

The 8th Edition Lung Cancer Stage Classification

Elwyn Cabebe, M.D.

Medical Oncology, Hematology, and Hospice and
Palliative Care

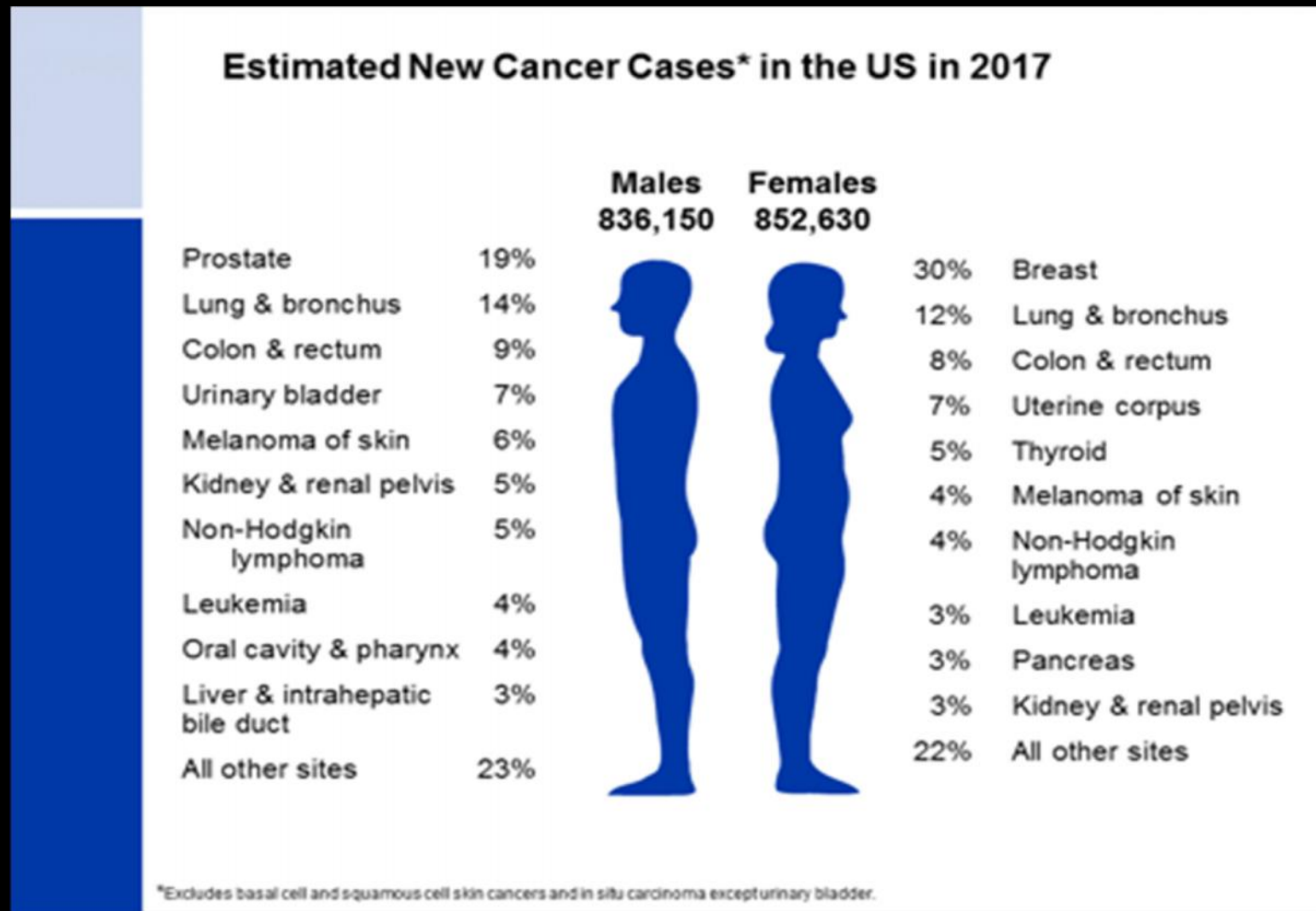
Valley Medical Oncology Consultants

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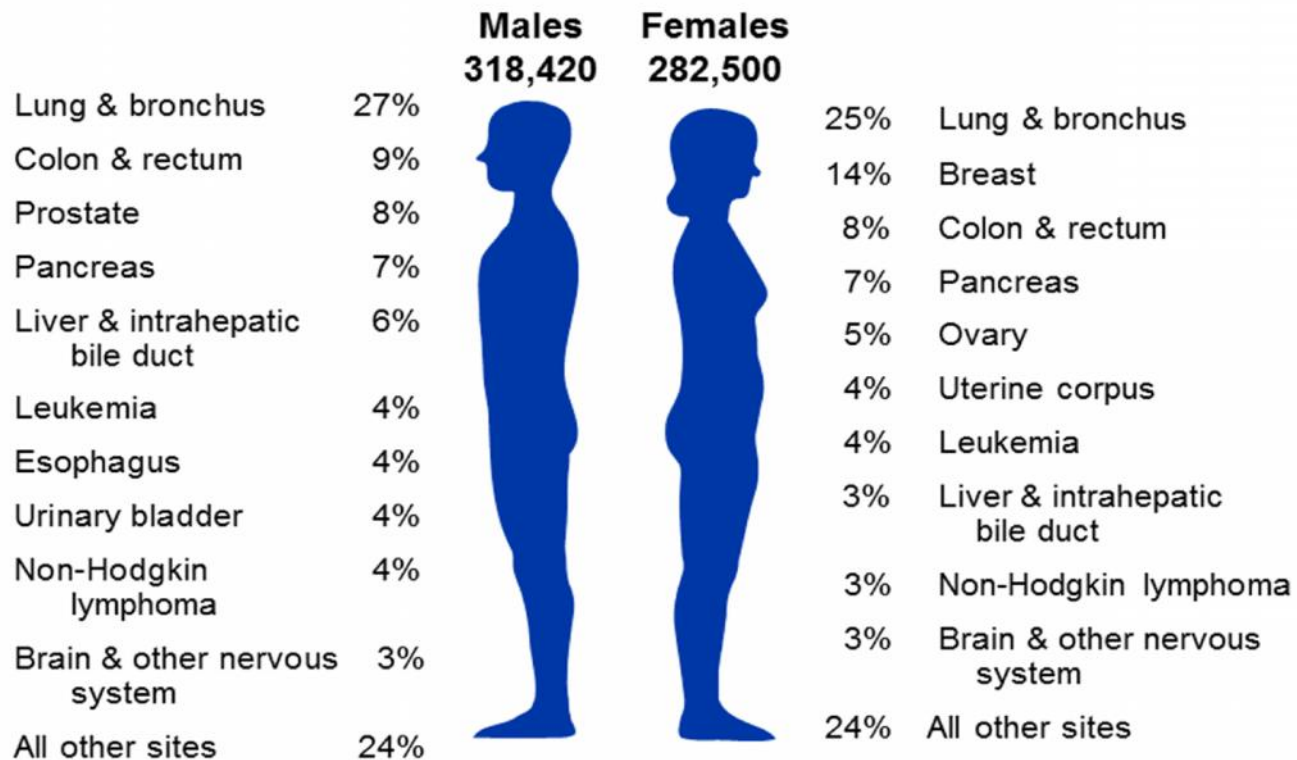
Santa Clara Valley Chapter of the Oncology Nursing Society
Hot Topics Conference
September 16, 2017

Estimated New Cancer Cases in 2017



Estimated Cancer Deaths in 2017

Estimated Cancer Deaths in the US in 2017



IASLC Lung Cancer Staging Timeline

- 1996: Idea for the IASLC
- 1998: Lung Cancer Staging Project Created
- 2010: 7th Edition
- 2009-2013: Registry of New Cases (1999-2010)
- 2013-2014: Data Review
- 2011-2016: Publication
- 2017: 8th Edition

Database for the 8th Edition

Region	Number	%
Europe	46560	49
Asia	41705	44
North America	4660	5
Australia	1593	1.7
South America	190	0.3
TOTAL	94708	100

“T” Classification Results

- Size: every cm counts
- Tumor size a descriptor in all T categories
- Visceral Pleural invasion: no change
- T2 and T3 endobronchial: Same prognosis
- T2 and T3 atelectasis: Same prognosis
- T3 diaphragm has a T4 prognosis
- T3 mediastinal pleura, rarely used

The “T” Component

Proposed (TNM 8th)

Up to 1 cm: T1a

>1-2 cm: T1b

>2-3 cm: T1c

>3-4 cm: T2a

>4-5 cm: T2b

>5-7 cm: T3

>7 cm: T4

Bronchus < 2cm: T2

Total Atelectasis: T2

Diaphragm: T4

Previous (TNM 7th)

T1a

T1a

T1b

T2a

T2a

T2b

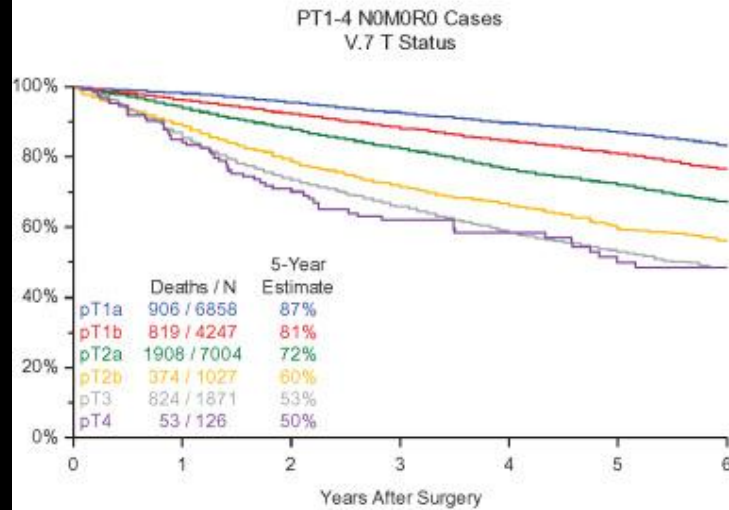
T3

Rami-Porta R, [J Thoracic Oncol](#), 2015

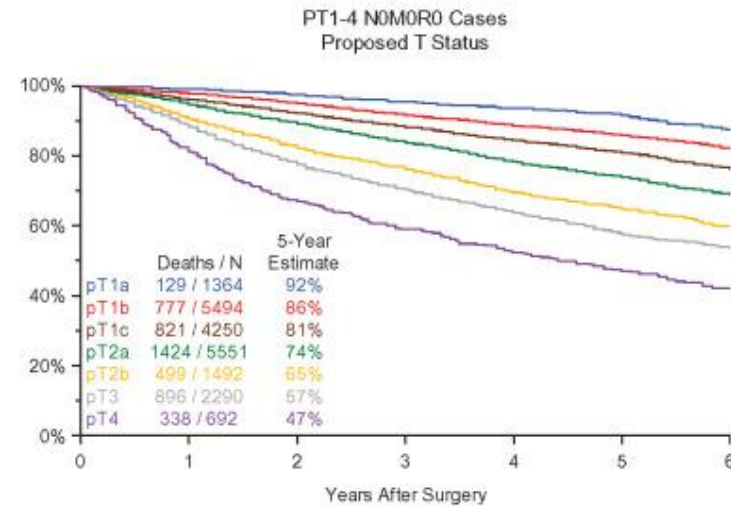
International Association for the Study of Lung Cancer, 2015

8th Edition "T" Staging Category Changes

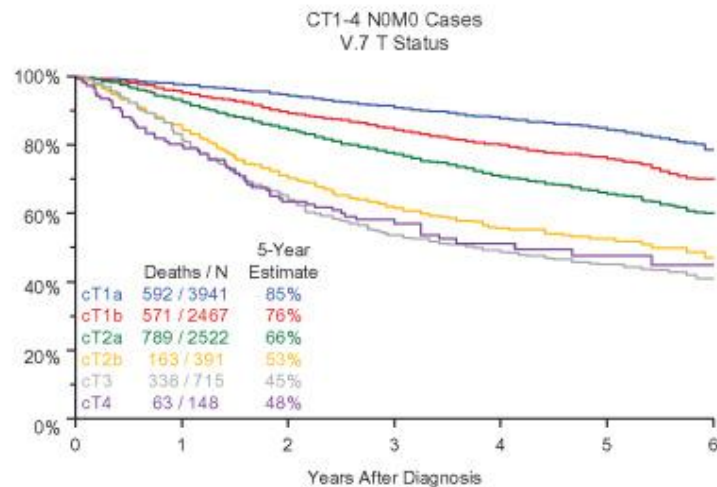
A 7th Edition T Categories



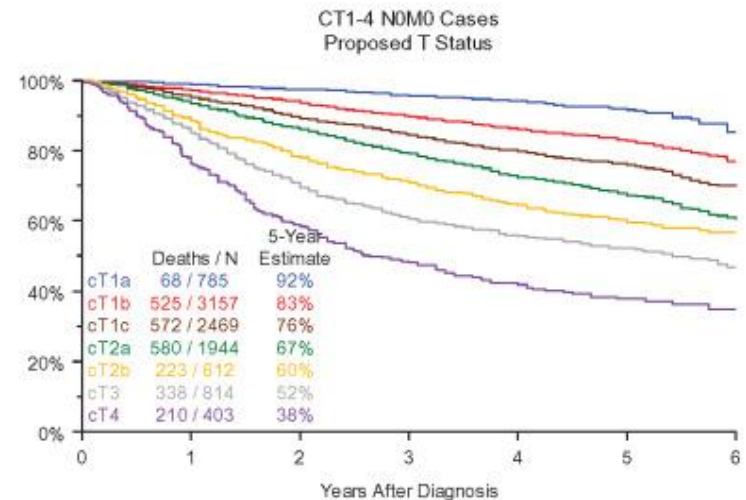
Proposed T Categories






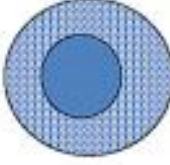
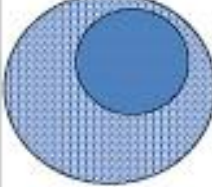
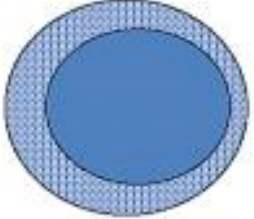
B 7th Edition T Categories



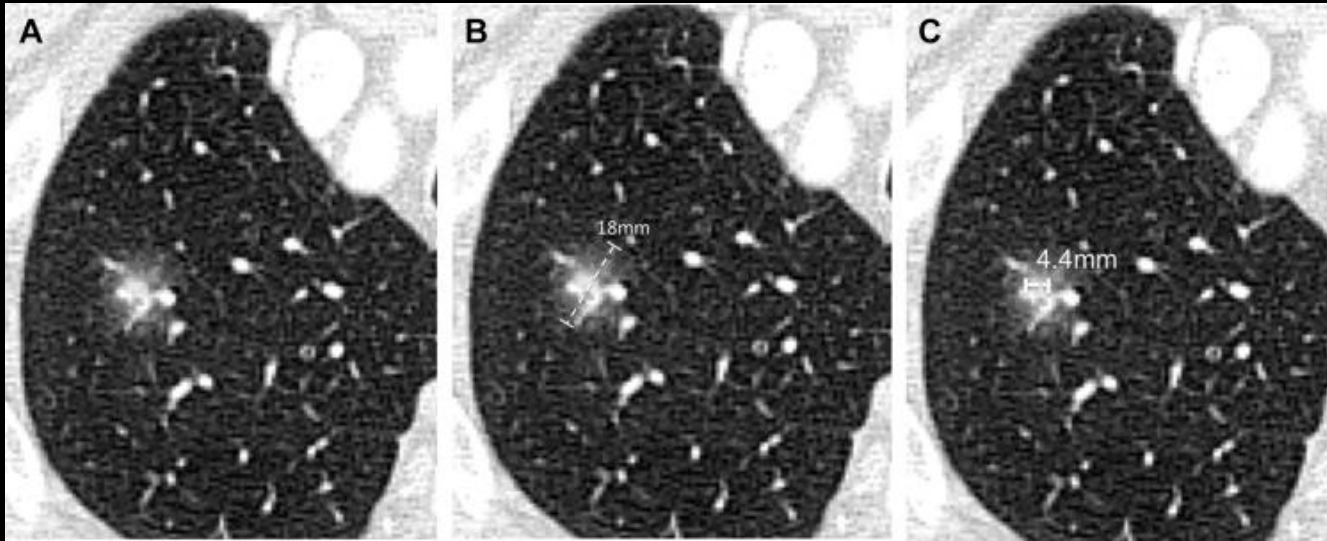
Proposed T Categories



New “T” Component Categories

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 a lepidic component or lepidic predominant AD	Invasive AD with lepidic component
	Pathologic Stage		pTis‡‡	pT1mi‡‡	pT1a	pT1b	pT1c

New “T” Component Categories



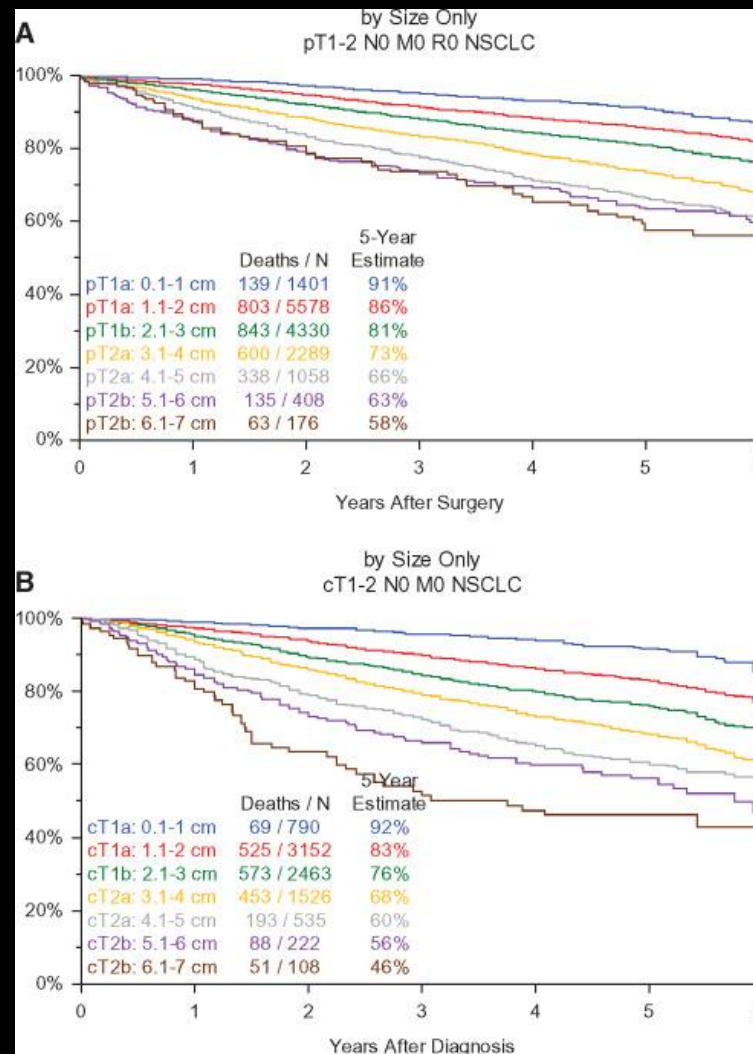
Clinical size: Size of **Solid** Component

Pathologic size: Size of **Invasive** Component

T – Primary Tumour

Tx		Primary tumour cannot be assessed
T0		No evidence of primary tumour
T1		Tumour 3 cm or less in greatest diameter surrounded by lung or visceral pleura, without evidence of main bronchus
	T1a(mi)	Minimally invasive adenocarcinoma
	T1a	Tumour 1 cm or less in greatest diameter
	T1b	Tumour more than 1 cm but not more than 2 cm
	T1c	Tumour more than 2 cm but not more than 3 cm
T2		Tumour more than 3 cm but not more than 5 cm; or tumour with any of the following features: Involves main bronchus (without involving the carina), invades visceral pleura, associated with atelectasis or obstructive pneumonitis that extends to the hilar region
	T2a	Tumour more than 3 cm but not more than 4 cm
	T2b	Tumour more than 4 cm but not more than 5 cm
T3		Tumour more than 5 cm but not more than 7 cm or one that directly invades any of the following: chest wall, phrenic nerve, parietal pericardium, or associated separate tumour nodule(s) in the same lobe as the primary
T4		Tumours more than 7 cm or one that invades any of the following: diaphragm, mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, oesophagus, vertebral body, carina; separate tumour nodule(s) in a different ipsilateral lobe to that of the primary

Survival of Pathologically Staged T1-T2

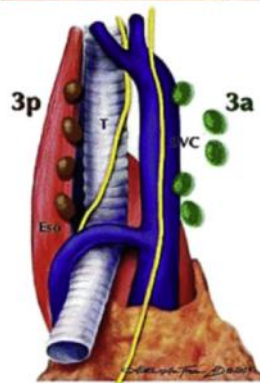
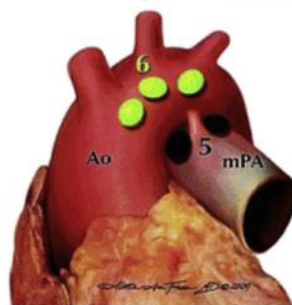
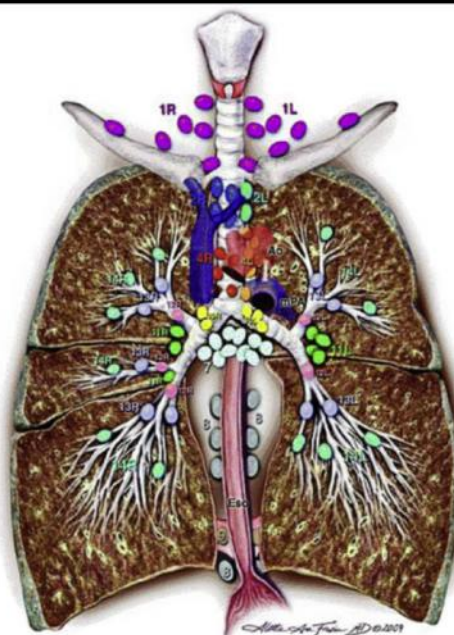


The “N” Component

No changes in the TNM 8th Edition...

Exploratory subgrouping (for future validation)

- **N1a: Single N1**
- **N1b: Multiple N1**
- **N2a1: Single N2 (skip metastasis)**
- **N2a2: Single N2 + N1**
- **N2b: Multiple N2**



Supraclavicular zone

- 1 Low cervical, supraclavicular, and sternal notch nodes

SUPERIOR MEDIASTINAL NODES

Upper zone

- 2R Upper Paratracheal (right)
- 2L Upper Paratracheal (left)
- 3a Prevascular
- 3p Retrotracheal
- 4R Lower Paratracheal (right)
- 4L Lower Paratracheal (left)

AORTIC NODES

AP zone

- 5 Subaortic
- 6 Para-aortic (ascending aorta or phrenic)

INFERIOR MEDIASTINAL NODES

Subcarinal zone

- 7 Subcarinal

Lower zone

- 8 Paraesophageal (below carina)
- 9 Pulmonary ligament

N1 NODES

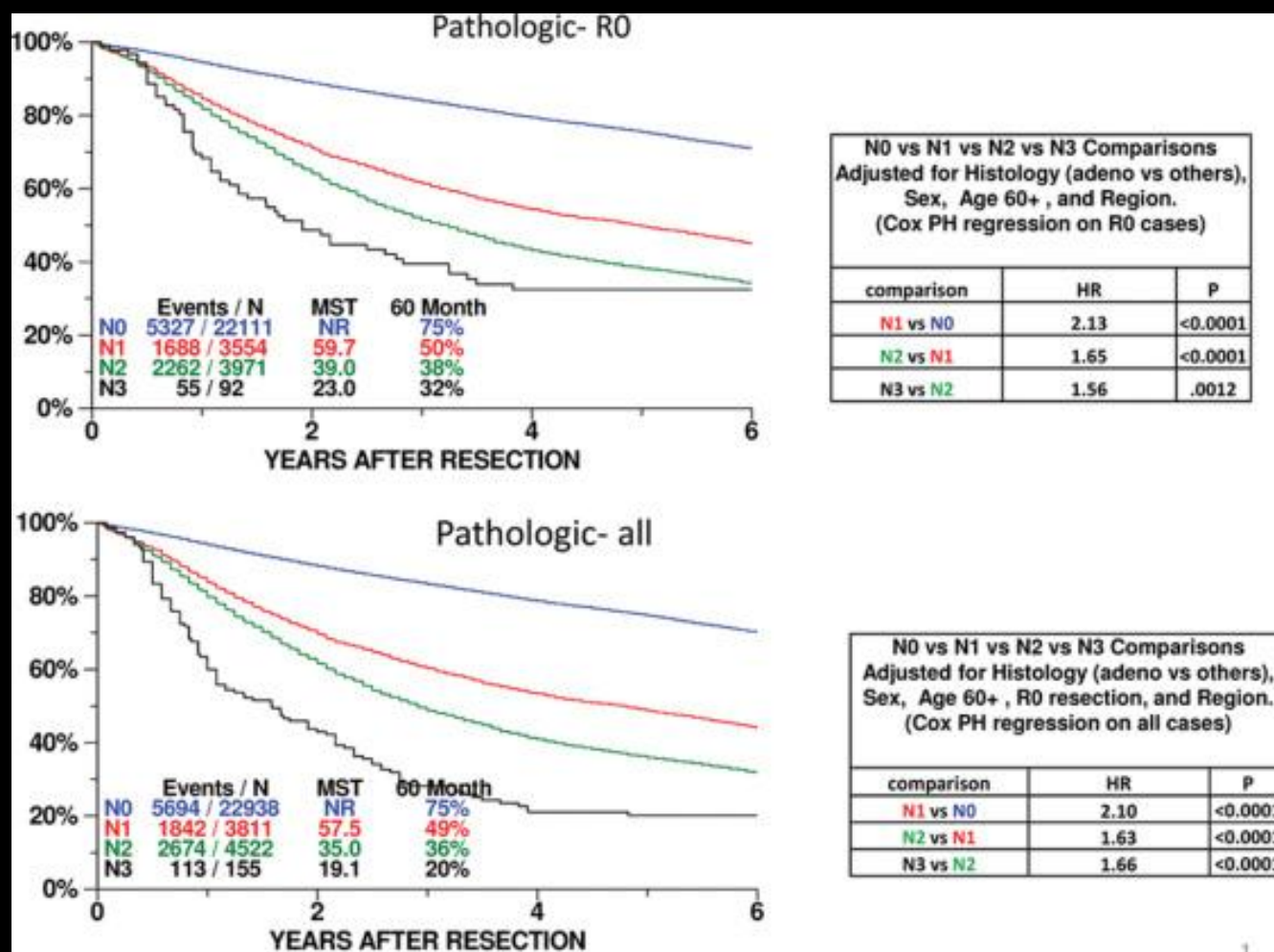
Hilar/Interlobar zone

- 10 Hilar
- 11 Interlobar

Peripheral zone

- 12 Lobar
- 13 Segmental
- 14 Subsegmental

Quantification of the Nodal Component



N – Regional Lymph Nodes

Nx		Regional lymph nodes cannot be assessed
N0		No regional lymph node metastasis
N1		Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension
N2		Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
N3		Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene or supraclavicular lymph node(s)

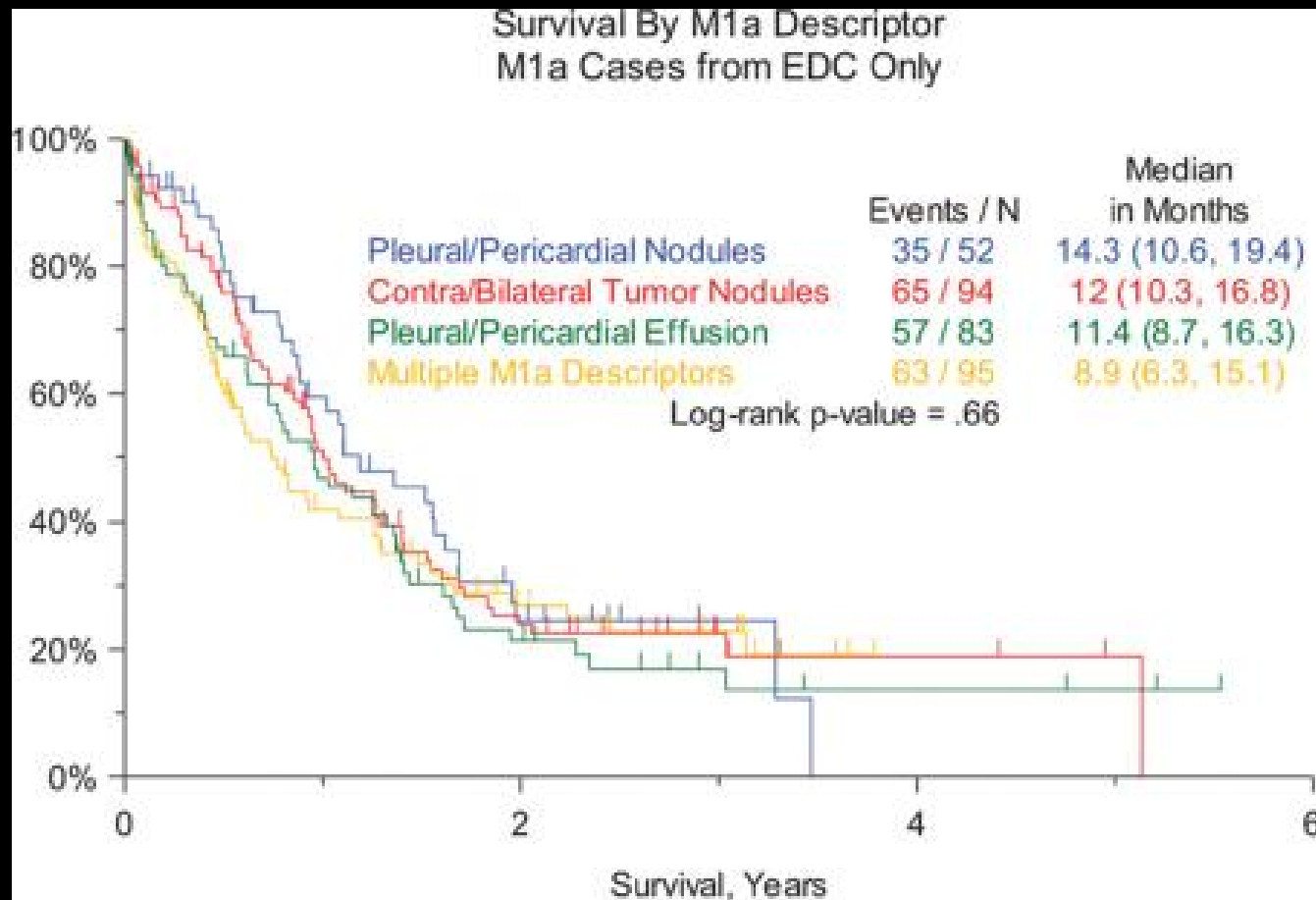
M – Distant Metastasis

M0		No distant metastasis
M1		Distant metastasis
	M1a	Separate tumour nodule(s) in a contralateral lobe; tumour with pleural or pericardial nodules or malignant pleural or pericardial effusion
	M1b	Single extrathoracic metastasis in a single organ
	M1c	Multiple extrathoracic metastases in one or several organs

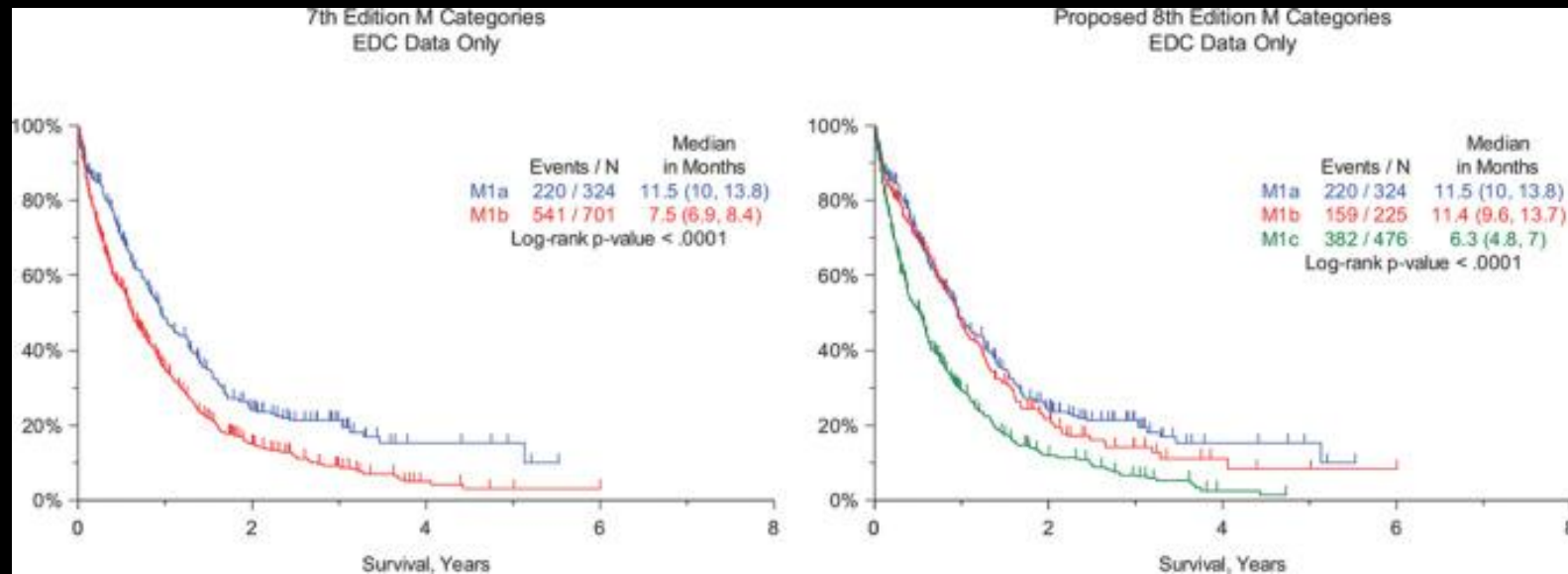
The “M” Component

- **M1a: as it is**
- **M1b: single metastasis in a single organ**
- **M1c: multiple metastases in a single organ or in several organs**

Prognostic Impact of M1a Descriptor

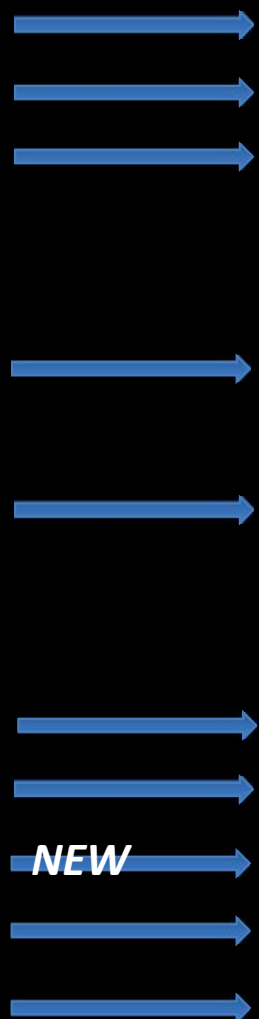


Prognostic Impact of M1 Descriptors



STAGE	T	N	M
Occult	TX	N0	M0
0	Tis	N0	M0
IA1	T1a(mi)/T1a	N0	M0
IA2	T1b	N0	M0
IA3	T1c	N0	M0
IB	T2a	N0	M0
IIA	T2b	N0	M0
IIB	T1a-T2b	N1	M0
	T3	N0	M0
IIIA	T1a-T2b	N2	M0
	T3	N1	M0
	T4	N0/N1	M0
IIIB	T1a-T2b	N3	M0
	T3/T4	N2	M0
IIIC	T3/T4	N3	M0
IVA	Any T	Any N	M1a/M1b
IVB	Any T	Any N	M1c

International Association for the Study of Lung Cancer, 2015



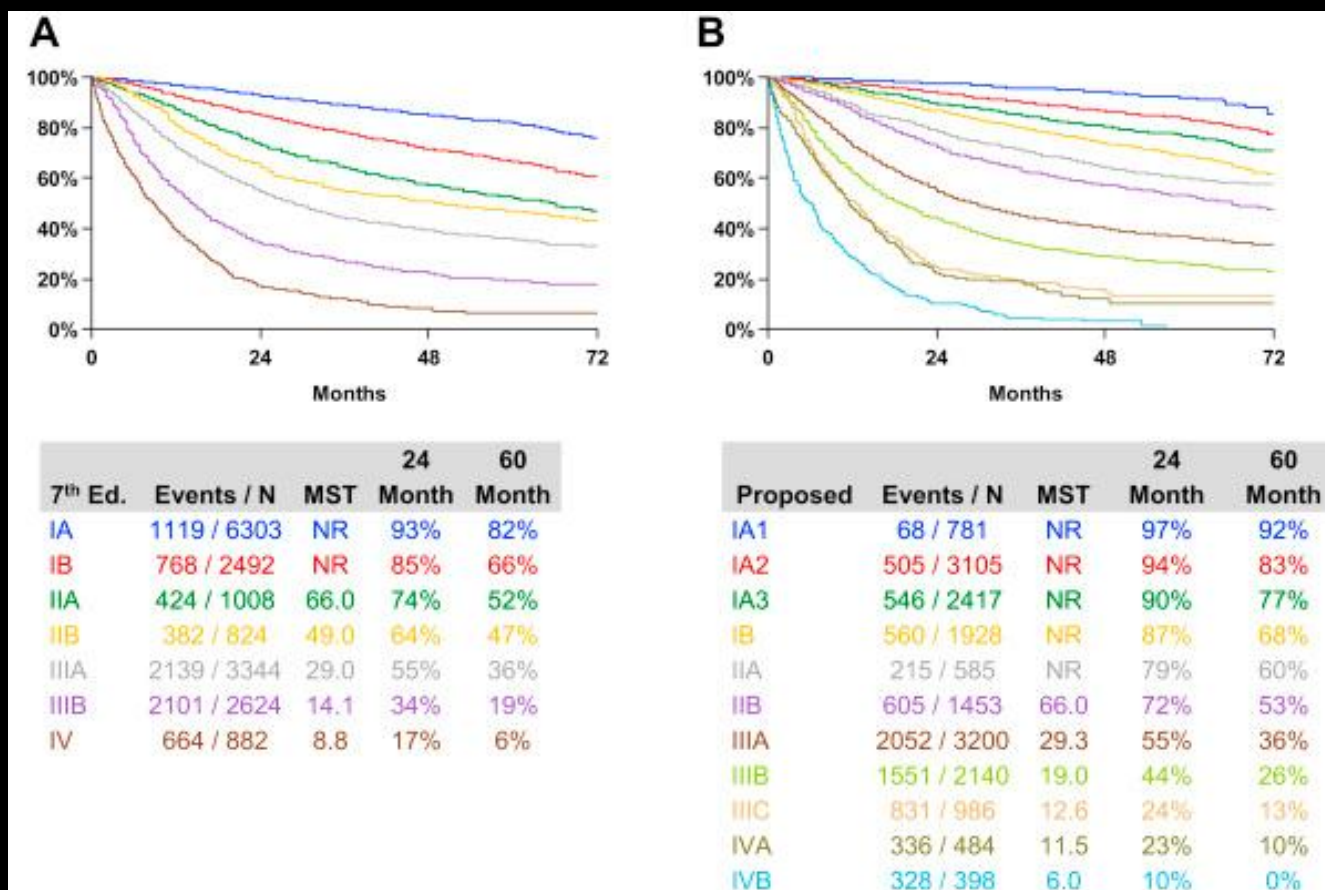
STAGE	T	N	M
Occult	TX	N0	M0
0	Tis	N0	M0
IA1	T1a(mi)/T1a	N0	M0
IA2	T1b	N0	M0
IA3	T1c	N0	M0
IB	T2a	N0	M0
IIA	T2b	N0	M0
IIB	T1a-T2b	N1	M0
	T3	N0	M0
IIIA	T1a-T2b	N2	M0
	T3	N1	M0
	T4	N0/N1	M0
IIIB	T1a-T2b	N3	M0
	T3/T4	N2	M0
IIIC	T3/T4	N3	M0
IVA	Any T	Any N	M1a/M1b
IVB	Any T	Any N	M1c

International Association for the Study of Lung Cancer, 2015

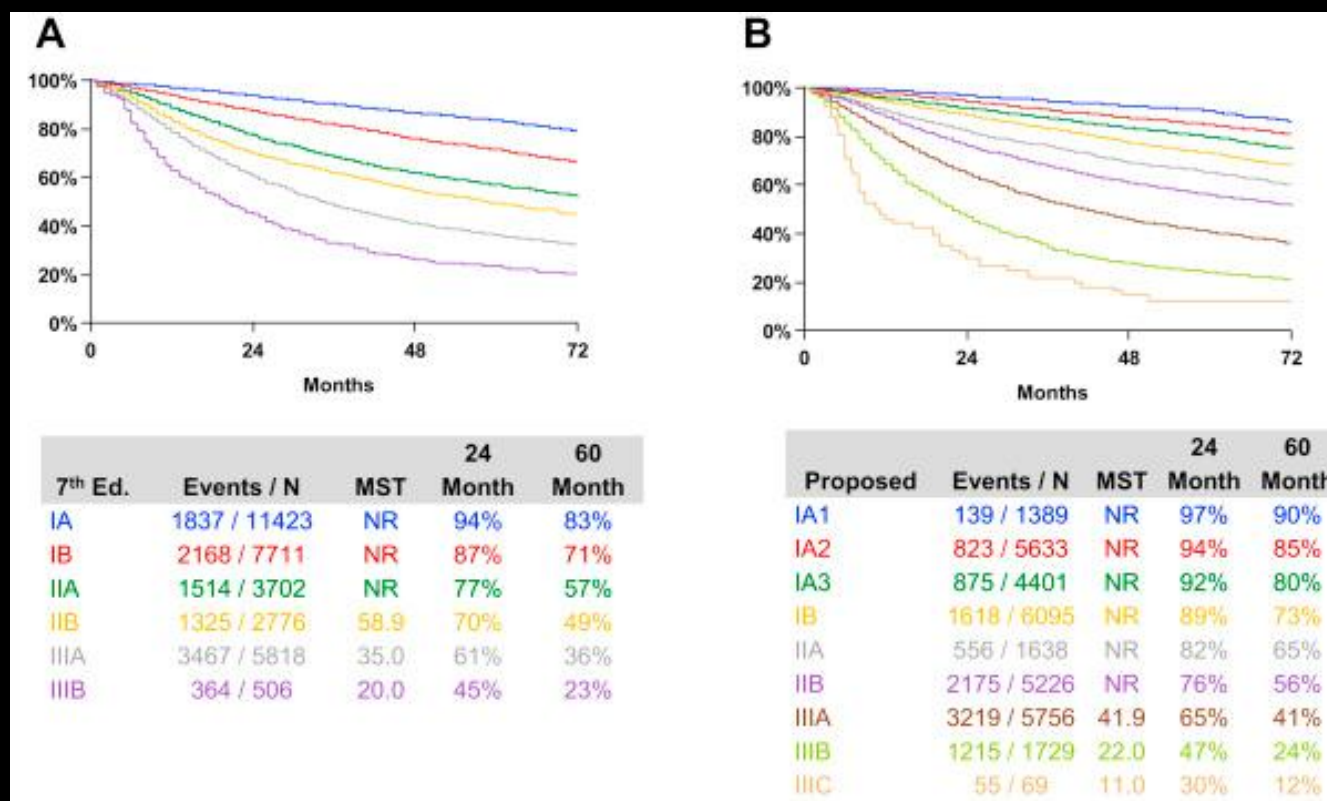
8th Edition of the TNM Classification for Lung Cancer

	<i>N0</i>	<i>N1</i>	<i>N2</i>	<i>N3</i>	<i>M1</i> <i>a</i>	<i>M1</i> <i>b</i>	<i>M1c</i>
<i>T1a</i>	IA1	IIB	IIIA	IIIB	IVA	IVA	IVB
<i>T1b</i>	IA2	IIB	IIIA	IIIB	IVA	IVA	IVB
<i>T1c</i>	IA3	IIB	IIIA	IIIB	IVA	IVA	IVB
<i>T2a</i>	IB	IIB	IIIA	IIIB	IVA	IVA	IVB
<i>T2b</i>	IIA	IIB	IIIA	IIIB	IVA	IVA	IVB
<i>T3</i>	IIB	IIIA	IIIB	IIIC	IVA	IVA	IVB
<i>T4</i>	IIIA	IIIA	IIIB	IIIC	IVA	IVA	IVB

Overall Survival by Clinical Stage



Overall Survival by Pathologic Stage



Cancers with Multiple Lesions

- Multiple primary tumors
 - One TNM for each tumor
- Separate tumor nodules
 - T3, T4, M1a
- Multiple adenocarcinomas with GGO/lepidic features
 - Highest T (#/m) N M
- Pneumonic type adenocarcinoma:
 - T3, T4, M1a

Summary of Key Points of 8th IASLC

- More relevance to tumor size
- Reclassification of some T descriptors
- Validation of present N descriptors
- Acknowledgement of relevance of quantification of nodal disease
- Three metastatic groups
- More stages for better prognostic stratification

Therapeutic Implications

- Attention with follow-up of small nodules
- Identification of locally advanced tumors with worse prognosis: T3-T4 N2-N3
- Upfront surgery for cN2a1?
- Better stratification of metastatic disease
- Important issues to plan future clinical trials
- However, taxonomic changes do not imply a change of therapy

Conclusions

- The innovations in the 8th edition of the TNM classification of lung cancer:
 - Increase our capacity to refine prognosis
 - Improve tumor stratification in future trials
 - Prompt future research
 - Facilitate homogeneous tumor classification and collection of prospective data
 - Now in use since January 1st 2017