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Tumor (T) Component

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Table 1. **Primary Tumor Definitions**

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[c]
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

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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

[a] This includes tumors proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy.

[b] This includes adenocarcinoma *in situ* – Tis (AIS) – and squamous cell carcinoma *in situ* – Tis (SCIS).

[c] The uncommon superficial spreading tumor of any size with its invasive component limited to the bronchial wall, which may extend proximal to the main bronchus, is also classified as T1a.

[d] Solitary adenocarcinoma (not more than 3 cm in greatest dimension), with a predominantly lepidic pattern and not more than 5 mm invasion in greatest dimension.

[e] Although these structures lie within the mediastinum, the degree of mediastinal penetration by the tumor needed to invade these structures is not counted as T4.

Explanatory Notes

1. Invasion of visceral pleura (T2) is defined as "invasion beyond the elastic layer including invasion to the visceral pleural surface" (Table 1). The use of elastic stains is recommended when this feature is not clear on routine histology.
2. Tumor with direct invasion of an adjacent lobe, across the fissure or by direct extension at a point where the fissure is deficient, should be classified as T2a unless other criteria assign a higher T category.
3. Invasion of azygos vein is classified as T3.
4. Invasion of thoracic nerve roots (e.g. T1, T2) or stellate ganglion is classified as T3.
5. Invasion of thymus is classified as T4.
6. Invasion of subclavian vessels, vertebral body, lamina, spinal canal, cervical nerve roots, or brachial plexus (e.g. trunks, divisions, cords or terminal nerves) is classified as T4.
7. Invasion of the brachiocephalic veins is classified as T4.
8. Invasion of the vagus nerve is classified as T4.
9. Invasion into hilar fat, unless other criteria assign a higher T, is classified as T2a.

What is new for the 9th Edition?

The survival curves for patients with clinical and pathologic stage tumors separate nicely (Figure 1). As demonstrated in Figure 1, significant and clinically relevant differences were observed with the exception of cT2b versus cT3 in univariable analysis, but not in multivariable analysis (Table 2). For this reason, no changes were implemented for the T-component in the 9th edition compared to the 8th edition.[1]

T3 with chest wall invasion was evaluated as a separate descriptor compared to the other T3 descriptors.[2] However, survival differences were only significant for

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Node (N) Component

James Huang, MD

Table 1. **Regional Lymph Nodes Definitions**

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in ipsilateral peribronchial and/or ipsilateral hilar and/or intrapulmonary lymph nodes, including involvement by direct extension
N2	Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
	N2a – Single N2 station involvement
	N2b – Multiple N2 station involvement
N3	Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene or supraclavicular lymph node(s)

Explanatory Notes

1. Recommendations for the 9th edition are based upon recommendations from the IASLC Lung Cancer Staging Project (Table 1).[1,2]
2. The regional lymph nodes are the intrathoracic, scalene, and supraclavicular nodes.
3. The IASLC lymph node classification is the recommended means of describing regional lymph node involvement for lung cancers (see Chapter on Lymph Node Chart).[3] Ipsilateral or contralateral node involvement in station #1 is classified as N3. Involvement of mediastinal nodes, if limited to the midline stations or ipsilateral stations (#2-9), is classified as N2. Involvement of ipsilateral stations #10-14 is classified as N1. Contralateral involvement of # 2, 4, 5, 6, 8, 9, 10-14 is classified as N3.
4. Direct extension of the primary tumor into lymph nodes is counted as lymph node involvement.
5. The IASLC nodal chart[3] has been adopted as the international chart that defines nodal stations used in clinical or pathologic TNM classification where detailed assessment of nodes has been made (see Chapter on Lymph Node Chart).

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Metastasis (M) Component

Kwun M. Fong, MD, PhD

Table 1. Distant Metastasis Definitions

M0	No distant metastasis
M1	Distant metastasis
M1a	Tumor with pleural or pericardial nodules or malignant pleural or pericardial effusions[1], separate tumor nodule(s) in a contralateral lobe
M1b	Single extrathoracic metastasis in a single organ system[2]
M1c	Multiple extrathoracic metastases
M1c1	Multiple extrathoracic metastases in a single organ system[3]
M1c2	Multiple extrathoracic metastases in multiple organ systems

Explanatory Notes

1. Most pleural (or pericardial) effusions in patients with lung cancer are due to the tumor. In a few patients, however, multiple microscopic examinations of pleural (or pericardial) fluid are negative for tumor, and the fluid is non-bloody and is not an exudate. When these elements and clinical judgment dictate that the effusion is not related to the tumor, the effusion should be excluded as a stage descriptor. An effusion thought to be malignant is thus counted as M1a (Table 1), whether it is microscopically proven or not.
2. This includes involvement of a single non-regional node.
3. For example, the skeleton is considered one organ system. Multiple metastases in several bones are classified as M1c1. Multiple metastases in the liver are classified as M1c1. Metastasis involving liver and bone would be considered M1c2.

What is new for the 9th Edition?

M1c (multiple extrathoracic metastases in a single or multiple organ system[s]) is now divided into M1c1 (multiple extrathoracic metastases in a single organ system) and M1c2 (multiple extrathoracic metastases in several organ systems) (Figure 1, Table 2).[1]

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Stage Groups

Ramón Rami-Porta, MD, PhD

Table 1. **Stage Groups of the 9th Edition of the Tumor, Node, Metastasis (TNM) Classification of Lung Cancer[2]**

9th Edition TNM Descriptors and Stages						
				N2		
T/M	Categories and Descriptors	N0	N1	N2a	N2b	N3
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

Explanatory Notes

In the tumor, node, and metastasis (TNM) classification, tumors with similar prognosis are clustered together in stage groups. In each revision of the classification,