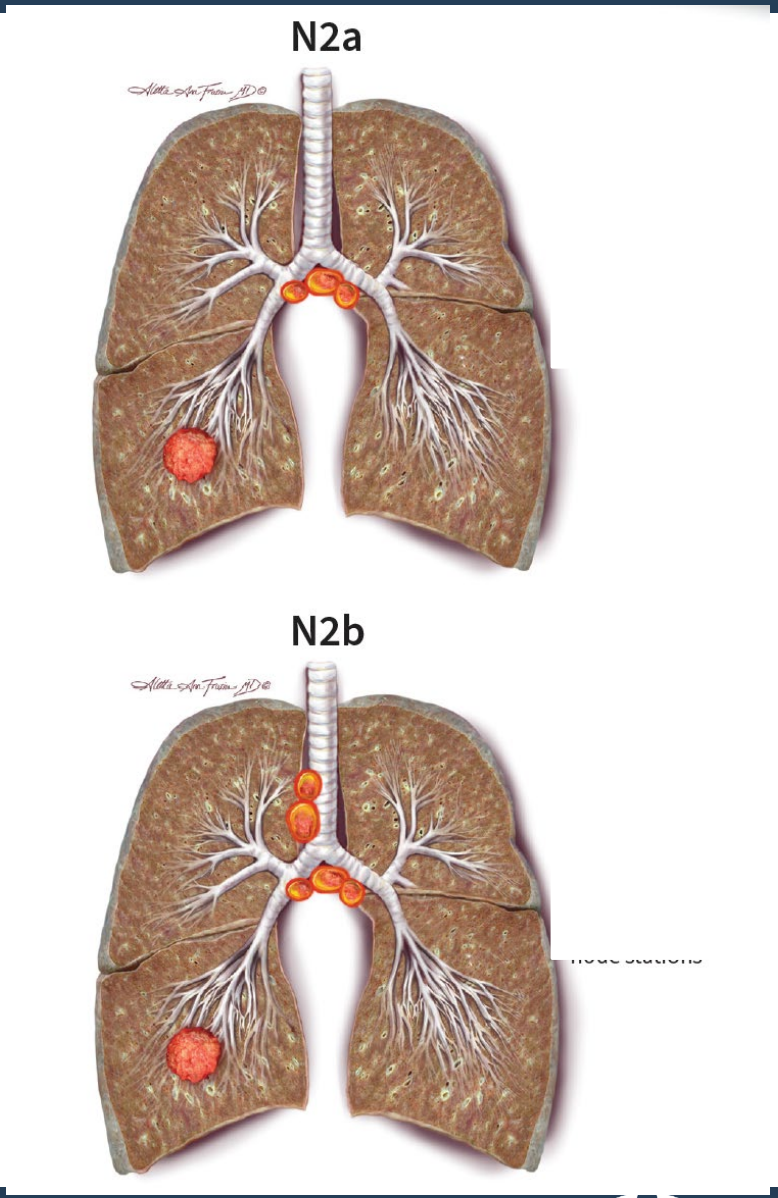
IASLC Staging Manual 2024


N2
Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s), including "skip" metastasis without N1 involvement
Metastasis in ipsila
mediastinal and/or
subcarinal lymph
node(s) associated
with N1 disease

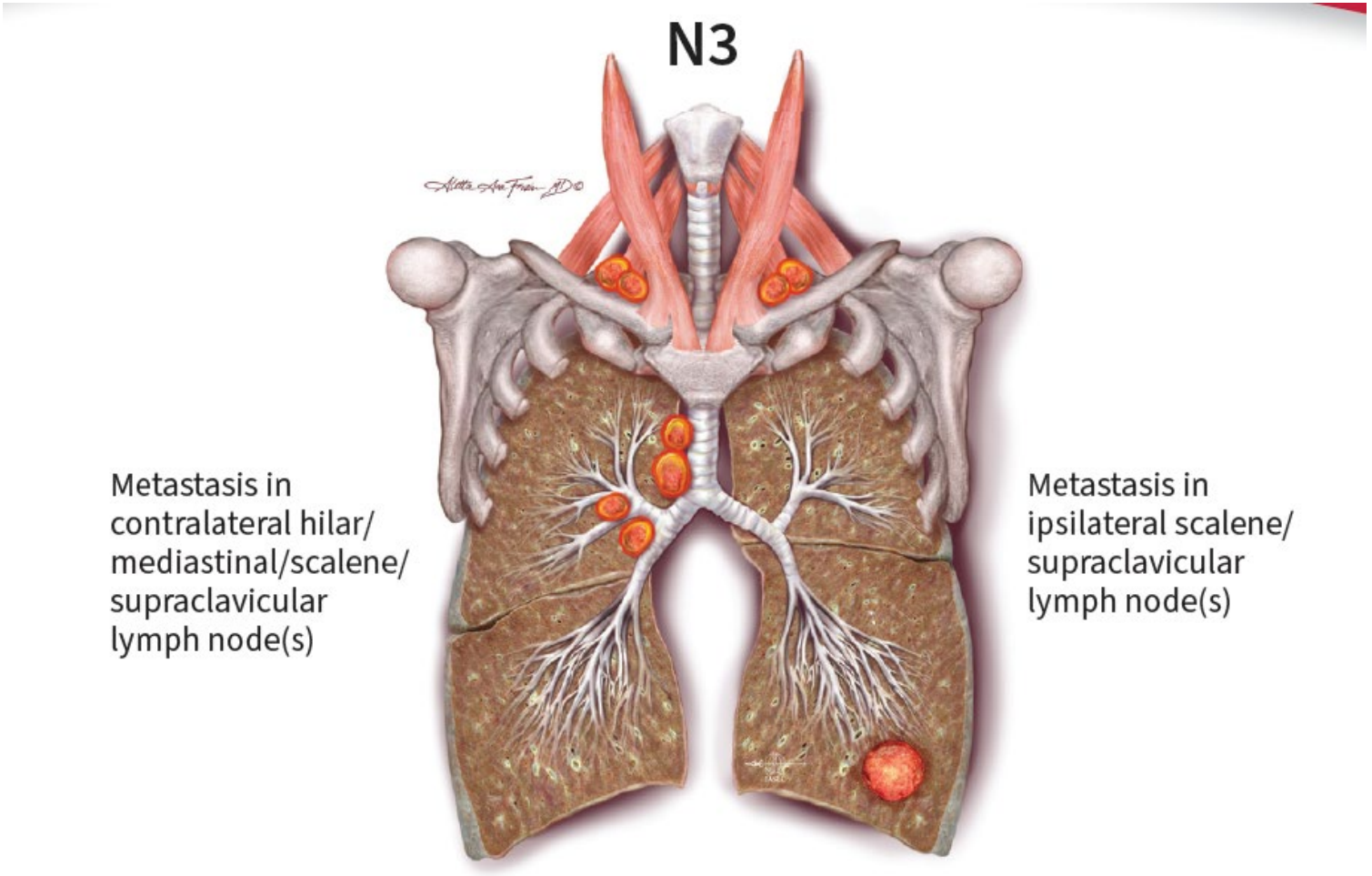
New in 9th Edition

N2a = Mets to a single ipsilateral mediastinal or subcarinal LN **STATION**

N2b = Mets to multiple ipsilateral mediastinal and/or subcarinal LN **STATIONS**



No Changes to 9th Edition



Changes from 8th to 9th Edition: *Major M Changes*

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- N category — N2 subdivided into
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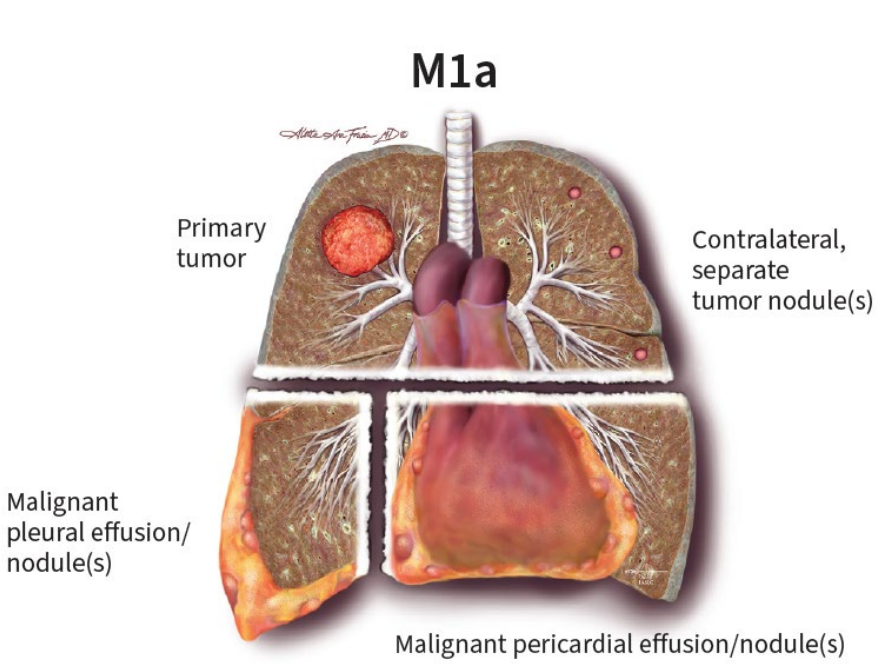
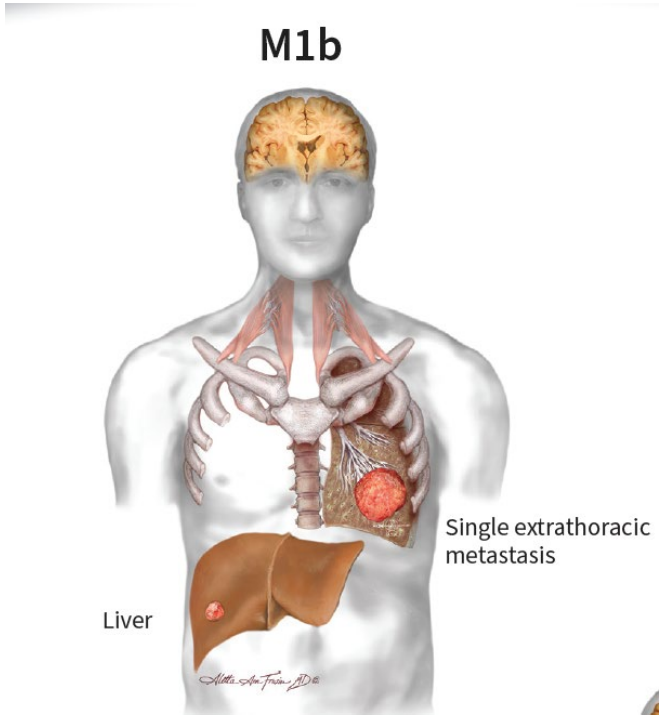
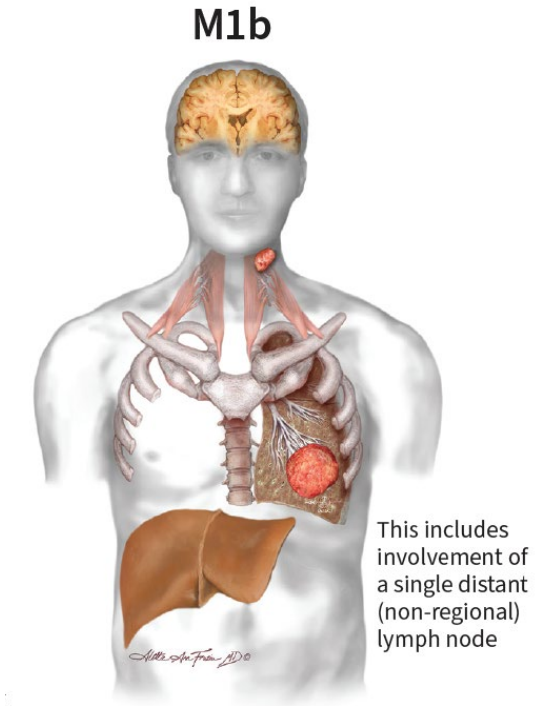
  - N2b- Multistation N2
- M category
  - M1c1— multiple extrathoracic mets within a single organ system
  - M1c2 — multiple extrathoracic mets across several organ systems

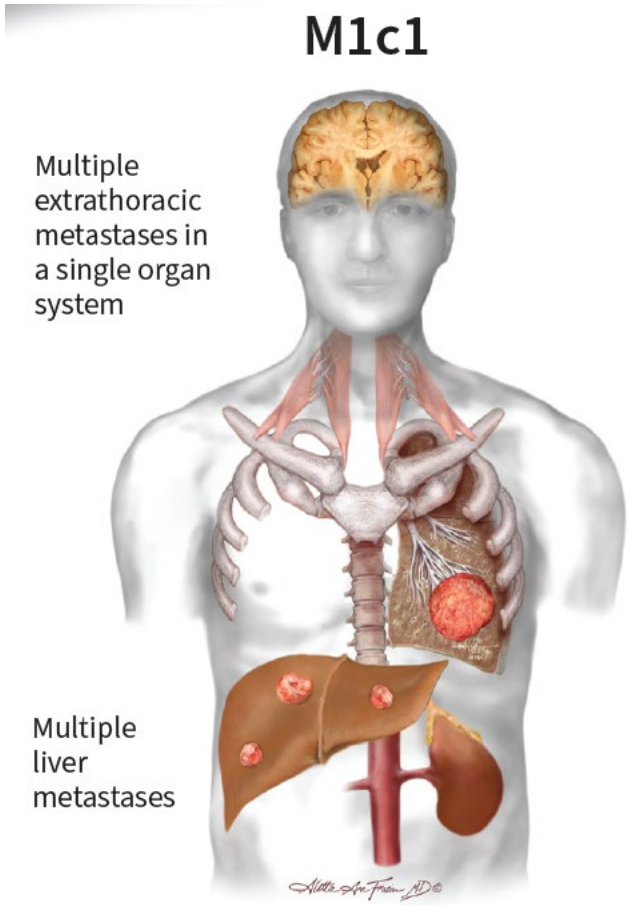
M Component

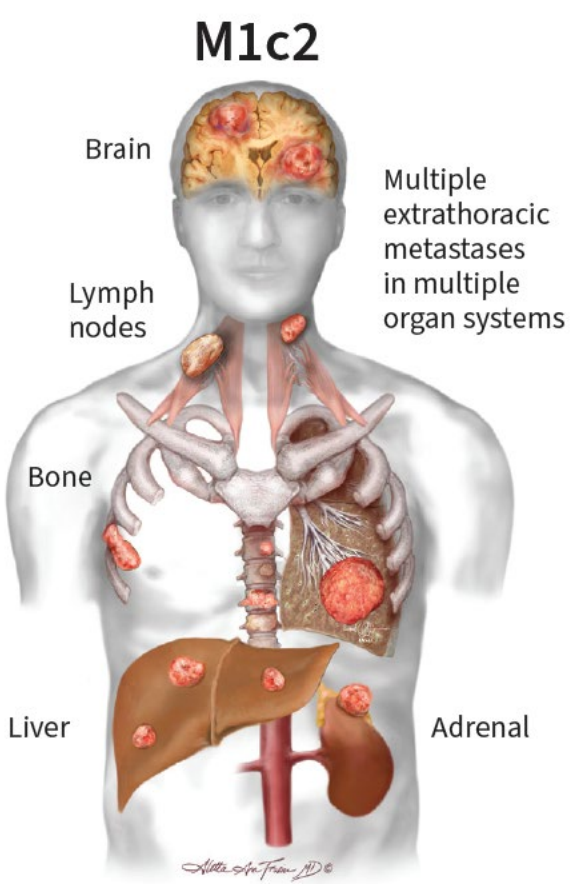

M1a
Primary tumor
Contralateral, separate tumor nodule(s)
Malignant pleural effusion/ nodule(s)
Malignant pericardial effusion/nodule(s)


M1b
Single extrathoracic metastasis
Liver


M1b
This includes involvement of a single distant (non-regional) lymph node

New to the 9th Edition





Stage Grouping

8th

T/M	Label	N0	N1	N2	N3
T1	T1a ≤1	IA1	IIB	IIIA	IIIB
	T1b >1-2	IA2	IIB	IIIA	IIIB
	T1c >2-3	IA3	IIB	IIIA	IIIB
T2	T2a Cent, Yisc Pl	IB	IIB	IIIA	IIIB
	T2a >3-4	IB	IIB	IIIA	IIIB
	T2b >4-5	IIA	IIB	IIIA	IIIB
T3	T3 >5-7	IIB	IIIA	IIIB	IIIC
	T3 Inv	IIB	IIIA	IIIB	IIIC
	T3 Satell	IIB	IIIA	IIIB	IIIC
T4	T4 >7	IIIA	IIIA	IIIB	IIIC
	T4 Inv	IIIA	IIIA	IIIB	IIIC
	T4 Ipsi Nod	IIIA	IIIA	IIIB	IIIC
M1	M1a Contr Nod	IVA	IVA	IVA	IVA
	M1a Pl Dissem	IVA	IVA	IVA	IVA
	M1b Single	IVA	IVA	IVA	IVA
	M1c Multi	IVB	IVB	IVB	IVB

9th

9th Edition TNM Descriptors and Stages

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	T1c >2 to ≤3 cm	IA3	IIA	IIB	IIIA	IIIB
T2	T2a Visceral pleura / central invasion	IB	IIB	IIIA	IIIB	IIIB
	T2a >3 to ≤4 cm	IB	IIB	IIIA	IIIB	IIIB
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T3	T3 >5 to ≤7 cm	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Invasion	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Same lobe separate tumor nodules	IIB	IIIA	IIIA	IIIB	IIIC
T4	T4 >7 cm	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Invasion	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Ipsilateral separate tumor nodules	IIIA	IIIA	IIIB	IIIB	IIIC
M1	M1a Contralateral tumor nodules	IVA	IVA	IVA	IVA	IVA
	M1a Pleural / pericardial effusion, nodules	IVA	IVA	IVA	IVA	IVA
	M1b Single extrathoracic metastasis	IVA	IVA	IVA	IVA	IVA
	M1c1 Multiple metastases in 1 organ system	IVB	IVB	IVB	IVB	IVB
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T4	T4 >7 cm	IIIA	IIIA	IIIB	IIIB	IIIC
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T2	T2a Visceral pleura / central invasion	IB	IIB	IIIA		IIIB
	T2a >3 to ≤4 cm	IB	IIB	IIIA	IIIB	IIIB
	T2b >4 to ≤5 cm	IIA	IIB	IIIA	IIIB	IIIB
T3	T3 >5 to ≤7 cm	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Invasion	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Same lobe separate tumor nodules	IIB	IIIA	IIIA	IIIB	IIIC
T4	T4 >7 cm	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Invasion	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Ipsilateral separate tumor nodules	IIIA	IIIA	IIIB	IIIB	IIIC
M1	M1a Contralateral tumor nodules	IVA	IVA	IVA	IVA	IVA
	M1a Pleural / pericardial effusion, nodules	IVA	IVA	IVA	IVA	IVA
	M1b Single extrathoracic metastasis	IVA	IVA	IVA	IVA	IVA
	M1c1 Multiple metastases in 1 organ system	IVB	IVB	IVB	IVB	IVB
	M1c2 Multiple metastases in >1 organ systems	IVB	IVB	IVB	IVB	IVB

Stage Grouping

8th

T/M	Label	N0	N1	N2	N3
T1	T1a ≤1	IA1	IIB	IIIA	IIIB
	T1b >1-2	IA2	IIB	IIIA	IIIB
	T1c >2-3	IA3	IIB	IIIA	IIIB
T2	T2a Cent, Visc Pl	IB	IIB	IIIA	IIIB
	T2a >3-4	IB	IIB		
	T2b >4-5	IIA	IIB		
T3	T3 >5-7	IIB	IIIA		IIIC
	T3 Inv	IIB	IIIA		IIIC
	T3 Satell	IIB	IIIA		IIIC
T4	T4 >7	IIIA	IIIA	IIIB	IIIC
	T4 Inv	IIIA	IIIA	IIIB	IIIC
	T4 Ipsi Nod	IIIA	IIIA	IIIB	IIIC
M1	M1a Contr Nod	IVA	IVA	IVA	IVA
	M1a Pl Dissem	IVA	IVA	IVA	IVA
	M1b Single	IVA	IVA	IVA	IVA
	M1c Multi	IVB	IVB	IVB	IVB

9th

9th Edition TNM Descriptors and Stages

T/M	Categories and Descriptors	N0	N1	N2		N3
				N2a	N2b	
T1	T1a ≤1 cm	IA1	IIA	IIB	IIIA	IIIB
	T1b >1 to ≤2 cm	IA2	IIA	IIB	IIIA	IIIB
	T1c >2 to ≤3 cm	IA3	IIA	IIB	IIIA	IIIB
T2	T2a Visceral pleura / central invasion	IB	IIB	IIIA	IIIB	IIIB
	T2a >3 to ≤4 cm	IB	IIB	IIIA	IIIB	IIIB
					IIIB	IIIB
						IIIC
T3	T3 Invasion	IIB	IIIA	IIIA		IIIC
	T3 Same lobe separate tumor nodules	IIB	IIIA	IIIA	IIIB	IIIC
T4	T4 >7 cm	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Invasion	IIIA	IIIA	IIIB	IIIB	IIIC
	T4 Ipsilateral separate tumor nodules	IIIA	IIIA	IIIB	IIIB	IIIC
M1	M1a Contralateral tumor nodules	IVA	IVA	IVA	IVA	IVA
	M1a Pleural / pericardial effusion, nodules	IVA	IVA	IVA	IVA	IVA
	M1b Single extrathoracic metastasis	IVA	IVA	IVA	IVA	IVA
	M1c1 Multiple metastases in 1 organ system	IVB	IVB	IVB	IVB	IVB
	M1c2 Multiple metastases in >1 organ systems	IVB	IVB	IVB	IVB	IVB

Stage Grouping

8th

T/M	Label	N0	N1	N2	N3
T1	T1a ≤1	IA1	IIB	IIIA	IIIB
	T1b >1-2	IA2	IIB	IIIA	IIIB
	T1c >2-3	IA3	IIB	IIIA	IIIB
T2	T2a Cent, Visc Pl	IB	IIB	IIIA	IIIB
	T2a >3-4	IB	IIB	IIIA	IIIB
	T2b >4-5	IIA	IIB	IIIA	IIIB
T3	T3 >5-7	IIB	IIIA	IIIB	IIIC
	T3 Inv	IIB	IIIA	IIIB	IIIC
	T3 Satell	IIB	IIIA	IIIB	IIIC
T4	T4 >7	IIIA	IIIA	IIIB	IIIC
	T4 Inv	IIIA	IIIA		
	T4 Ipsi Nod	IIIA	IIIA		IIIC
M1	M1a Contr Nod	IVA	IVA	A	IVA
	M1a Pl Dissem	IVA	IVA	A	IVA
	M1b Single	IVA	IVA	A	IVA
	M1c Multi	IVB	IVB	IVB	IVB

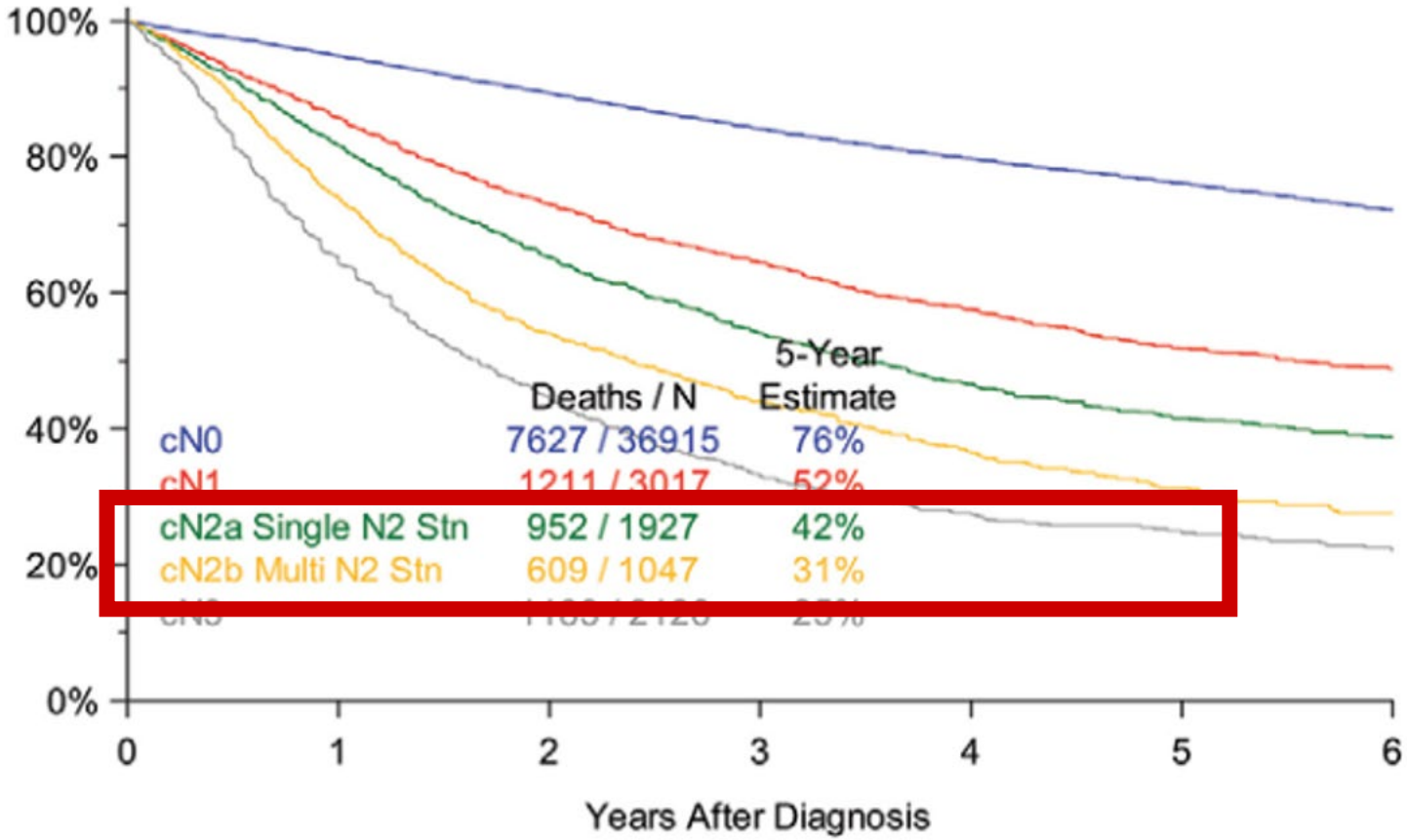
9th

9th Edition TNM Descriptors and Stages

T/M	Categories and Descriptors	N0	N1	N2		N3
				N2a	N2b	
T1	T1a ≤1 cm	IA1	IIA	IIB	IIIA	IIIB
	T1b >1 to ≤2 cm	IA2	IIA	IIB	IIIA	IIIB
	T1c >2 to ≤3 cm	IA3	IIA	IIB	IIIA	IIIB
T2	T2a Visceral pleura / central invasion	IB	IIB	IIIA	IIIB	IIIB
	T2a >3 to ≤4 cm	IB	IIB	IIIA	IIIB	IIIB
	T2b >4 to ≤5 cm	IIA	IIB	IIIA	IIIB	IIIB
T3	T3 >5 to ≤7 cm	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Invasion	IIB	IIIA	IIIA	IIIB	IIIC
	T3 Same lobe separate tumor nodules	IIB	IIIA	IIIA	IIIB	IIIC
	T4 >7 cm				IIIB	IIIC
					B	IIIC
	T4 Ipsilateral separate tumor nodules	IIIA	IIIA	IIIB		IIIC
M1	M1a Contralateral tumor nodules	IVA	IVA	IVA	A	IVA
	M1a Pleural / pericardial effusion, nodules	IVA	IVA	IVA	IVA	IVA
	M1b Single extrathoracic metastasis					
	M1c1 Multiple metastases in 1 organ system	IVB	IVB	IVB	IVB	IVB
	M1c2 Multiple metastases in >1 organ systems	IVB	IVB	IVB	IVB	IVB

Overall Survival by Clinical N Category

cN2a 42%
Vs
cN2b 31%



More accurate prognosis
- Survival curves align better with assigned stage
- Less overlap between adjacent stages

J Thorac Oncol. 2023:766–785.

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CT, PET, and EBUS-TBNA for Mediastinal Lymph Node Staging

	Sensitivity	Specificity	Accuracy
Chest CT	76.9%	55.3%	60.8%
PET	80%	70.1%	72.5%
EBUS-TBNA	92.3%	100%	98%

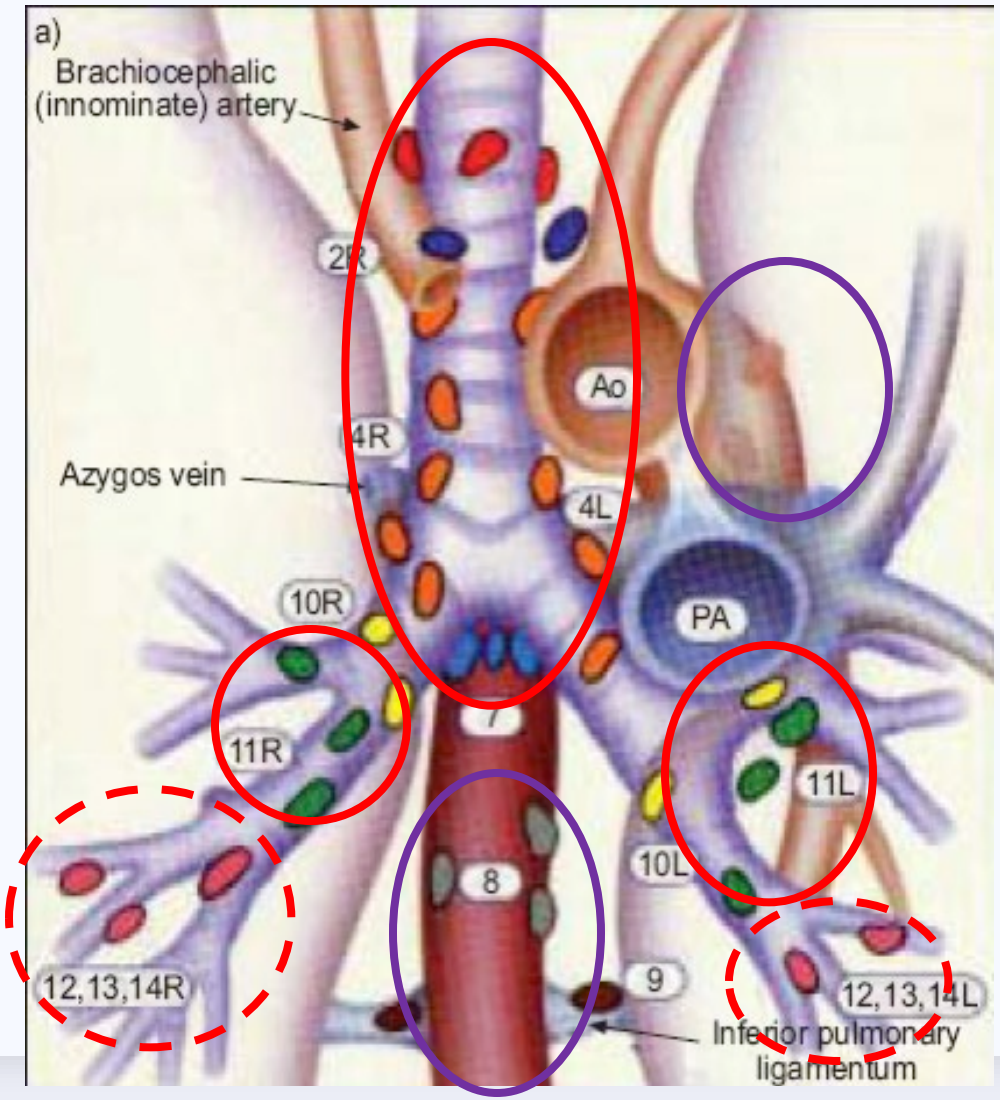
Yasufuku K, et al. Chest 2006; 130:710-718.

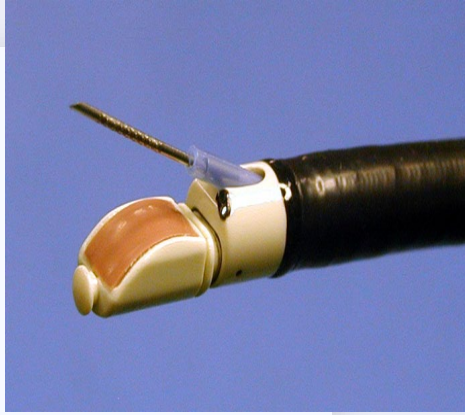
NCCN-Based Mediastinal Staging With EBUS

Clinical Scenario	Imaging Findings	Tumor Features
Enlarged mediastinal node	≥1 cm short axis on CT	Any tumor
PET-avid mediastinal node	FDG uptake	Any tumor
Hilar (N1) nodes present	Enlarged or PET-avid N1	Any tumor
Central tumor	Normal mediastinum	Tumor in inner third of lung
Peripheral tumor ≥3 cm	Normal mediastinum	≥T2 lesion
Discordant imaging	PET+ but CT normal (or vice versa)	Any tumor
Suspected stage II	Imaging suggests N1 disease	Any tumor

NCCN Clinical Practice Guidelines 2024

Lymph Nodes That Can Be Biopsied With EBUS-Guidance





LN accessible

2, 3p, 4, 7, 10, 11

LN possibly accessible

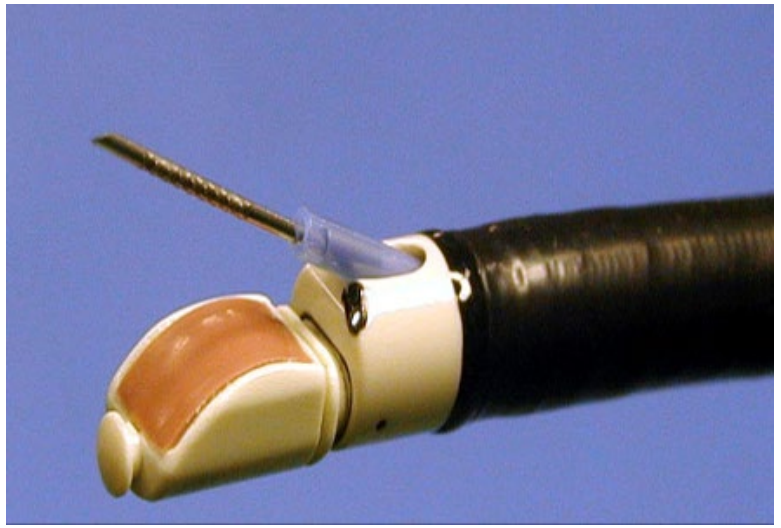
12

LN not accessible

3a, 5, 6, 8, 9

So What Do These Changes in TNM 9 Mean for EBUS?

- **EBUS findings- larger impact on prognosis**
  - **Small differences now change stage and treatment**
    - Surgical candidacy
    - Trimodality therapy
    - Clinical trial eligibility
- **EBUS implication**
  - Single-station vs multistation N2 now has clearer consequences
  - Systematic nodal sampling matters more than "targeted only"



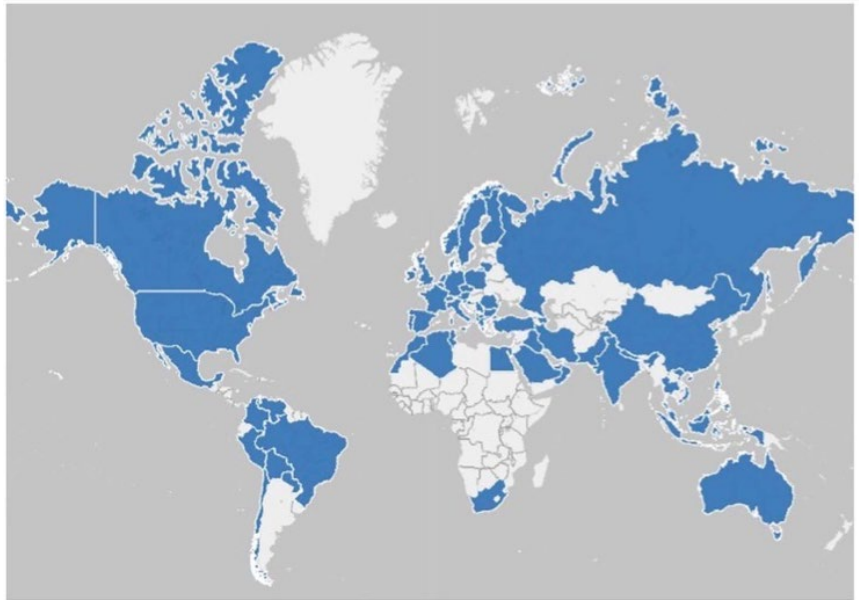
Questions to be answered

- How do you determine the order in which the N2 nodes should be sampled to prevent the spread of malignant cells via the needle
  - Strict hierarchy of N2 lymph nodes is not defined yet
  - One option would be to start by puncturing the N2 lymph node that is farthest from tumor or that appears least suspicious (less/not PET positive, smaller)
- Do you change the needle between all N2 LN stations? (2R, 4R, 7) or (2L, 4L, 7)
- Do you change the needle only when the LNs are enlarged or FDG avid
  - Staging all LN > 5 mm
- Factors to consider
  - Needle cost
  - Needle availability

ORIGINAL INVESTIGATION

Global Survey on Current Practices of Endobronchial Ultrasound Approaches to N2 Staging in Non-Small Cell Lung Cancer Following the Ninth Edition of the TNM Classification

- Survey to assess impact of the 9th edition changes on mediastinal staging with EBUS-TBNA
- Needle change between different N2 stations
- 605 questionnaires
- 66 countries
- March 2025



Kontogianni, K et al. JOBIP 33(1):e1039. 2026.

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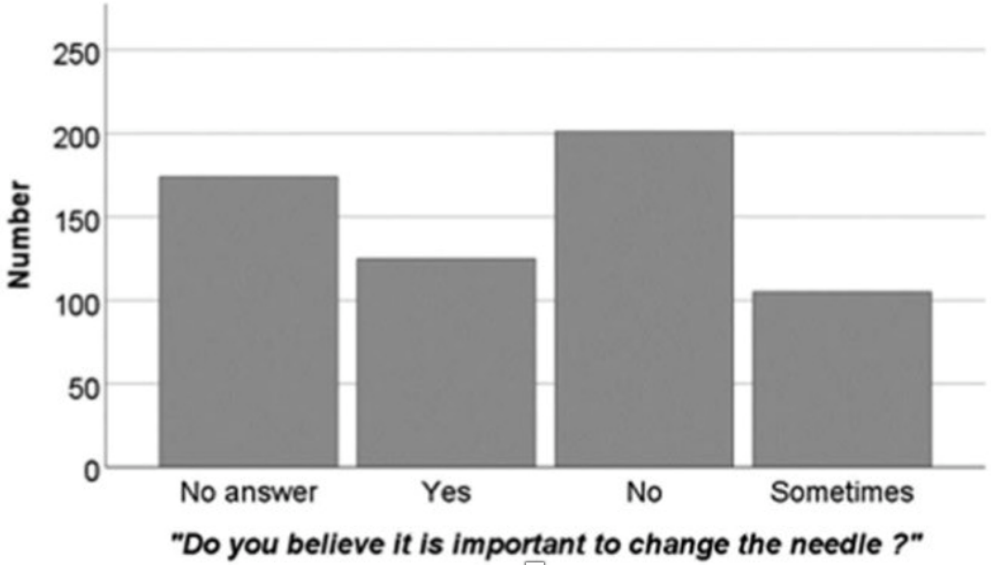
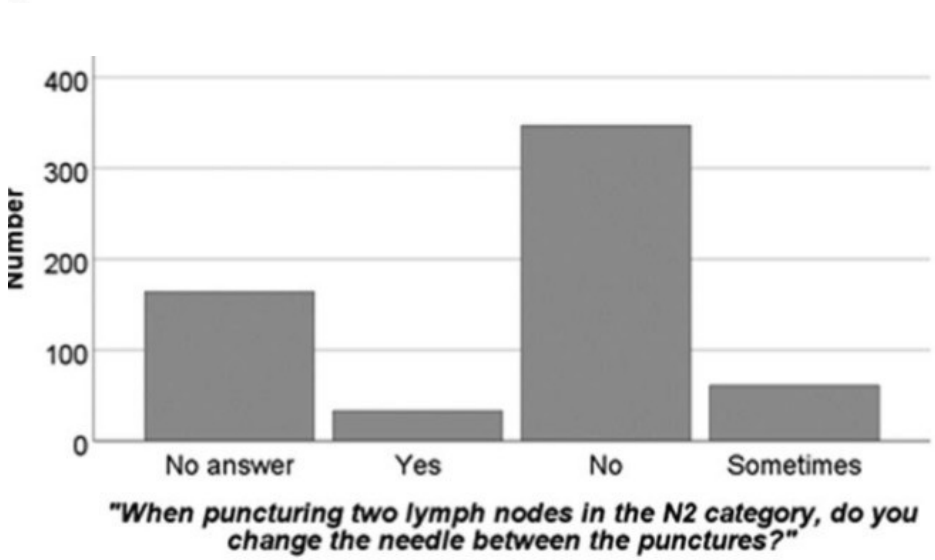
EBUS Needle Management During N2 Nodal Puncture





Main barriers were
Costs (68.3%)
Lack of evidence (31.3%)

Kontogianni, K et al. JOBIP 33(1):e1039. 2026.

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Can you just flush the needle? NO

Puyal et al

- Prospectively analyzed 62 patients undergoing linear EBUS for suspected lung tumors-diagnosis and staging
- Despite multiple needle flushes (up to 10 mL saline), cytologic analysis revealed persistent tumor cell contamination in 43.5% of cases

Arch Bronconeumol. 2022;58:367–368

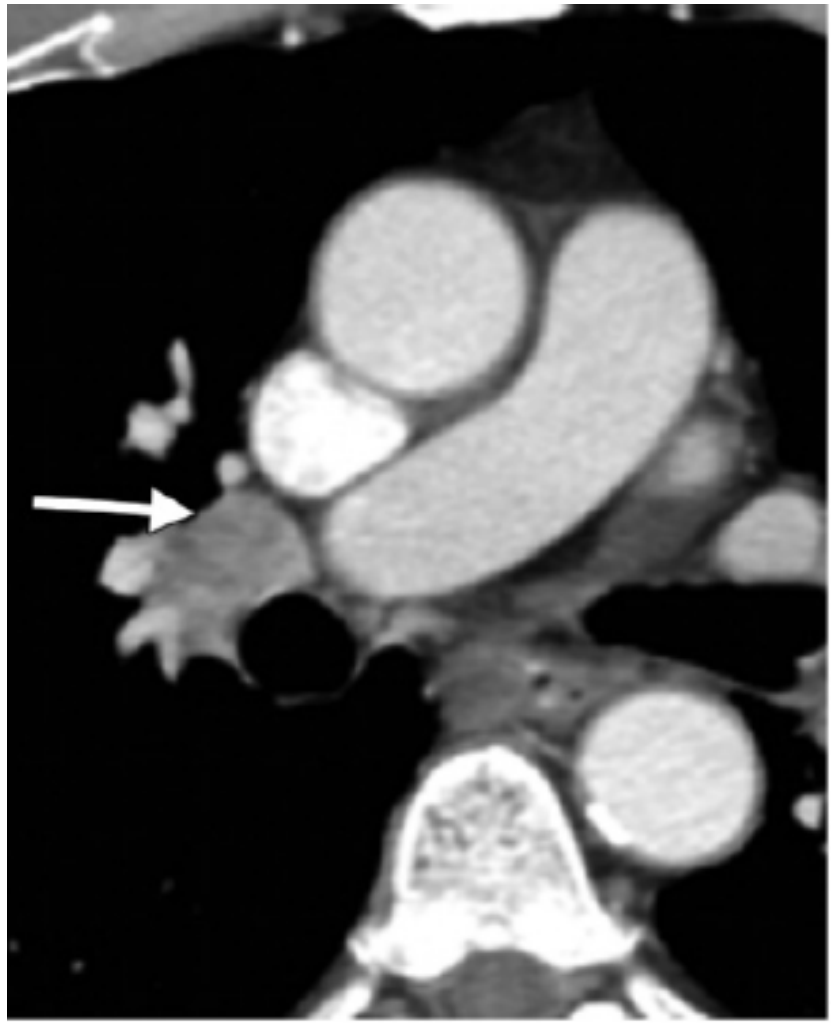
What stage is this—and why does it matter?

- 64-year-old male, 40 pack-years
- 3.5 cm RUL mass, mediastinal LAD on CT
  - EBUS-guided biopsy of 4R and 7- adenocarcinoma
- What stage is this patient:
  - Based on 8th edition? T2aN2Mo = IIIA (26%)
  - Based on 9th edition? T2aN2bMo = IIIB (17%)
  - What is the difference in 5-year survival? ~10%

Case 1

- RUL adenocarcinoma
- **Tumor size: 2.9 cm**
- +10R Lymph node
- PET negative for distant mets
- **Question**
- *Does this stage change in TNM 9?*

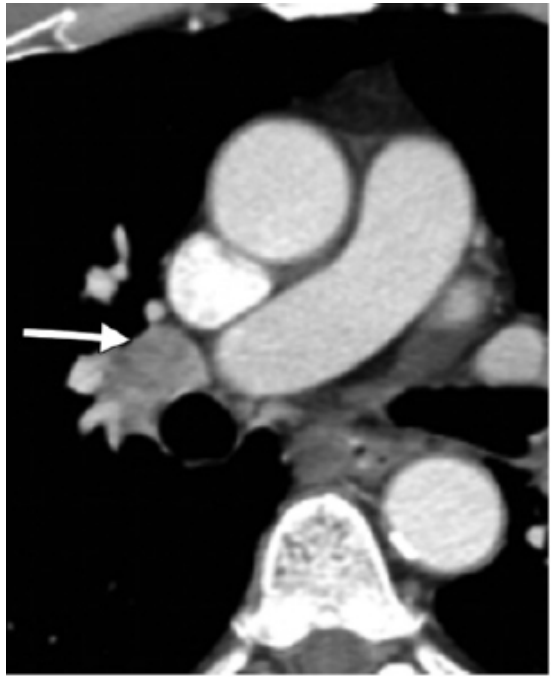
- *T1cN1Mo*

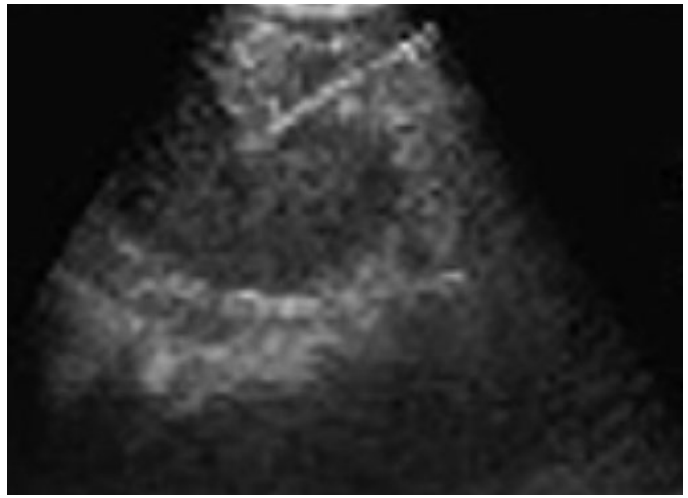


Case 1

- **Answer: YES!**
- **AJCC 8:** Stage **IIB**
- **AJCC 9:** Stage **IIA**

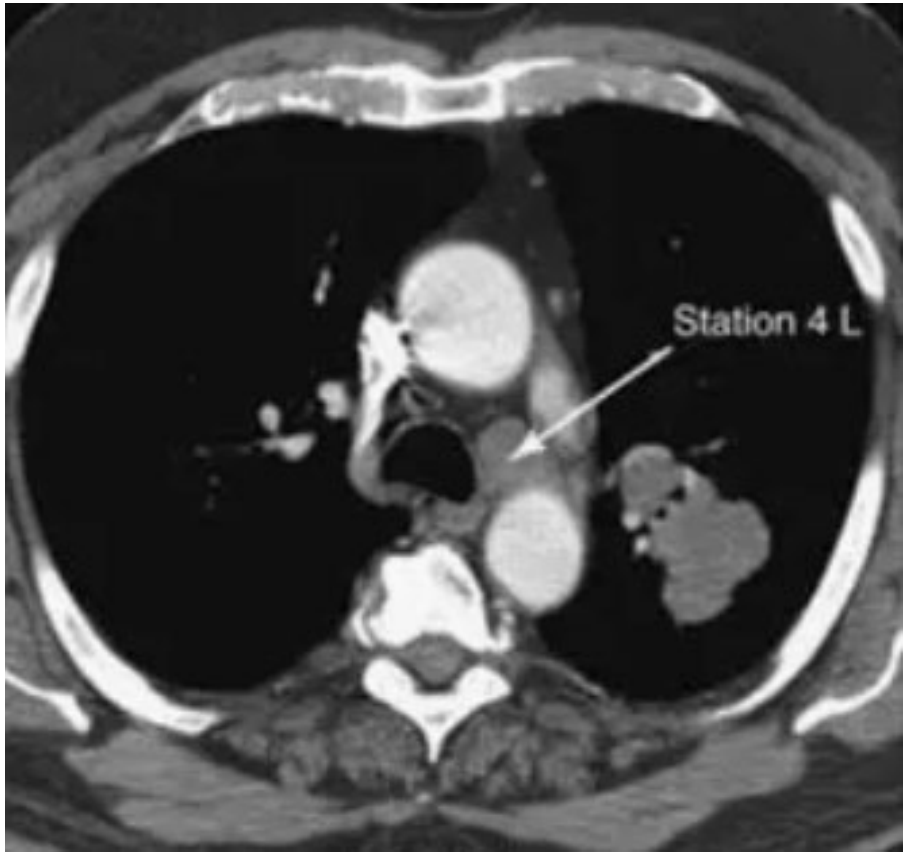
- Nothing changed but the stage did
- Better survival curve alignment





Case 2:

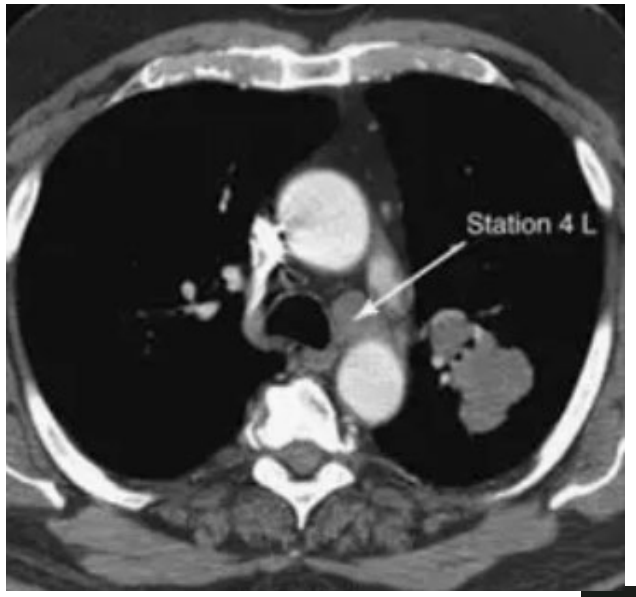
- LUL mass, **4.1 cm**
- **+Single-station N2 (4L)** on EBUS
- No distant metastases
- **Question**
- *Is this Stage IIIA?*

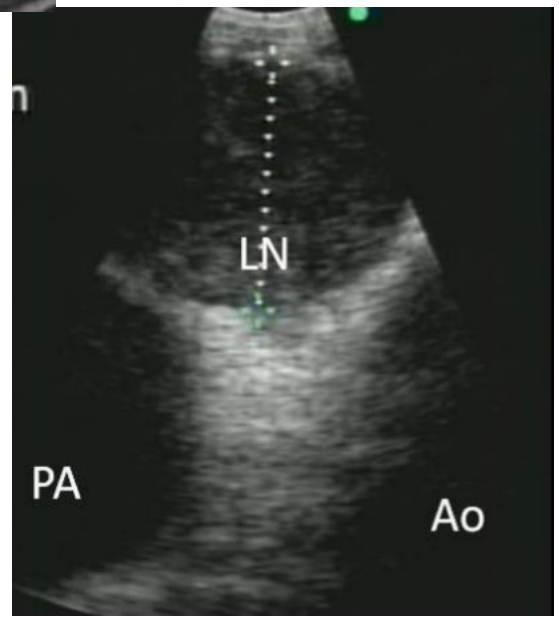


Case 2

- **Answer :T2bN2aMo**
- **AJCC 8:** Stage **IIIA**
- **AJCC 9:** Stage **IIIA**

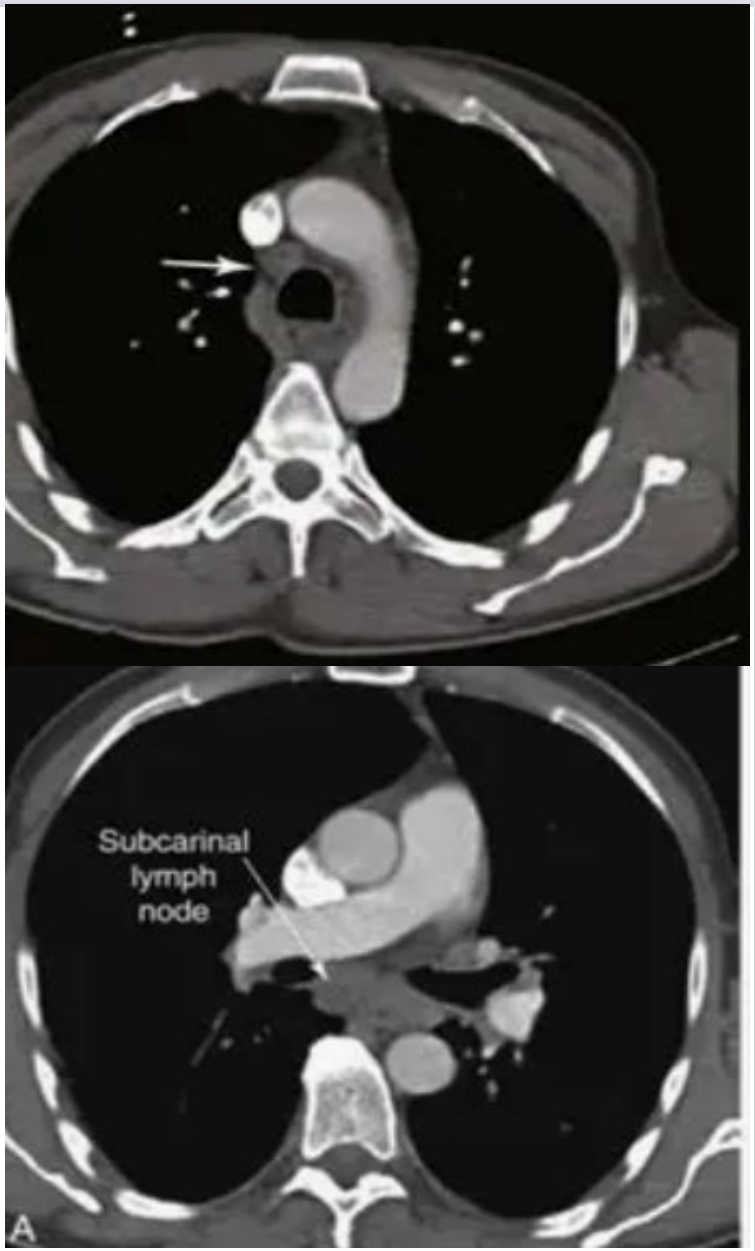
- **Limited N2 disease**





Case 3:

- RLL mass, **4.6 cm**
- **Multistation N2** (7 + 4R)
- No distant disease
- **Question**
- *What stage is this?*

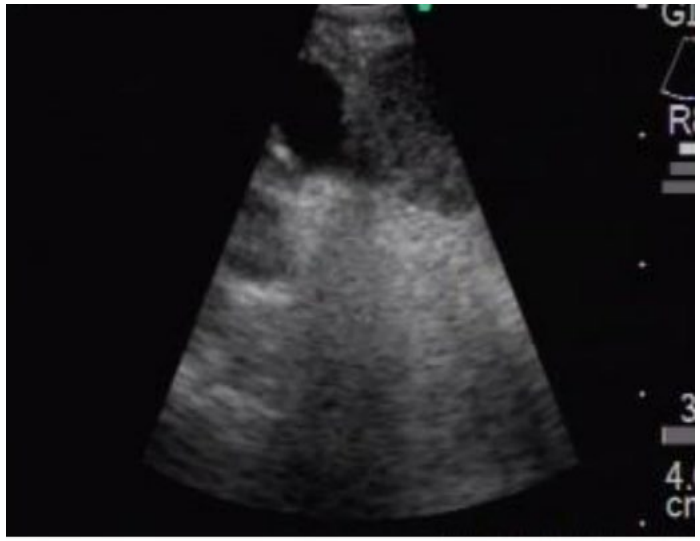


Case 3:

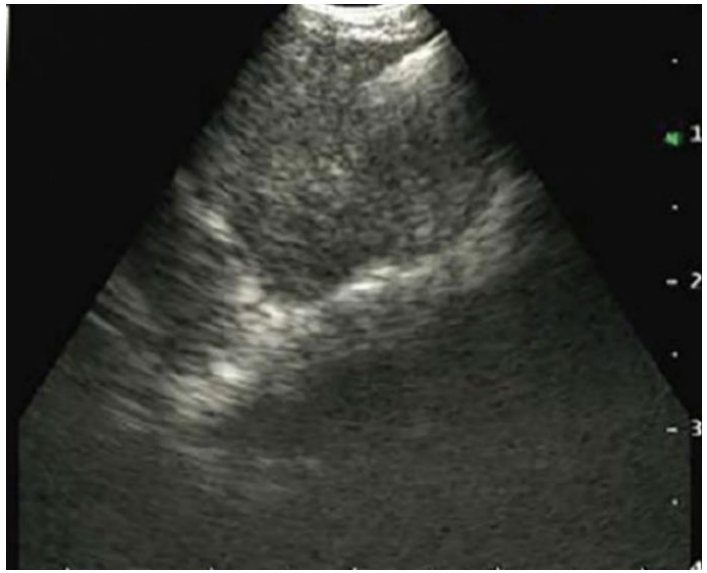
- **Answer: T2bN2bMo**

- **AJCC 8:** Stage **IIIA**
- **AJCC 9:** Stage **IIIB**

4R



7



Implications: EBUS carries more weight — and more responsibility

- A *true* negative EBUS supports:
  - de-escalation of therapy
  - surgical pathways
- A *false* negative EBUS has bigger downstream consequences
- Lower tolerance for incomplete nodal evaluation
- More scrutiny of:
  - node size
  - station coverage
  - sampling adequacy
- Nodal findings directly affect:
  - prognosis discussions
  - patient expectations
  - goals-of-care framing

Conclusion:

- Early stages → mostly unchanged

- Advanced stages → mostly unchanged

- **Biggest staging shifts mediastinal nodal disease—N2**
  - **Single-station N2 ≠ multistation N2**
  - **Aggressive mediastinal staging**
    - **Improving prognostic discrimination**

- **"The Shuffle Zone"**

Questions?

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