The New Lung Cancer Staging System:

What Pulmonologists Need to Know

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Disclosures

- None

Outline

- Eighth Edition of the International Staging System for Classification of Lung Cancer
  - Tumor
  - Node
  - Metastasis
  - TNM groupings
- Lung Cancer with Multiple Pulmonary Sites of Disease
  - Synchronous primary lung cancers
  - Separate tumor nodules (intrapulmonary metastasis)
  - Multifocal lung cancer
  - Pneumonic-type lung cancer

8th Edition of the TNM Staging Classification for Lung Cancer

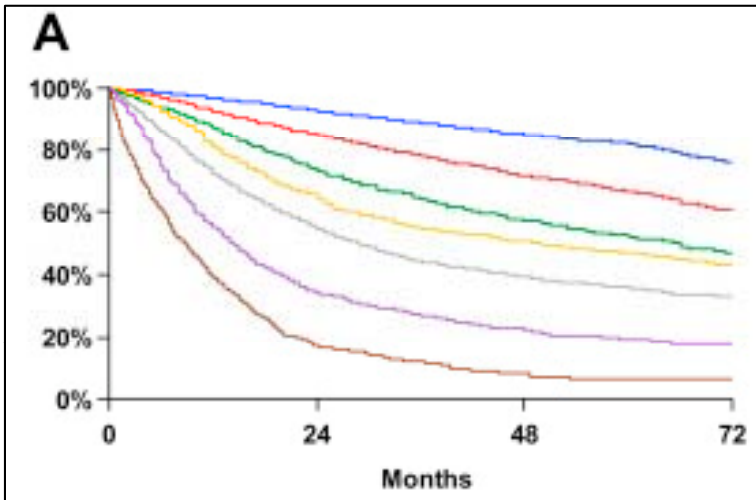
References

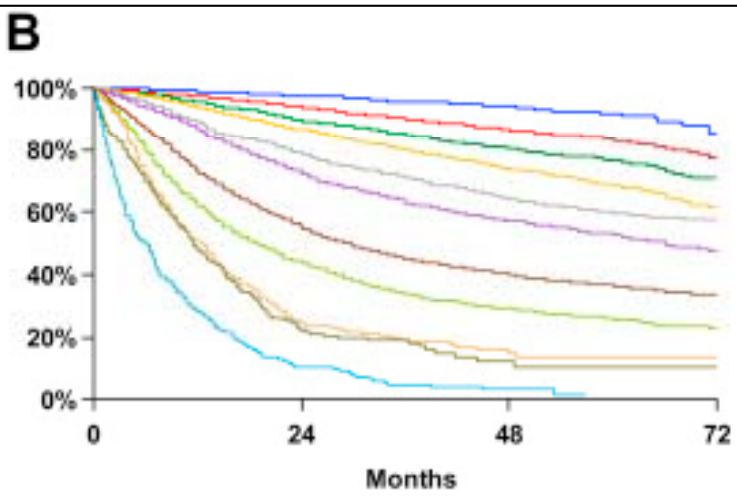
- *Detterbeck F et al. The IASLC Lung Cancer Staging Project: methodology and validation used in the development of proposals for revision of the stage classification of non-small cell lung cancer in the forthcoming (8th) edition of the TNM Classification of Lung Cancer. J Thor Oncol. 2016; 11: 1433*
- *Rami-Porta R et al. The IASLC Lung Cancer Staging Project. Proposals for the Revisions of the T Descriptors in the Forthcoming Eighth Edition of the TNM Classification for Lung Cancer. J Thorac Oncol 2015; 10:990*
- *Asamura, H et al. The IASLC Lung Cancer Staging project: proposals for the revision of the N descriptors in the forthcoming eighth edition of the TNM Classification for Lung Cancer. J Thorac Oncol. 2015; 10: 1675*
- *Rusch, V et al. The IASLC Lung Cancer Staging Project: a proposal for a new international lymph node map in the forthcoming 7th edition of the TNM classification for lung cancer. J Thorac Oncol. 2009; 4: 568*
- *Eberhardt, W et al. The IASLC Lung Cancer Staging Project: proposals for the revision of the M descriptors in the forthcoming (8th) edition of the TNM Classification of Lung Cancer. J Thorac Oncol. 2015; 10: 1515*
- *Goldstraw, P et al. The IASLC Lung Cancer Staging Project: Proposals for Revision of the TNM Stage Groupings in the Forthcoming (Eighth) Edition of the TNM Classification for Lung Cancer. J Thorac Oncol. 2016; 11: 39*
- ***Detterbeck F et al.The Eighth Edition Lung Cancer Stage Classification. Chest 2017; 151:193***

Why do we stage cancers?

1. TNM classification provides a common anatomic language
   - T: description of the extent of the primary site
   - N: description of the highest level of nodal involvement
   - M: description of involvement of distant sites
2. Provides a first pass grouping of patients with similar prognosis
   - Heterogeneous disease patterns be grouped together
     - eg. $T4_{>7}N0M0$ and T1aN2M0 are 2 of 15 TNM groupings for Stage IIIA
3. Identifies groups of patients with similar prognosis, for the purpose of clinical trials
4. Accurate staging leads to better outcomes

Overall survival by clinical stage 7th and 8th edition stage groupings





7th Ed.	Events / N	MST	24 Month	60 Month
IA	1119 / 6303	NR	93%	82%
IB	768 / 2492	NR	85%	66%
IIA	424 / 1008	66.0	74%	52%
IIB	382 / 824	49.0	64%	47%
IIIA	2139 / 3344	29.0	55%	36%
IIIB	2101 / 2624	14.1	34%	19%
IV	664 / 882	8.8	17%	6%

Proposed	Events / N	MST	24 Month	60 Month
IA1	68 / 781	NR	97%	92%
IA2	505 / 3105	NR	94%	83%
IA3	546 / 2417	NR	90%	77%
IB	560 / 1928	NR	87%	68%
IIA	215 / 585	NR	79%	60%
IIB	605 / 1453	66.0	72%	53%
IIIA	2052 / 3200	29.3	55%	36%
IIIB	1551 / 2140	19.0	44%	26%
IIIC	831 / 986	12.6	24%	13%
IVA	336 / 484	11.5	23%	10%
IVB	328 / 398	6.0	10%	0%

Journal of Thoracic Oncology 2016 11, 39-51DOI

T Descriptor Definition Changes

- Subclassification of T1
  - T1: T1a $\leq$ 1 cm; T1b 1.1 – 2 cm; T1c 2.1 – 3 cm
- Subclassification of T2
  - T2: T2a 3.1 – 4 cm, T2b 4.1 – 5 cm
- Classification of tumors > 5 cm
  - T3: tumors 5.1 – 7 cm
  - T4: tumors > 7 cm
- Involvement of a main bronchus without invasion of carina is T2, regardless of distance from carina
- Invasion of the carina, diaphragm, mediastinum are T4
- For subsolid (lepidic) lesions, the radiographic (clinical stage) and pathologic T designation should be based on the solid or invasive component only

TABLE 7 . Survival Comparisons of Pathologically Staged Tumors According to the T Categories of the 7th Edition and to the Proposed T Categories for the 8th Edition

7th Edition			Proposed 8th Edition		
Contrast	Estimate	p	Contrast	Estimate	p
T1a vs T1b	1.3585	< 0.0001	T1a vs T1b	1.4899	< 0.0001
T1b vs T2a	1.4292	< 0.0001	T1b vs T1c	1.2767	< 0.0001
T2a vs T2b	1.2520	< 0.0001	T1c vs T2a	1.3647	< 0.0001
T2b vs T3	1.4496	< 0.0001	T2a vs T2b	1.2218	0.0001
T3 vs T4	1.0045	0.9747	T2b vs T3	1.2895	< 0.0001
			T3 vs T4	1.2997	< 0.0001

The IASLC Lung Cancer Staging Project: Proposals for the Revisions of the T Descriptors in the Forthcoming Eighth Edition of the TNM Classification for Lung Cancer.
Rami-Porta, Ramon; MD, FETCS; Bolejack, Vanessa; Crowley, John; Ball, David; MD, FRANZCR; Kim, Jhingook; Lyons, Gustavo; Rice, Thomas; Suzuki, Kenji; Thomas, Charles; Travis, William; Wu, Yi-Long; on behalf of the IASLC Staging and Prognostic Factors Committee, Advisory
Journal of Thoracic Oncology. 10(7):990-1003, July 2015.
DOI: 10.1097/JTO.0000000000000559

N Descriptor: no major changes in 8th edition

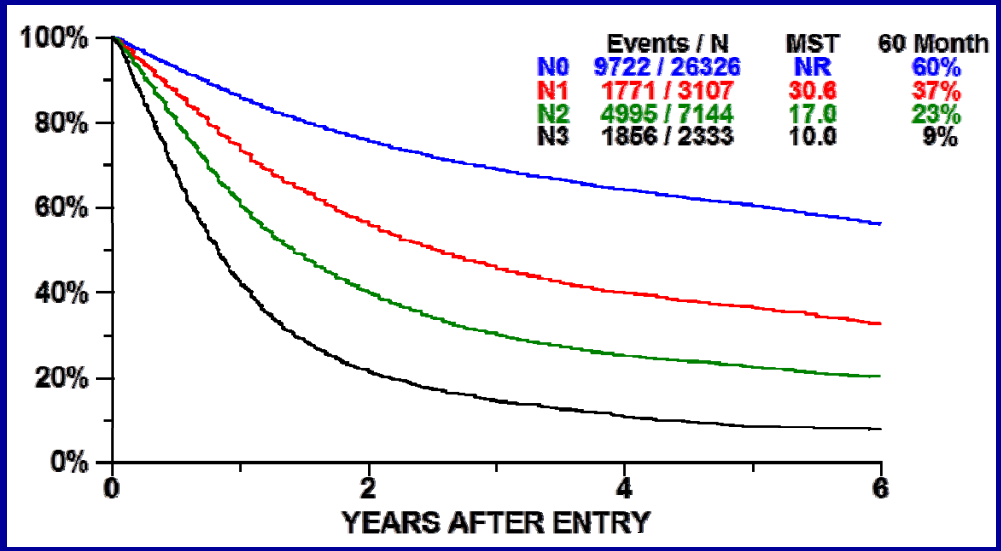
7th Edition N descriptors maintained, still discriminate well

N0	No regional lymph nodes involved
N1	Ipsilateral hilar, peribronchial or intrapulmonary nodes involved, including direct extension
N2	Ipsilateral mediastinal nodes involved
N3	Contralateral mediastinal nodes involved or supraclavicular nodes involved

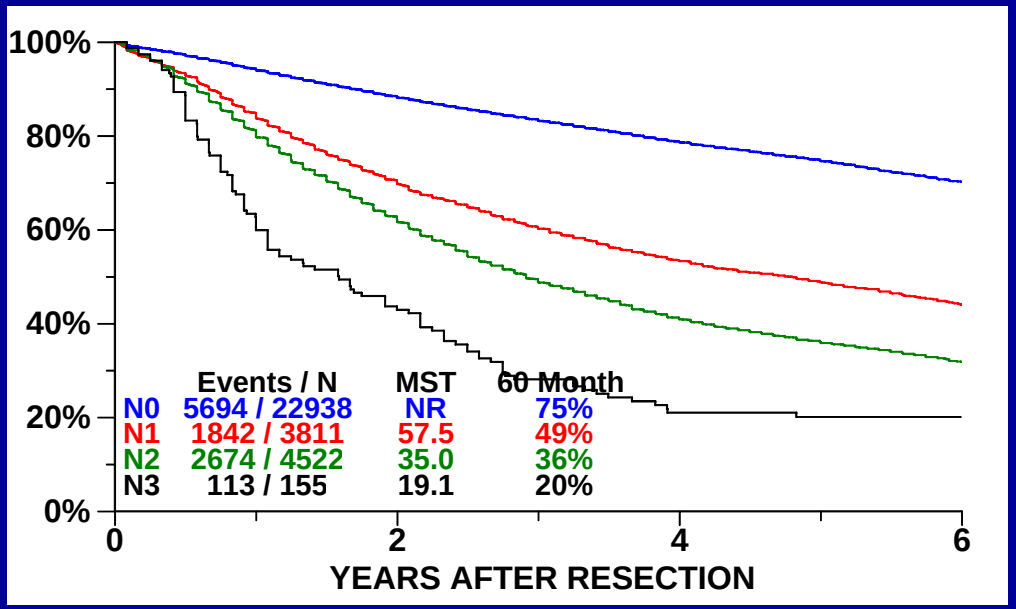
Asamura et al. J Thorac Oncol 2015;10:1675

N Categories (T1-4 M0)

Clinical Stage
(T-any M0)
38,910 patients



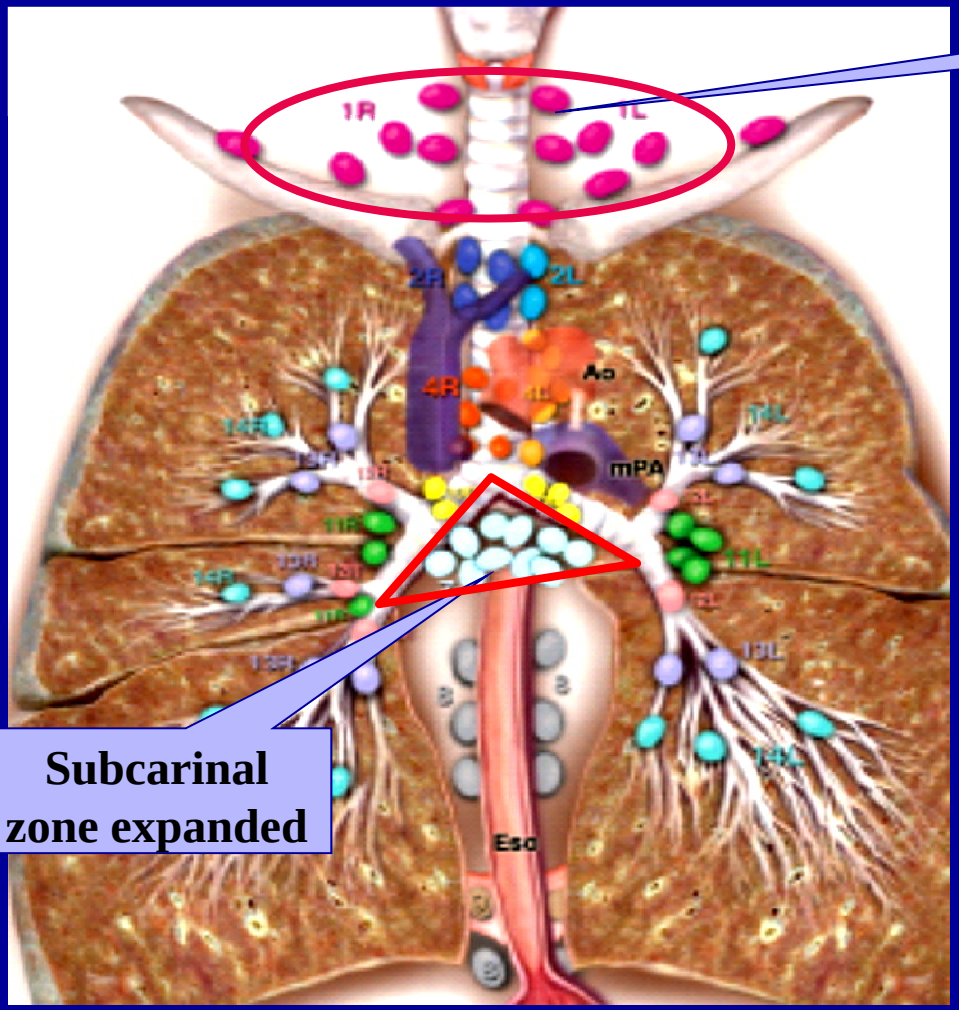
Pathologic Stage
(T-any M0 R-any)
26,436 patients



Slide courtesy Frank Detterbeck

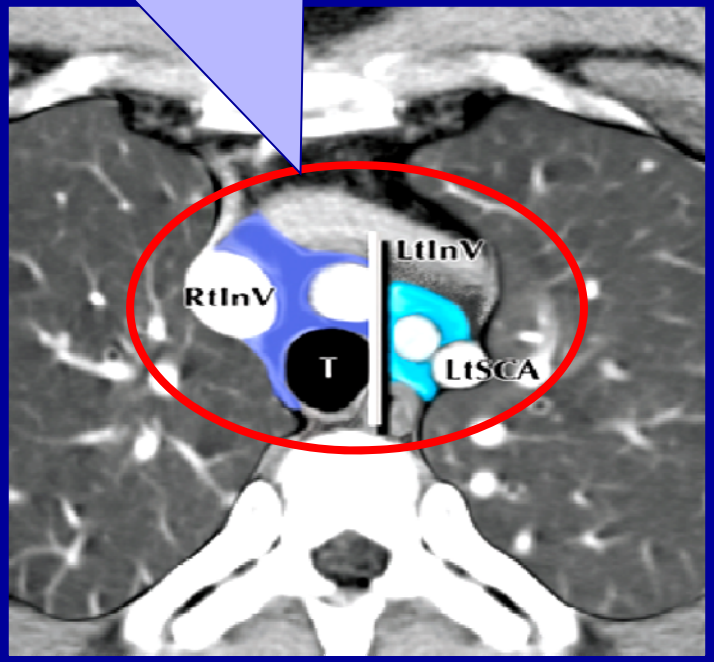
Asamura et al. J Thor Onc 2015;10:1675

The IASLC Lymph Node Map



New supraclavicular zone (N3)

Shift of the anatomic midline to the left paratracheal border



Subcarinal zone expanded

Slide courtesy Frank Detterbeck

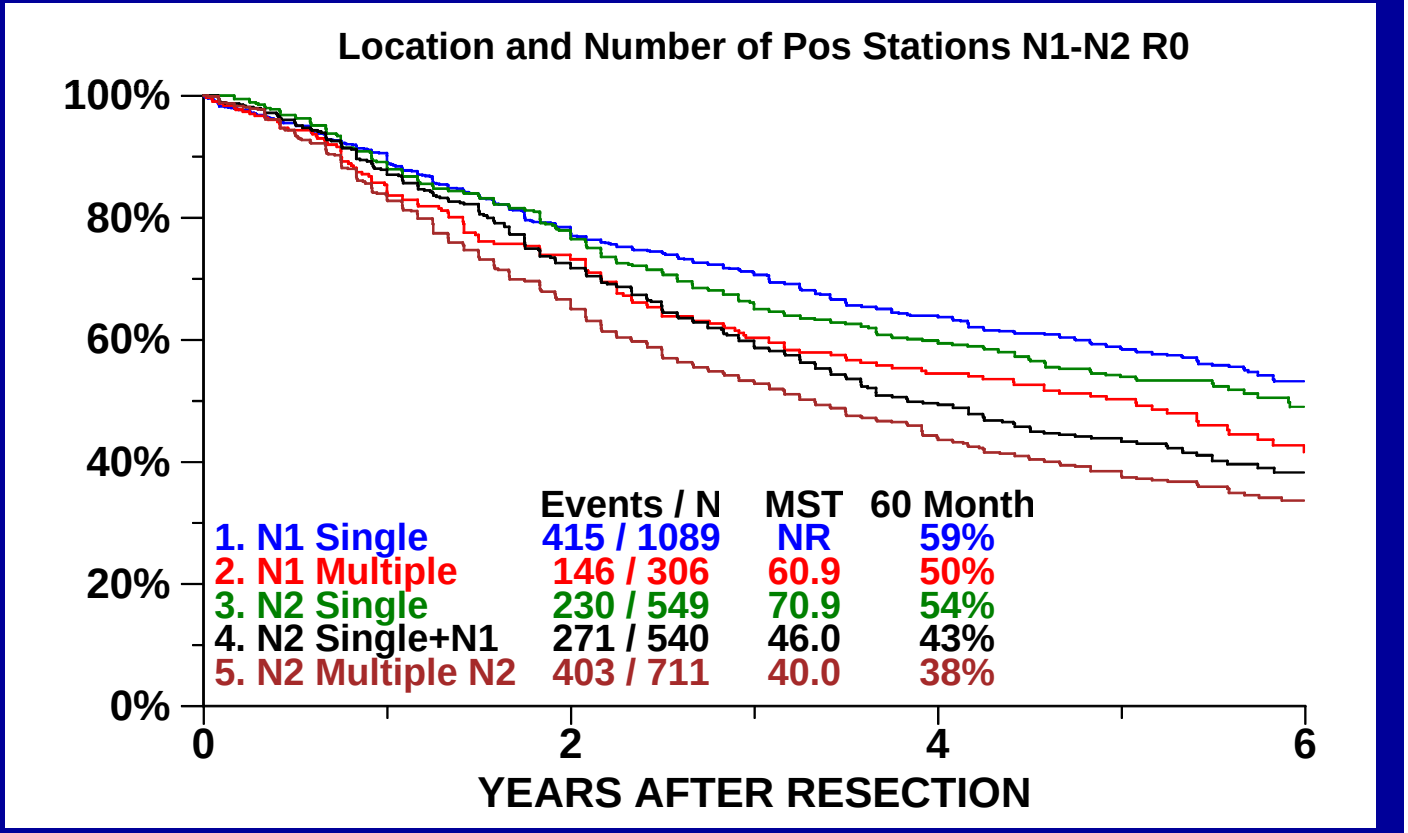
N Categories (T1-4 M0) – future study

Exploratory analysis by level plus number of involved node stations

Not included in stage classification because it cannot be validated in the clinical stage classification setting

N1 Single = N1a
N1 Multiple = N1b
N2 Single N2 ("skip mets") = N2a1
N2 Single N2 + N1 = N2a2
N2 Multiple N2 = N2b

p-Stage (R0)



Slide courtesy Frank Detterbeck

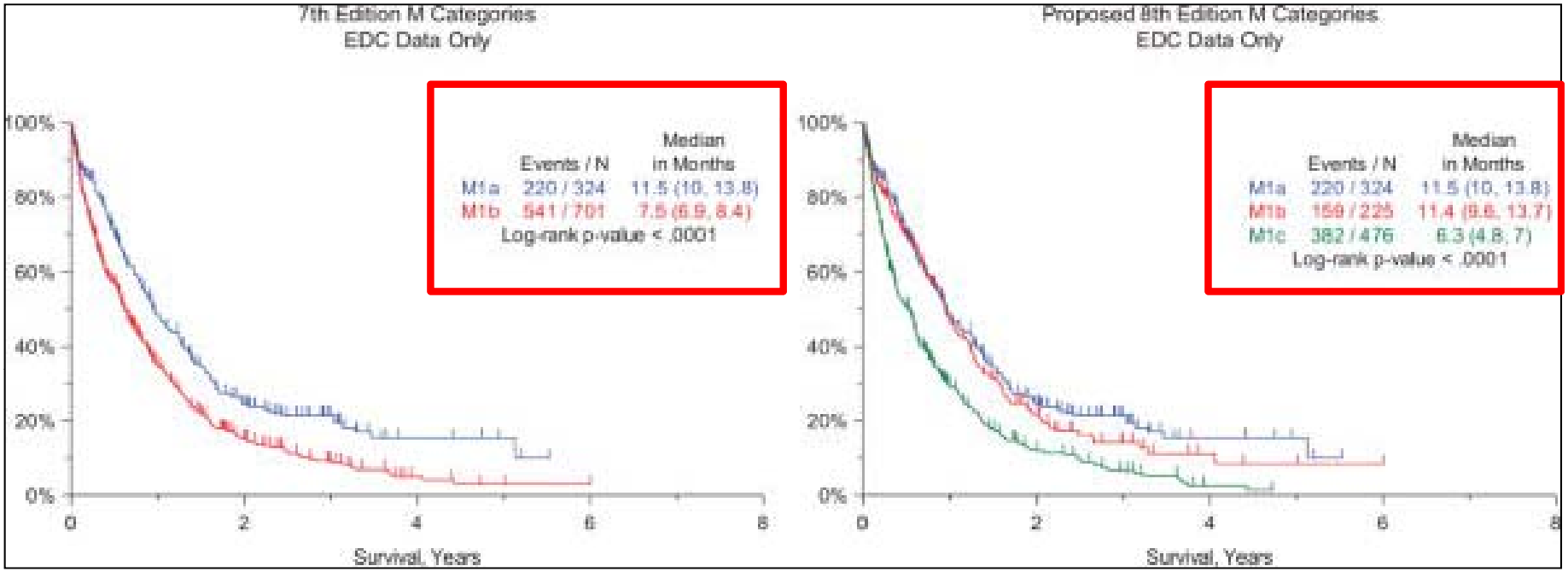
M Descriptor, Changes in 8th Edition

Changes in 8th Edition: Oligometastatic disease identified as a distinct category

M0	No distant metastasis
M1a	Malignant pleural/pericardial effusion or pleural/pericardial nodules
M1b	Single extrathoracic metastasis
M1c	Multiple extrathoracic metastases (1 or >1 organ)

Eberhardt et al. J Thorac Oncol 2015;10:1515

FIGURE 8 . 7th edition and 8th edition M categories.

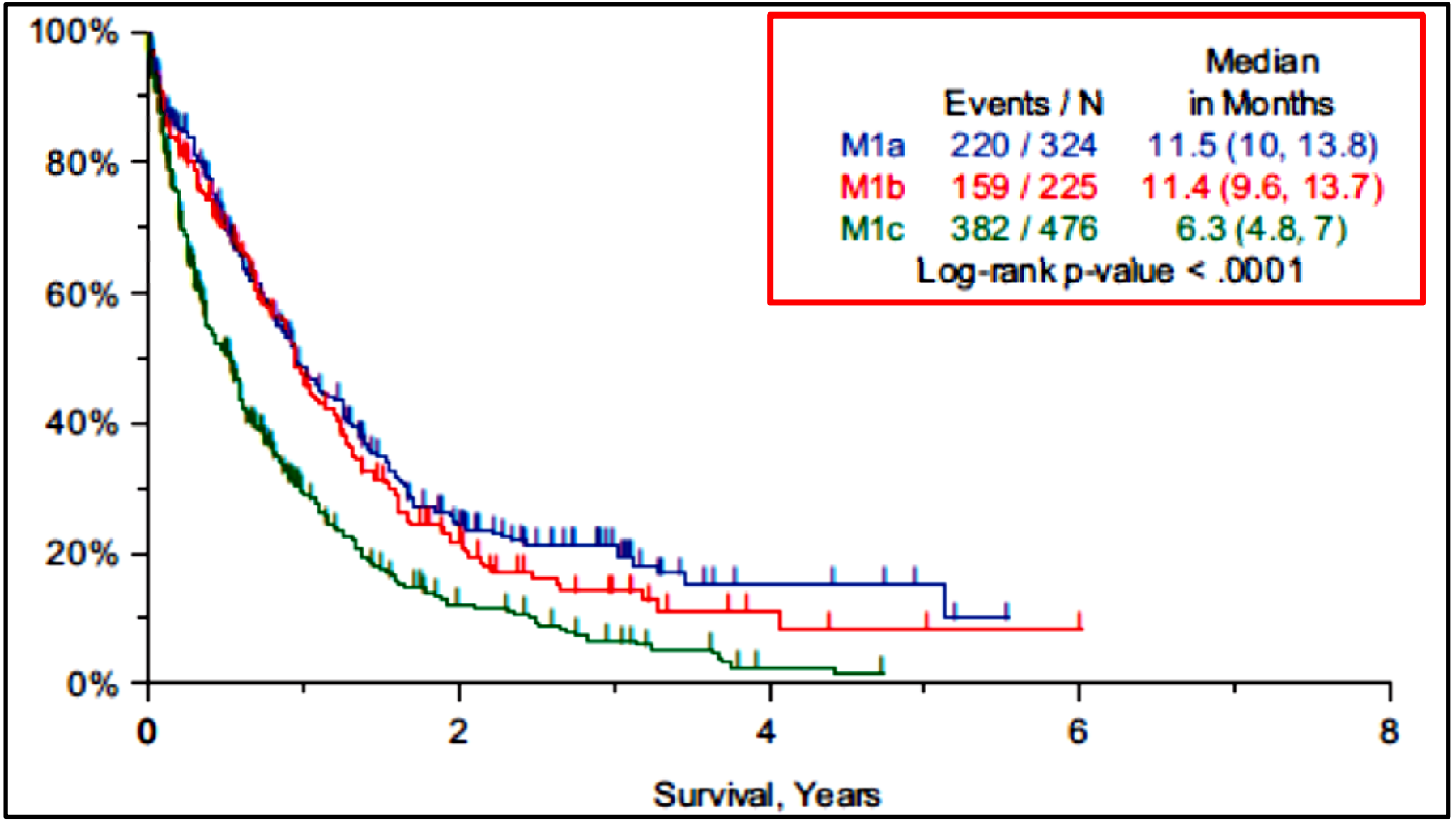


The IASLC Lung Cancer Staging Project: Proposals for the Revision of the M Descriptors in the Forthcoming Eighth Edition of the TNM Classification of Lung Cancer.

Eberhardt, Wilfried et al

Journal of Thoracic Oncology. 10(11):1515-1522, November 2015.

DOI: 10.1097/JTO.0000000000000673



The IASLC Lung Cancer Staging Project: Proposals for the Revision of the M Descriptors in the Forthcoming Eighth Edition of the TNM Classification of Lung Cancer.
Eberhardt, Wilfried et al Journal of Thoracic Oncology. 10(11):1515-1522, November 2015.

TNM Group Staging, 8th Edition

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	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

Detterbeck et al. Chest 2017;151:193-203

Each stage grouping includes heterogeneous TNM populations

8th Edition of the TNM Staging Classification: Lung Cancers with Multiple Pulmonary Sites of Involvement

References

- *Detterbeck FC et al. The IASLC Lung Cancer Staging Project: Summary of Proposals for Revisions of the Classification of Lung Cancers with Multiple Pulmonary Sites of Involvement in the Forthcoming Eighth Edition of the TNM Classification. J Thorac Oncol 2016; 11:639-650.*
- *Detterbeck FC et al. The IASLC Lung Cancer Staging Project: Background Data and Proposed Criteria to Distinguish Separate Primary Lung Cancers from Metastatic Foci in Patients with Two Lung Tumors in the Forthcoming Eighth Edition of the TNM Classification for Lung Cancer. J Thorac Oncol 2016; 11:651-655.*
- *Detterbeck FC et al. The IASLC Lung Cancer Staging Project: Background Data and Proposals for the Application of TNM Staging Rules to Lung Cancer Presenting as Multiple Nodules with Ground Glass or Lepidic Features or a Pneumonic Type of Involvement in the Forthcoming Eighth Edition of the TNM Classification. J Thorac Oncol 2016; 11:666-680.*
- ***Detterbeck F et al.The Eighth Edition Lung Cancer Stage Classification. Chest 2017; 151:193***

Lung Cancer:
Multiple Pulmonary Sites of Disease

Consider the patient with multiple pulmonary sites of lung cancer:

1. Synchronous primary lung cancers
2. Separate tumor nodules (intrapulmonary metastasis)
3. Multifocal lung cancer
4. Pneumonic-type lung cancer

How do we distinguish between these cancers?

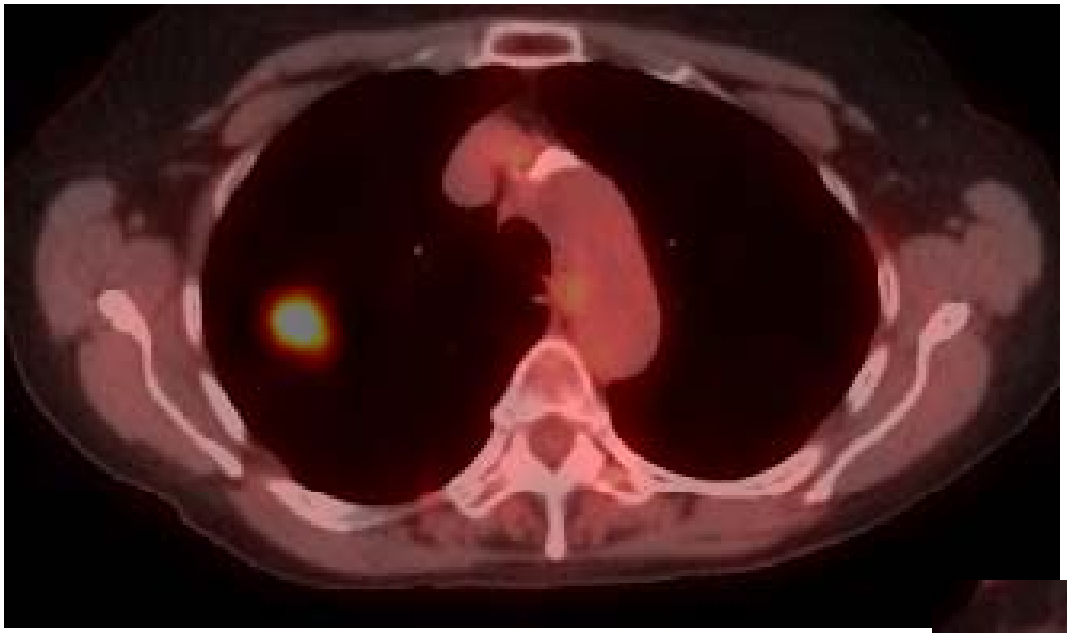
And why does it matter?

Synchronous Primary Lung Cancers vs. Separate Tumor Nodule(s) ?

78 year old woman, former 40 pk-yr smoker, had a CXR performed pre-op shoulder surgery. She has no pulmonary symptoms, but has a history of mild COPD. CXR identified a left lower lobe nodule.

Chest CT:

- Emphysematous changes
- 2.5 cm spiculated nodule LLL
- 1.4 cm spiculated nodule RUL
- No mediastinal or hilar adenopathy



PET: LLL nodule SUV 9.6
RUL nodule SUV 5.4

What relationship (if any) is there between the two nodules? Does this patient have synchronous primary lung cancers or one lung cancer with a contralateral tumor nodule?

What is the appropriate clinical stage?

- T1cN0M0 and T1bN0M0 (two primary sites, both Stage I) vs
- T1cN0M1a (index LLL lesion with related RUL intrapulmonary metastasis, Stage IVa)

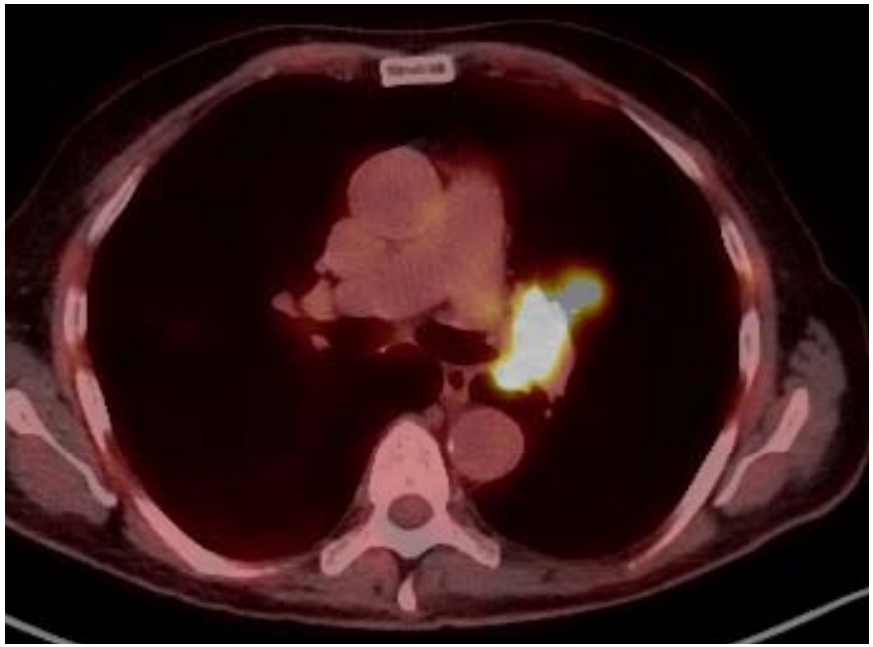
What is at stake?

- Stage I cancer x 2 vs Stage IV cancer

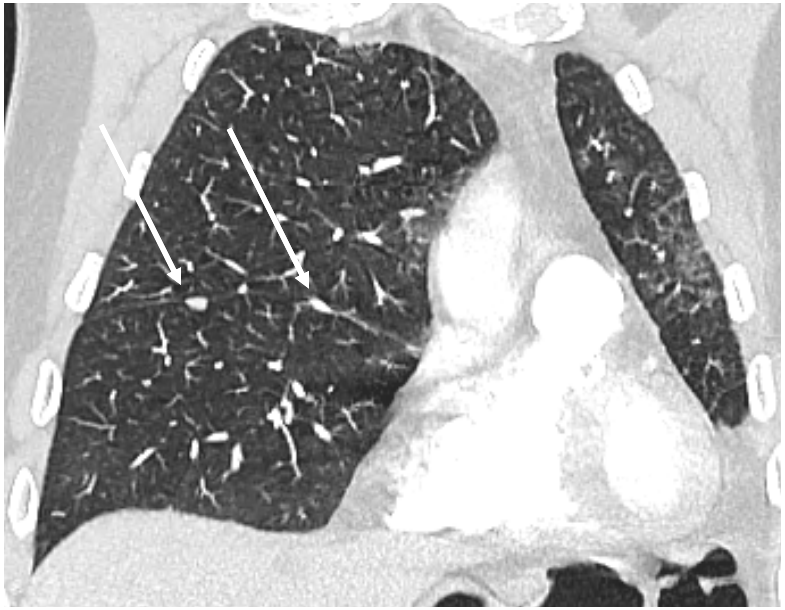
Question 1

Assuming this patient has lung cancer, what is your assessment of the clinical stage?

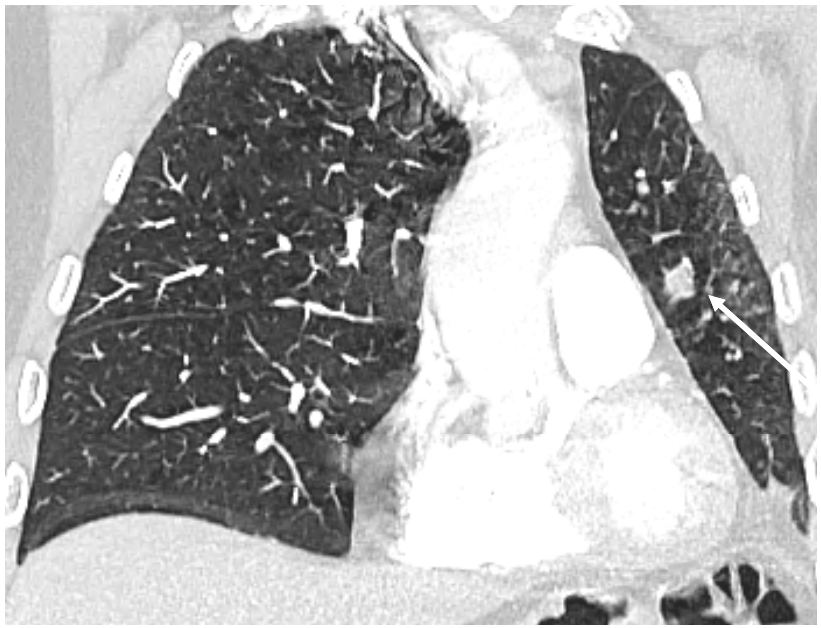
A. Synchronous primary lung cancers: T1cN0M0, Stage I and T1bN0M, Stage I
B. One lung cancer, primary in LLL and intrapulmonary metastasis in RUL: T1cN0M1a, Stage IVa

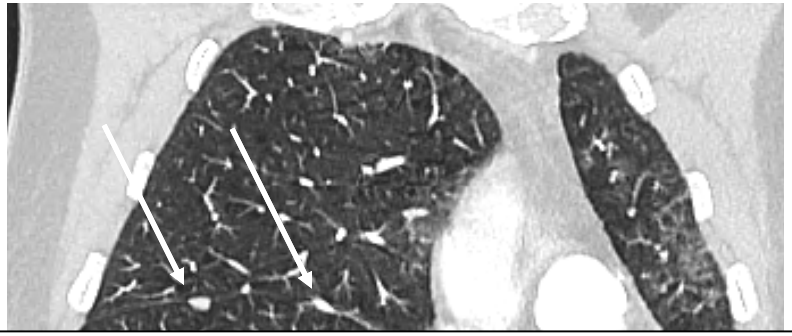


- 72 yo man, 50 pk-yr smoker, presented with persistent cough and 10 lb wgt loss over 3 months
- CT: 3.5 cm left hilar mass without mediastinal adenopathy
- EBUS: distal left mainstem tumor, LUL bronchus 50% obstructed, LLL bronchus 90% obstructed
  - Endobronchial biopsies: squamous cell carcinoma
  - Station 7, 4L, 4R nodes negative
- PET: left hilar mass SUV 11.9; no other FDG uptake
- PFT: FEV1 70% predicted; DLCO 69% predicted
- Quantitative perfusion evenly split between the two lungs

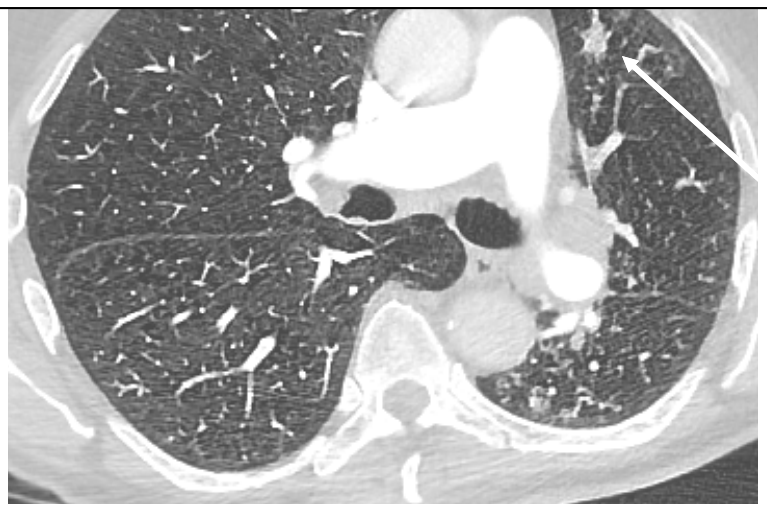


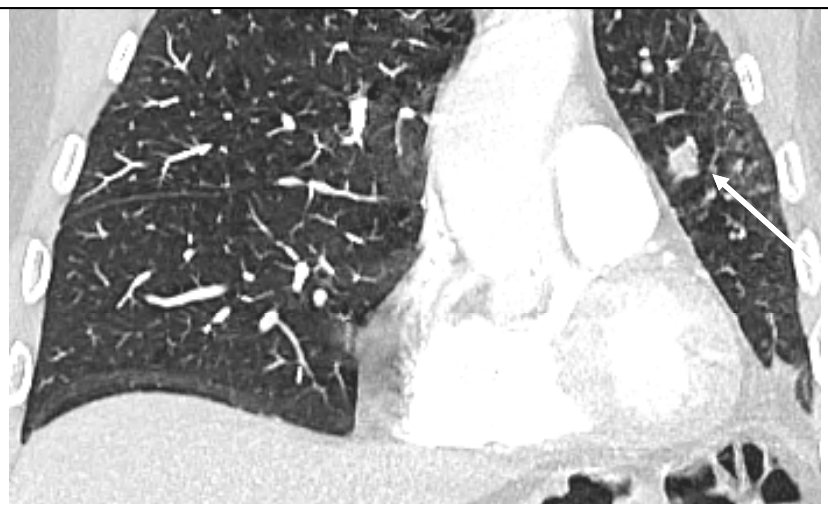
Chest CT also demonstrated 3 pulmonary nodules (LUL, RML)





- What is the clinical stage?
  - T2aN1M0, Stage IIB (3.5 cm left endobronchial tumor with presumed N1 involvement, assume right nodules are lymph nodes), and separate primary T1aN0M0,Stage IA1 vs
  - T4N1M0, Stage IIIA (3.5 cm left endobronchial tumor with related tumor nodule in ipsilateral lobe, assume right nodules are lymph nodes) vs
  - T2N1M1a, Stage IVA (3.5 left endobronchial tumor with metastatic nodules in separate ipsilateral and contralateral lobes)





Question 2

Knowing this patient has lung cancer, what is your assessment of the clinical stage?

A. T2aN1M0, Stage IIB (left endobronchial tumor with presumed N1 involvement, assume right nodules are lymph nodes), and separate primary T1aN0M0, Stage IA1

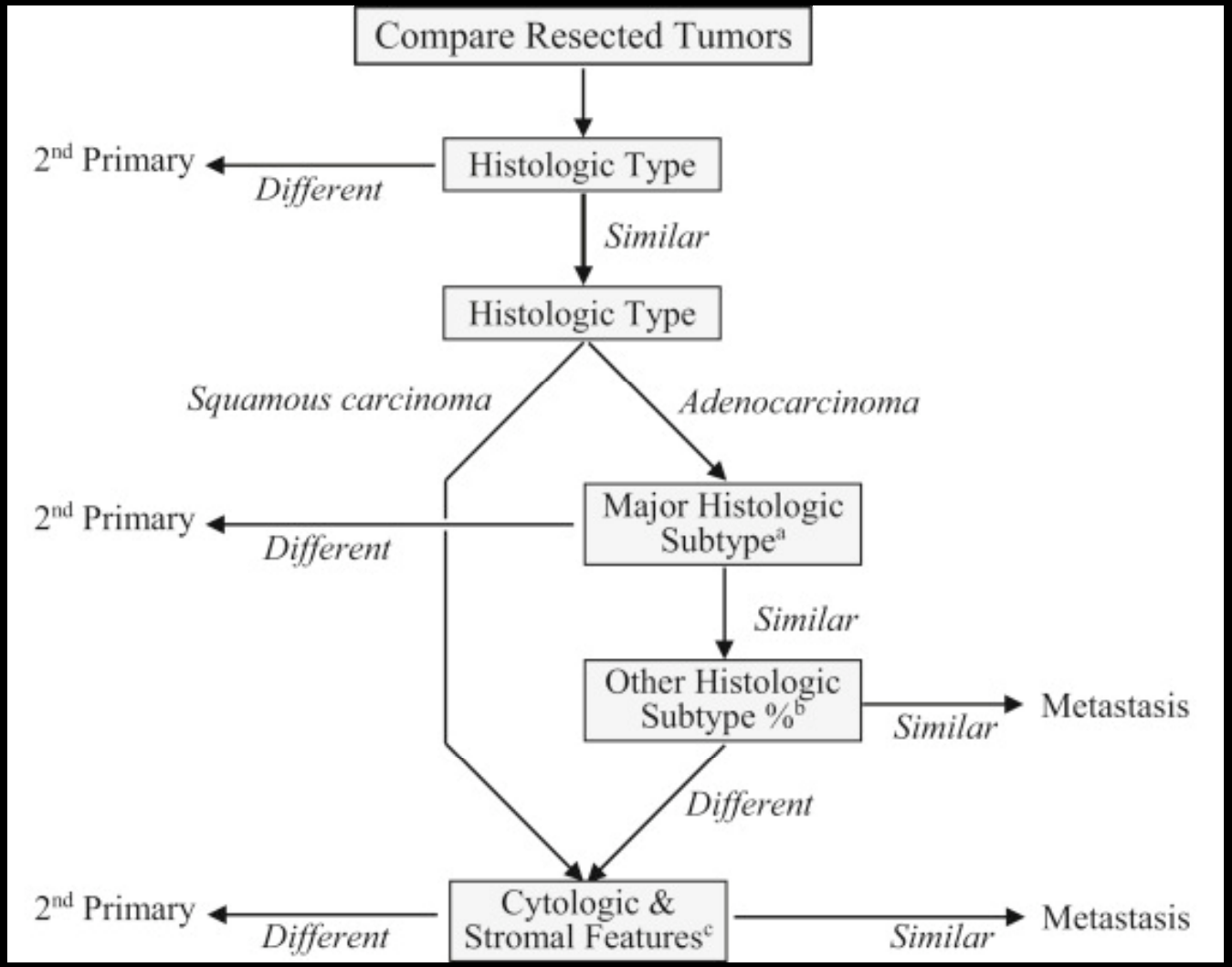
B. T4N1M0, Stage IIIA (left endobronchial tumor with related tumor nodule in separate ipsilateral lobe, assume right nodules are lymph nodes)

C. T2N1M1a, Stage IVA (left endobronchial tumor with metastatic nodules in separate ipsilateral and contralateral lobes)

How do we distinguish synchronous primary lung cancers from an index lung cancer with intrapulmonary metastasis?

	Synchronous Primaries	Intrapulmonary metastasis
Clinical	• Absence of clinical features suggesting metastasis • Distinct biologic behavior (growth characteristics)	• Clinical features suggesting metastasis • Similar biologic behavior
Radiography	• Distinct nodules/masses with features of primary lung cancer (spiculation) • Absence of nodal or systemic disease	• Convincing index cancer with smaller distinct nodules • Presence of nodal or systemic disease
Pathology	• **Distinct histologies (eg. squamous vs adeno)** • NB: same histology does not EXCLUDE synchronous primaries • Distinct biomarker profiles (KRAS+ vs EGFR+)	• **Matching breakpoints identified by comparative genomic hybridization** • Same histologies • NB: morphologic differences and biomarker variation do not EXCLUDE intrapulmonary metastasis

Figure 2 Process of conducting a comprehensive histologic assessment



Journal of Thoracic Oncology 2016 11, 651-665DOI: (10.1016/j.jtho.2016.01.025)

Lung cancer heterogeneity

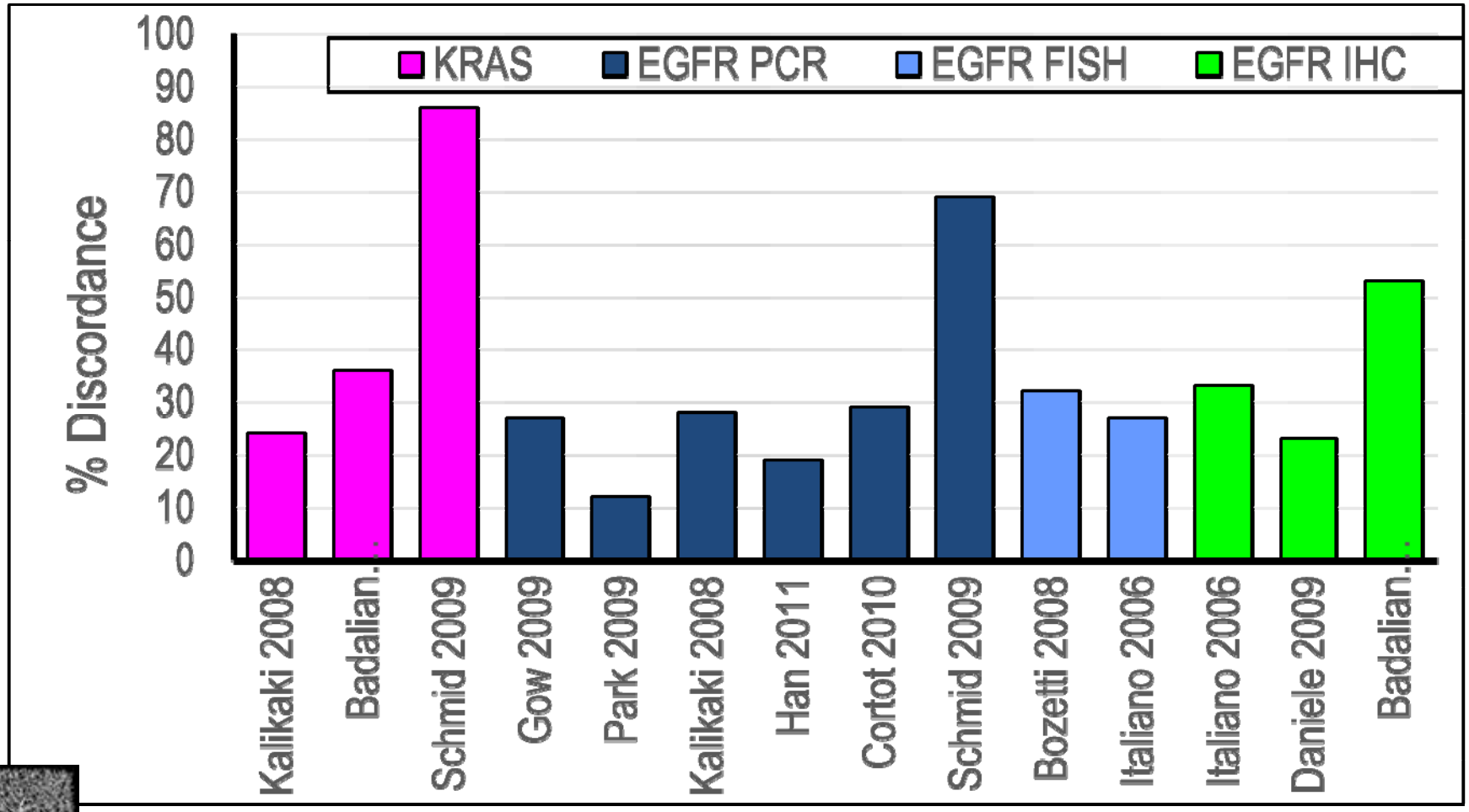
Roggli VL et al. Lung Cancer Heterogeneity: A Blinded and Randomized Study of 100 Consecutive Cases. Human Pathology 1985; 16:569-579

- 100 consecutive lung cancers (65 surgical resections and 35 autopsies)
  - 5 pathologists reviewed all slides
  - At least 10 blocks from the primary tumor or the entire tumor

	Determination by majority of observers	
Homogeneity	Identification of the same major histologic type on each slide	34%
Heterogeneity, minor	Presence of same major histologic type but with variation in identification of subtypes	21%
Heterogeneity, major	Presence of more than one major histologic type	45%

- In cases where a minimally invasive biopsy had been done, nearly half demonstrated major heterogeneity with the resected or autopsied cancer

Figure 1: Reported rates of discordance between primary and metastatic sites of lung cancer for various biomarkers.



Journal of Thoracic Oncology 2016 11, 651-665DOI: (10.1016/j.jtho.2016.01.025)

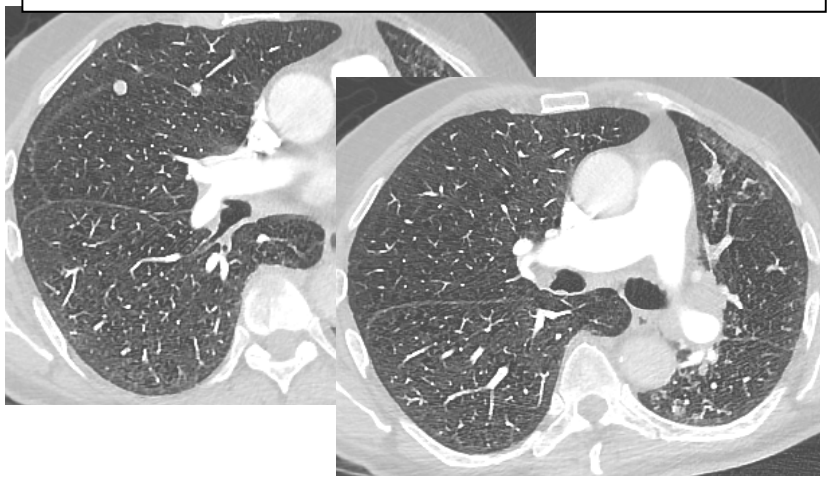
Synchronous primary lung cancers vs lung cancer with intrapulmonary metastasis

	Synchronous Primaries	Intrapulmonary metastasis
Staging	• Each tumor receives a distinct TNM staging	• Stage all findings as one cancer Intrapulmonary metastasis: • T3 – same lobe • T4 – ipsilateral different lobe • M1a – contralateral lung
Management	• Manage each cancer separately • Ideal management of each cancer may have to be tempered by composite management of both	• Manage as a single cancer
Outcomes	• Observed overall survival similar to what would be expected by separate primary cancers	• Projected based on cancer stage

Synchronous Primary Lung Cancers vs. Separate Tumor Nodule(s) ?

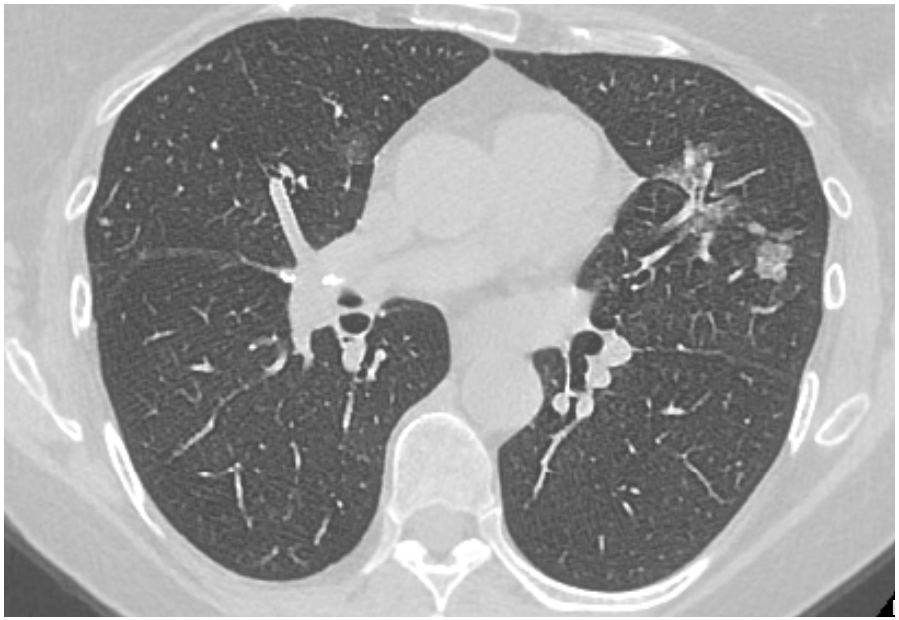
<u>T1cN0M0 and T1bN0M0,</u>
two primary cancers, both Stage I)

T3 or T4N1M0 (left endobronchial tumor with related tumor nodule in ipsilateral lobe, Stage IIIA)



3. Multifocal lung cancer

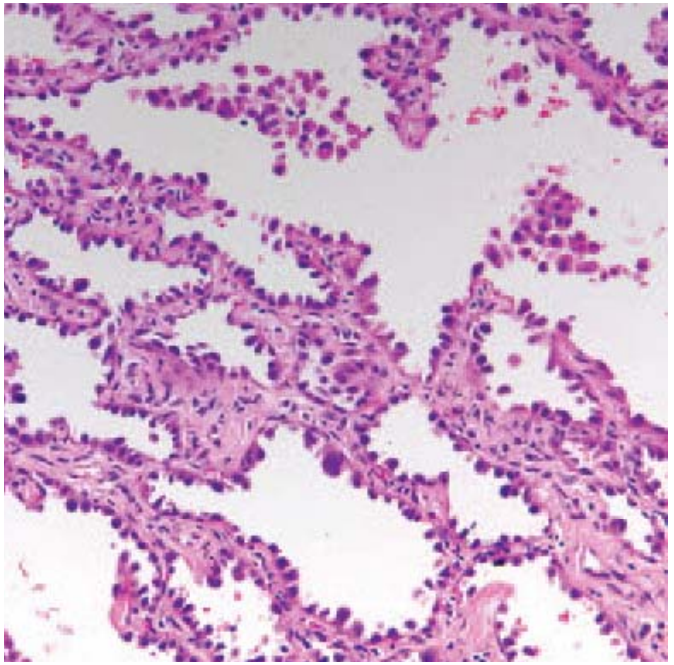
60 year old woman, never smoker, presented to ED with chest pain. The chest pain was eventually attributed to GERD. CXR suggested a right upper lobe nodule, and the patient had a follow up chest CT. She is without physical exam findings or complaints.



Chest CT: multiple ground glass nodules, 2 – 18 mm. One subsolid 14 mm nodule in the right middle lobe. No hilar or mediastinal adenopathy

3. Multifocal lung cancer

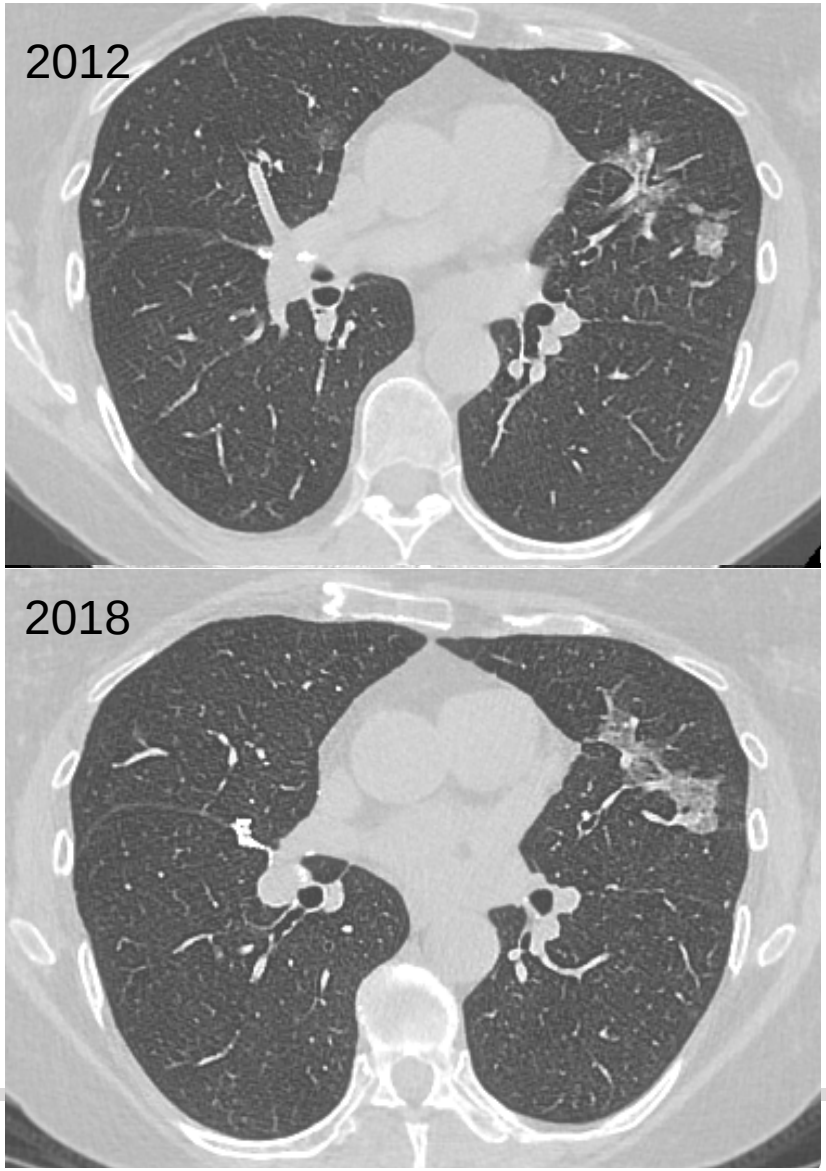
	Multifocal Lung Cancer
Clinical	• Women, nonsmokers • (both sexes, smoking, nonsmoking) • Often (usually) asymptomatic
Radiography	• Multiple subsolid nodules (pure ground glass or subsolid), at least one of which is suspected or proved to be cancer
Pathology	• Adenocarcinoma • Multiple foci with variable histologies – atypical adenomatous hyperplasia (AAH), adenocarcinoma in situ (AIS), minimally invasive adenocarcinoma (MIA), lepidic predominant adenocarcinoma (LPA), invasive adenocarcinoma



3. Multifocal Lung Cancer

	Multifocal Lung Cancer
Staging	• Stage as multiple primary cancers • T based on highest T lesion • T(#/m) indicates multiplicity • Single highest N, M
Management	• Manage each site as a separate primary • Pure ground glass lesions are likely to be AAH, AIS, MIA – natural history is slow • Development of solid component should trigger closer evaluation

3. Multifocal lung cancer



60 year old woman, never smoker, with multifocal lung cancer.

2012 – Right middle lobectomy: 1.2 cm invasive adenocarcinoma; 1.o cm lepidic predominant adenocarcinoma; 3 sites of minimally invasive adenocarcinoma, several < 5 mm sites of AAH. pT1a(m)N0M0 adenocarcinoma

2018 – Doing well and continues to be followed with multiple ground glass nodules

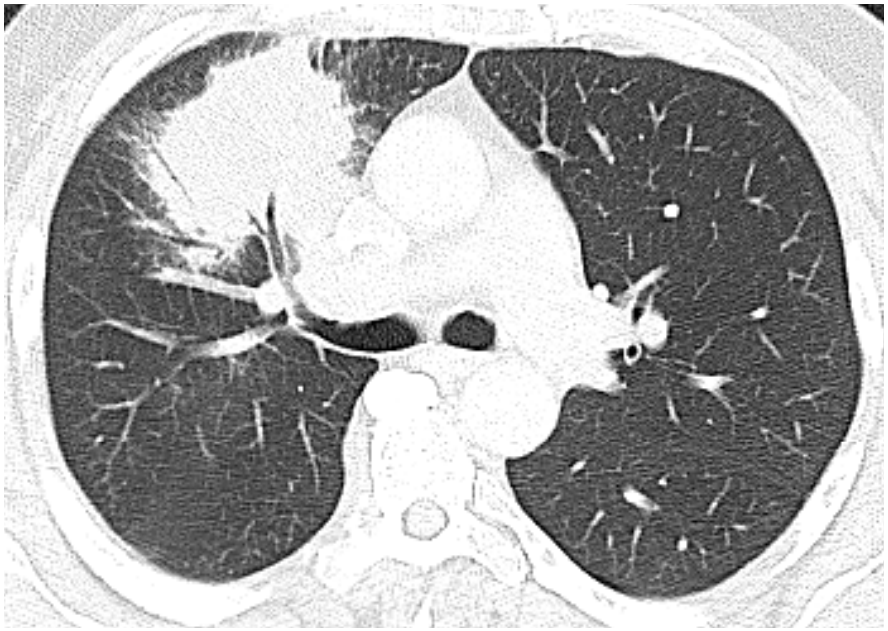
3. Multifocal lung cancer - outcomes

Table 2. Multifocal Ground Glass/Lepidic Lung Adenocarcinoma

First Author	No. Patients	% pN2	% Resected	Location	% Multifocal	% 5-Year Survival	
						All	pN0
Ishikawa[25]	93	8	100	Various	87	87	93
Vazquez[30,b]	49	10[c]	100	Various	100	—	100
Nakata[29]	31	6	100	Various	84	93	—
Ebright[12]	29[e]	3[c]	100	Various	100	68	—
Mun[28,b]	27	0	100	Various	93	100[f]	100[f]
Kim[58]	23	0	100	—	100	100	100
Roberts[60]	14	0	100	Various	100	64	64
Average						**85**	**91**
Registry data							
Zell 2006[27]	93	11	91	Same L	100	48[f]	—
Zell 2006[27]	80	22[g]	68	Ipsi DL	100	25[f]	—
Zell 2006[27]	198	22[g]	21	Bilat L	100	7[f]	—

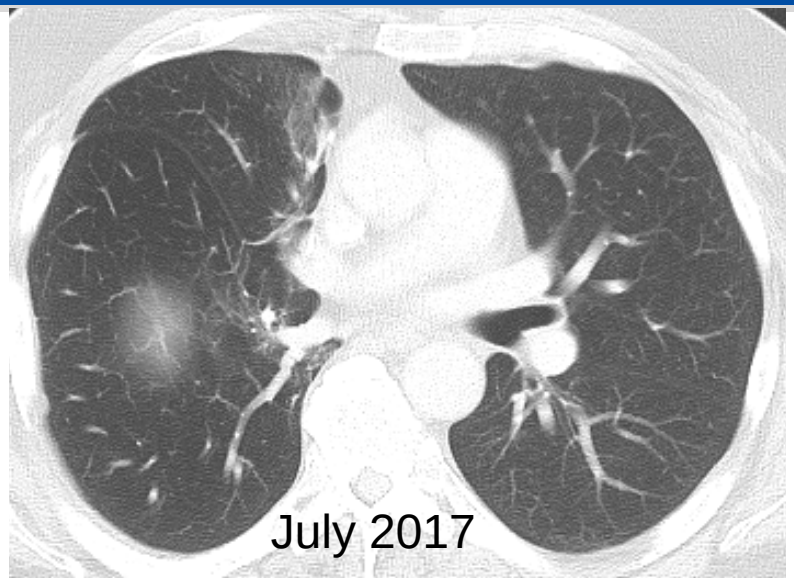
Detterbeck et al JTO 2016; 11:666-680

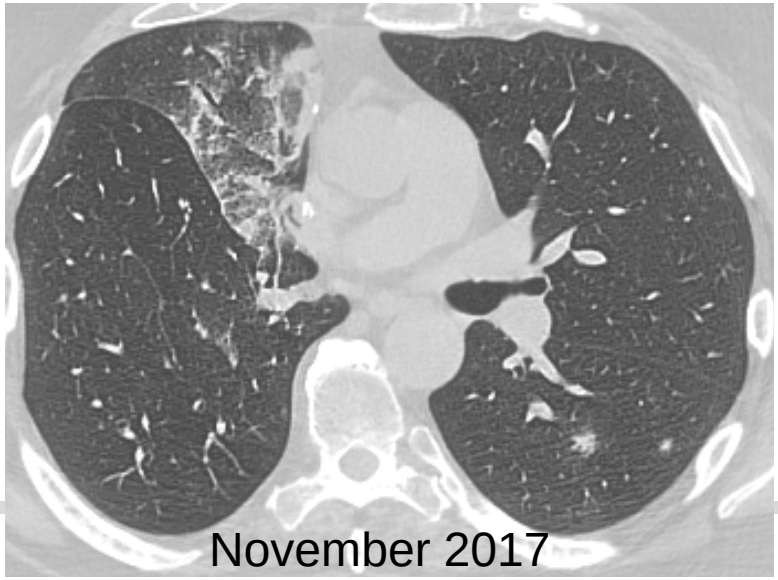
4. Pneumonic-type Adenocarcinoma



- 62 yo man with mild COPD, 40 pk-yr smoking (quit 25 years ago), several months of cough, fever, and dyspnea and persistent RUL infiltrate on CXR despite several courses of antibiotics.
- Chest CT: 7 cm spiculated, solid mass in RUL without hilar or mediastinal adenopathy
- Bronchoscopy: nondiagnostic
- RULobectomy Feb 2017: 8 cm mucinous adenocarcinoma with lepidic features and multiple "microfoci" of similar cancer, T4N0M0, Stage IIIA.
- Received postop chemotherapy (Cisplatin/Pemetrexed)

Pneumonic-type Adenocarcinoma





- July 2017: Patient developed cough. Chest CT: faint RML infiltrate. Improved with antibiotics
- November 2017: Patient with recurrent dry cough.
- Chest CT: more extensive RML infiltrate and several “soft”, <5 mm GGO in RLL and LLL
- Bronchoscopy: biopsies of RML nondiagnostic
- December 2017: Bronchoscopy with cryobiopsies of RML: Adenocarcinoma mucinous type, lepidic features. Station 7 and R11 lymph nodes negative
- T4N0M1a, Stage IVA
- Receptor/Molecular status negative
- Being treated with Nivolumab

Pneumonic-type lung cancer

	Pneumonic-type lung cancer
Clinical	• Areas of ground glass and consolidation, may be mistaken for pneumonia
Radiography	• Regional areas of ground glass and/or consolidation • Adenopathy is usually absent
Pathology	• Diffuse, often homogeneous distribution of adenocarcinoma throughout a region of lung • Invasive mucinous adenocarcinoma most common histotype, though nonmucinous and mixed (mucinous and nonmucinous) also observed • Usually lepidic, but other morphologies described

4. Pneumonic-type lung cancer

	Pneumonic-type lung cancer

Staging	• Stage as a single cancer
	• T descriptor
	  • T1 or T2 based on size
	  • T3 if confined to a single lobe
	  • T4 if present in a different ipsilateral lobe
	  • M1a if present in contralateral lobe
	• Single highest N, M

Management	• Manage as a single cancer • Lung transplant has been offered in small number of cases (recurrence rate > 50%)

4. Pneumonic-type lung cancer - outcomes

Table 5. Pneumonic-Type Adenocarcinoma

First Author	No. Patients	Presentation, %				Histologic Type, %			% 5-Year Overall Survival		
		Bilateral	N2,3	M1b	Resected	Mucinous	Mixed	Nonmucinous	All	Resected	pN0
Wislez[77]	52	58	22	6	38	26	21	53	13	36	–
Okubo[70]	25	40	–	–	56	44	12	44	–	40	–
Regnard[49]	21	–	–	–	–	57	14	29	–	27	–
Dumont[80]	12	–	33	0	100	50	–	50	–	25	–
Ebright[12]	7	–	0	0	100	100	0	0	–	27	27
Casali[48]	7	–	–	0	100	86	0	14	–	28	–
Average										**31**	

Detterbeck et al JTO 2016; 11:666-680

Lung Cancer with Multiple Pulmonary Sites of Disease

Table 5. Schematic Summary of Patterns of Disease and TNM Classification of Patients with Lung Cancer with Multiple Pulmonary Sites of Involvement

	Second Primary Lung Cancer	Multifocal GG/L Nodules	Pneumonic-Type Adenocarcinoma	Separate Tumor Nodule
Imaging features	Two or more distinct masses with imaging characteristic of lung cancer (e.g., spiculated)	Multiple ground glass or part-solid nodules	Patchy areas of ground glass and consolidation	Typical lung cancer (e.g., solid, spiculated) with separate solid nodule
Pathologic features	Different histotype or different morphologic features by comprehensive histologic assessment	Adenocarcinomas with prominent lepidic component (typically varying degrees of AIS, MIA, LPA)	Same histologic features throughout (most often invasive mucinous adenocarcinoma)	Distinct masses with the same morphologic features by comprehensive histologic assessment
TNM classification	Separate cTNM and pTNM for each cancer	T based on highest T lesion with (#/m) indicating multiplicity; single N and M	T based on size or T3 if in single lobe, T4 or M1a if in different ipsilateral or contralateral lobes; single N and M	Location of separate nodule relative to primary site determines if T3, T4, or M1a; single N and M
Conceptual view	Unrelated tumors	Separate tumors, albeit with similarities	Single tumor, diffuse pulmonary involvement	Single tumor, with intrapulmonary metastasis

AIS, adenocarcinoma in situ; c, clinical; GG/L, ground glass/lepidic; LPA, lepidic-predominant adenocarcinoma; MIA, minimally invasive adenocarcinoma; p, pathological; TNM, tumor, node, and metastasis.

Detterbeck et al. Journal of Thoracic Oncology 2016 11:639-650

Limitations of the Lung Cancer Staging System

- IALSC database is not representative of all populations
- The TNM system relies solely on anatomy
  - No incorporation of molecular or biomarker information
- Prognosis is for the population, not for the individual
- Staging is not an algorithm for treatment
  - Treatment decisions must consider many factors (patient-, tumor-, treatment-related)
  - Treatment should still be with proven interventions for extent of disease
    - Example: 7.1 cm Squamous cell carcinoma RLL; EBUS: all mediastinal/hilar nodes – for disease
      - 7th edition: T3N0M0, Stage IIB
      - 8th edition: T4N0M0, Stage IIIA

8th Edition Lung Cancer Staging System

Take home points

- T descriptor with multiple reclassifications
- Node map revised
- Oligometastatic disease now with separate M1b designation
- Multiple pulmonary sites of disease clarified

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	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