AJCC Staging: Inside Story for New 2025 Changes

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AJCC Nasopharynx Version 9 – 2025

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Nasopharynx: Major Changes

- T clarifications
  - T3 – skull base involvement
  - T4 – orbit involvement includes inferior orbital fissure; cranial nerve involvement
- N3 addition of advanced radiologic and/or clinical extranodal extension
  - Advanced radiologic ENE – unequivocal evidence of tumor invasion through nodal capsule into adjacent structures: muscle, skin, or neurovascular structures
- M1a and M1b categories subdivided by number of met lesions
- Stage groups underwent many revisions
- Minor salivary gland tumors ***NO*** longer included in nasopharynx staging

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Nasopharynx: Important Information

- Squamous cell histologies
  - Keratinizing and non-keratinizing ***only***
  - No longer includes NOS, since pathologists state the type **can be** determined
- Changed style of T & N categories to clarify criteria
  - Bullets
  - OR, AND all, AND any – carefully note difference in each of these
- Mets determined by ***number*** of lesions, **not** organs/sites involved
- ENE – terminology changed from gross ENE to clinically overt ENE
  - Applies to assessment of cervical nodes only, not retropharyngeal nodes

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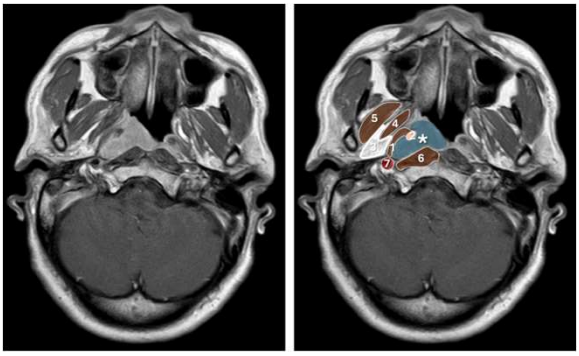
Nasopharynx: Illustrations

- Line drawings for anatomy and nodal map
- Imaging used to illustrate T1-T4 and N1-N3 categories
- Pathology slides showcasing histopathologic features

FIGURE NASOPHARYNX-T1. Nasopharyngeal carcinoma (*, blue) confined to the nasopharynx and displacing the right levator palatini muscle (1, brown), torus tubarius (2, pink), and compressing the prevertebral muscle (6, brown) but without invasion of the muscle or other T2 structures (parapharyngeal fat (3, white), medial (4) and lateral (5) pterygoid muscles (brown), or carotid sheath (7, red).



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Nasopharynx: Clinical/Pathological Staging & Workup

DIAGNOSTIC WORKUP	DESCRIPTION	SPECIFIC CONTRIBUTION TO TNM CATEGORY
Clinical Exam		
Physical examination, head & neck	Assess cranial nerves, and neck lymph nodes	T1-T4, N1-N3, M1
Nasopharynx endoscopic/mirror examination	Assess nasopharynx involvement of nasal cavity and adjacent pharyngeal structures	T1-T4
Imaging		
MRI head and neck, contrast preferred	Orbit to suprasternal notch	T1-T4,
CT head and neck, contrast preferred	Orbit to suprasternal notch	T1-T4,
^{18}F-Fluorodeoxyglucose PET-CT, contrast preferred	Whole body	T1-T4,
CT chest and at least upper abdomen, contrast preferred	Chest and upper abdomen	M1
Skeletal scintigraphy	Bones	M1
Laboratory Studies		
Plasma Epstein-Barr virus (EBV) DNA assay	In certain cases, it helps determine primary site	T0
Tissue Epstein-Barr virus encoded RNA (EBER) in-situ hybridization	In certain cases, it helps determine primary site	T0

CATEGORY	SPECIMEN	PATHOLOGIST	MANAGING PHYSICIAN (Stage Documented by Cancer Registry)
General Information		• Assignment of pTNM categories is based on surgical resection **specimen,** as well as intraoperative findings, biopsy procedures and clinical evaluation up to the point of definitive surgical treatment, if available • All other surgical procedure specimens use cTNM; for example, biopsy of a positive regional lymph node without surgical resection of the primary carcinoma is classified as cN1	• Assignment of pTNM categories for the **patient** requires use of information from all biopsy procedures performed during the clinical evaluation up to and including definitive surgical treatment • Requires information from clinical assessment or imaging studies or intraoperative findings to assign pTNM categories (may not change pTNM, but must be considered)
pTX		Not for use by pathologist; assigned only by managing physician	May assign if unable to determine pT category after surgical resection
pT0		No tumor found in specimen and never identified on diagnostic biopsies	No tumor found in specimen and never identified on diagnostic biopsies
pTis pT1 pT2 pT3	Resection of primary tumor is rare, except for locoregional recurrent tumor	Sites invaded or involved	Pathology reports +/- appropriate clinical exam, imaging studies, and intraoperative findings

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Nasopharynx: Staging Rules

- Common staging scenario
  - Primary treatment is radiation with/without systemic therapy
    - Staging is A and C in figure
  - If posttherapy clinical eval (yc) shows residual tumor is resectable
    - Patient may undergo surgical resection
    - Posttherapy pathological staging (yp) is also D in figure
  - Unlike other H&N ca, resection is only for persistent or recurrent tumor

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AJCC Thymus Version 9 – 2025

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Thymus: Major Changes

- T1
  - Subdivided based on tumor size
  - Previously based on involvement of mediastinal pleura
- T2
  - Added direct invasion of lung
  - Added direct invasion of phrenic nerve
- T3
  - Removed direct invasion of lung (moved to T2)
  - Removed direct invasion of phrenic nerve (moved to T2)

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Thymus: Important Information

- Terminology for thymic malignancies
  - TET – thymic epithelial tumors, includes thymomas and thymic carcinomas
  - T-NEN – thymic neuroendocrine neoplasms
- Histologies
  - List grouped by epithelial and neuroendocrine
  - Further subgrouped by types under these main categories
- N category
  - Divided by anterior regions (N1) and deep regions (N2)
  - Table in protocol provides detailed list by
    - Region boundaries
    - Node groups (names, stations)

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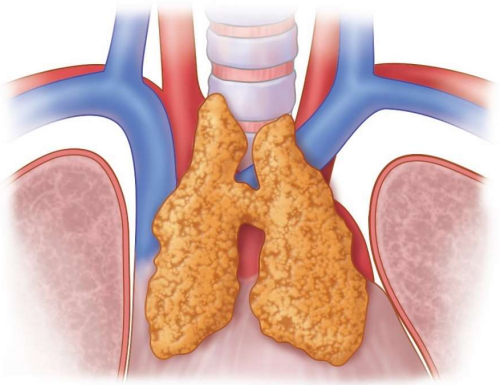
Thymus: Illustrations

- AJCC provided anatomy illustration
- IASLC graciously provided illustrations
  - T1-T4
  - N1-N2
  - M1a-M1b
  - Stage I-IVB
- IASLC graciously provided
  - Imaging nodal maps

FIGURE THYMUS-ANATOMY.
Anatomy illustration for the thymus.



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Thymus: Clinical/Pathological Staging & Workup

DIAGNOSTIC WORKUP	DESCRIPTION	SPECIFIC CONTRIBUTION TO TNM CATEGO
Clinical Exam		
Physical examination	Assess for tumor or node involvement	T3-T4, N2
Imaging		
CT chest	Chest	T1-T4, N1
MRI chest	Chest	T1-T4, N1
PET/CT	Whole body or skull base to mid-thigh	T1-T4, N1
Laboratory Studies		
None		

CATEGORY	SPECIMEN	PATHOLOGIST	MANAGING PHYSICIAN (Stage Documented by Cancer Registry)
General Information		• Assignment of pTNM categories are based on surgical resection **specimen,** as well as intraoperative findings, biopsy procedures and clinical evaluation up to the point of definitive surgical treatment, if available • All other surgical procedure specimens use cTNM; for example, biopsy of a positive regional lymph node without surgical resection of the primary carcinoma is classified as cN1	• Assignment of pTNM categories for the **patient** requires use of information from all biopsy procedures performed during the clinical evaluation up to and including definitive surgical treatment • Requires information from clinical assessment or imaging studies or intraoperative findings to assign pTNM categories (may not change pTNM, but must be considered)
pTX		Not for use by pathologist; assigned only by managing physician	May assign if unable to determine pT category after surgical resection
pT0	Resection	No tumor found in specimen and never identified on diagnostic biopsies	No tumor found in specimen and never identified on diagnostic biopsies
pT1	Resection	For a proper assignment of a T1 subcategory the pathologist needs to measure the largest dimension of the tumor in the resected specimen	Classify according to the pathology report +/- appropriate clinical exam, imaging studies and intraoperative findings
pT1a			
pT1b			
pT2		For a proper assignment of any T2, T3, and T4 category the pathologist needs to confirm the invasion microscopically	
pT3			
pT4			

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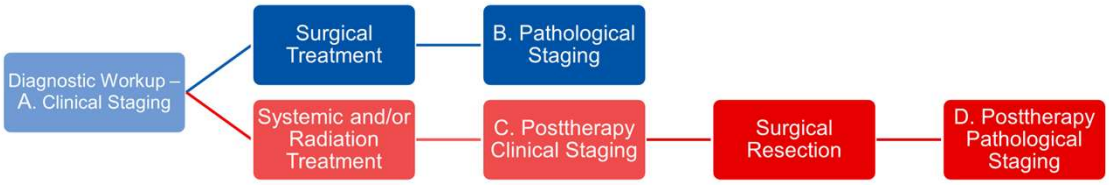
Thymus: Staging Rules



- Common staging scenario
  - Most are treated surgically, staging is A and B in figure
  - Less commonly, neoadjuvant with potential subsequent surgical resection
    - Cases have more extensive disease
    - Staging is A and C in figure
    - If residual tumor and resection performed, staging is also D in figure
    - Important to always assign A (clinical staging) along with posttherapy C and D
    - Need starting point and endpoints to evaluate neoadjuvant therapy

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AJCC Lung Version 9 – 2025

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Lung: Major Changes

- T2a, T3, & T4 categories revised
  - Some structures moved to higher T categories
  - Additional structures added to various T categories
- N2 category subdivided by single or multiple **nodal stations**
- M1c category subdivided by single or multiple **organ systems**
- Stage groups underwent some revisions
- Spread through air spaces (STAS) new prognostic factor
  - Tumor cells within first alveolar spaces in lung beyond main tumor edge
  - Determined by pathologist, required on CAP protocols
  - Associated with worse outcomes and affects treatment plans

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Lung: Important Information

- T categories were restructured to remove ambiguity
  - Size criteria may be different from size criteria with features
  - Too many still attributed initial size to entire category – needed to correct
- Tumors with ground glass/lepidic and solid components
  - Solid component size reported by radiology & pathology
  - Total tumor size also reported by radiology & pathology
  - Solid component size (invasive size) ***determines T category***
  - Future registry data needs may include total tumor size
- N categories based on nodal stations
  - N2 subdivided by nodal **stations** involved, *NOT* number of nodes
  - N2a – single station (may be multiple nodes in single station)
  - N2b – multiple stations

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Non-Small Cell Lung Ca Histology

- 8046 ***removed*** from WHO blue books in 2004 (***21 years ago!***)
- AJCC includes 8010 non-small cell carcinoma NOS, but not 8046
- CAP Protocol
  ___ Non-small cell carcinoma, subtype cannot be determined
- Verified with WHO BB pathologist, CAP Ca Comm lung pathologist expert
  - Non-small cell ca is not referring to 8046 criteria
  - Rather it is following criteria of "carcinoma but subtype cannot be determined"
  - Use 8010 non-small cell ca NOS (carcinoma NOS) as this reflects actual diagnosis
- Rules for pathologists & physicians

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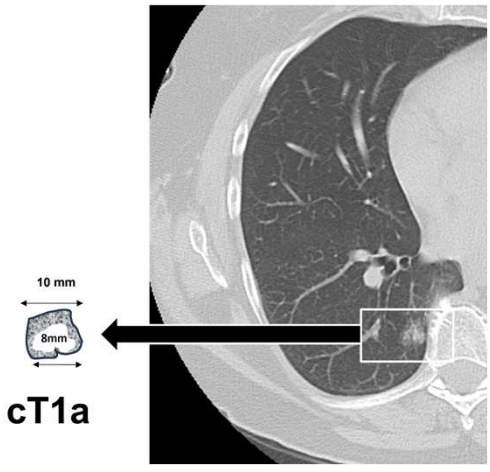
Lung: Illustrations

- Line drawing for anatomy
- Imaging for measuring total tumor size and solid component
- Imaging and drawings for multiple tumors
- Imaging/pathology slides/drawings for T1-T4, N1-N3, M1a-M1c2 categories, some graciously provided by IASLC

FIGURE LUNG-IMAGING INVASIVE ADENOCARCINOMA (cT1a).
10 mm part solid nodule in the right lower lobe with an 8 mm solid component (white box); schematic drawing showing 10 mm total tumor (solid + ground glass component); solid (white) 8 mm determines the invasive component and the cT category of cT1a.



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Lung: Clinical/Pathological Staging & Workup

DIAGNOSTIC WORKUP	DESCRIPTION	SPECIFIC CONTRIBUTION TO TNM CATE(
Clinical Exam		
Physical examination	Assess neck, axillary, and inguinal lymph nodes; hepatomegaly, splenomegaly; neurologic abnormalities	N3, M1b-c
Pulmonary function tests	Assess lung volume and capacity	None
Bronchoscopy	Size, location, spread	T0-T4
Mediastinoscopy, extended cervical mediastinoscopy, parasternal mediastinotomy	Direct invasion of mediastinum, nodal involvement	T4, N1-N3
Pleuroscopy, video-assisted thoracoscopic surgery (VATS), robotic-assisted thoracoscopic surgery (RATS)	Pleural involvement, nodal involvement	T3-T4, N1-N:
Imaging		
CT chest and upper abdomen	Chest and upper abdomen	T0-T4, N1-N:
PET/CT	Skull to mid-thigh	T0-T4, N1-N:
MRI head	Head	M1b-c
MRI chest and abdomen	Chest and abdomen	T0-T4, N1-N:
CT abdomen and pelvis	Abdomen and pelvis	M1a-c
Laboratory Studies		
Sputum cytology	Tumor not visualized	TX
Pleural or pericardial fluid cytology	Intrathoracic metastasis	M1a

CATEGORY	SPECIMEN	PATHOLOGIST	MANAGING PHYSICIAN (Stage Documented by Cancer Registry)
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pTX		Not for use by pathologist; assigned only by managing physician	May assign if unable to determine pT category after surgical resection
pTX		Not for use by pathologist; assigned only by managing physician	Special definition for lung – malignant cells in sputum or bronchial washings but not seen on imaging or bronchoscopy
pT0		No tumor found in specimen and never identified on diagnostic biopsies	No tumor found in specimen and never identified on diagnostic biopsies
pTis [AIS, SCIS] pT1 pT1mi pT1a	Wedge, segmental, lobectomy, bilobectomy, sleeve resection, or pneumonectomy surgical resection	Invasive size of tumor	Pathology reports +/- appropriate clinical exam, imaging studies, and intraoperative findings

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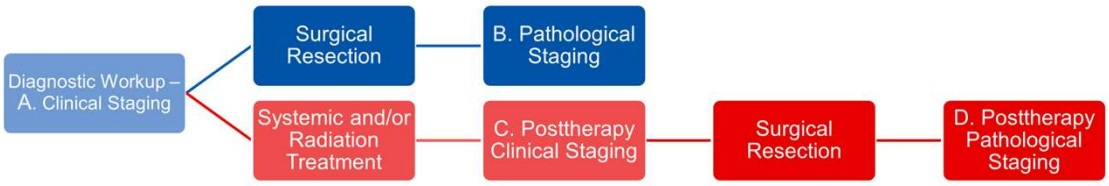
Lung: Staging Rules



- Common staging scenario
  - Surgical treatment, staging is A and B in figure
  - Initially unresectable, systemic and/or radiation with potential surgical resection
    - More extensive disease
    - Staging is A and C
    - If residual tumor is resectable, staging is also D in figure
    - Important to always assign A (clinical staging) along with posttherapy C and D
    - Need starting point and endpoints to evaluate neoadjuvant therapy

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AJCC Diffuse Pleural Mesothelioma Version 9 – 2025

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Diffuse Pleural Mesothelioma: Major Changes

- Clinical T categories
  - Quantitative pleural thickness measurements added
  - Modified previous T criteria of involvement and/or invasion
- Pathological T categories
  - Modified previous T criteria of involvement and/or invasion
- Prognostic stage groups revised based on changes to cT categories
- New grading system for epithelioid mesothelioma
  - Not used for other two types: biphasic and sarcomatoid

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Diffuse Pleural Mesothelioma: Important Information

- Title change is important
  - 8th edition Malignant PM vs. Version 9 Diffuse PM
  - No need for word "malignant"
  - ***Only diffuse*** mesothelioma tumors are staged, ***not*** localized or in situ
- N2 clarification
  - ***Includes*** contralateral intrathoracic (hilar and bronchopulmonary)
- cT terminology for measuring pleural thickness on CT imaging
  - Psum – sum of 3 measurements in upper, middle & lower chest
    - Psum = pmax1 + pmax2 + pmax3
  - Fmax – measurement of pleural thickness in fissure

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Epithelioid Mesothelioma Grade

Grading of Epithelioid Mesothelioma

Nuclear Atypia Score	
1	Mild
2	Moderate
3	Severe

+

Mitotic Count Score	
1	Low (≤ 1 mitosis/2 mm²)
2	Intermediate (2-4 mitoses/2 mm²)
3	High (≥ 5 mitoses/2 mm²)

↓

Sum	
2 or 3	Nuclear grade I
4 or 5	Nuclear grade II
6	Nuclear grade III

+

Necrosis
Present
Absent

↓

G	G Definition
LG (Low Grade)	Nuclear grade I with or without necrosis OR Nuclear grade II without necrosis
HG (High Grade)	Nuclear grade II with necrosis OR Nuclear grade III with or without necrosis

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Diffuse Pleural Mesothelioma: Illustrations

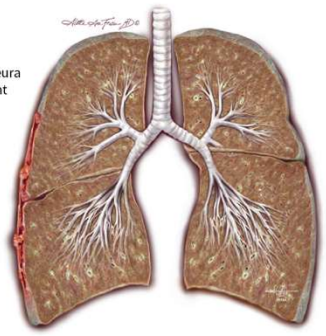
- Line drawings for anatomy and nodal map
- IACLS graciously provided illustrations for measuring pleural thickness
- IACLS graciously provided illustrations for T1-T4, and N1-N2

FIGURE DIFFUSE PLEURAL MESOTHELIOMA-T1. Reprinted courtesy of the International Association for the Study of Lung Cancer. Copyright ©2024, Aletta Ann Frazier. Figures 1-7. IASLC Atlas Figures of Mesothelioma Staging, reprinted from the IASLC Staging Manual in Thoracic Oncology, 3rd Edition (p. 174-177).

T1

CLINICAL T (cT)
cT1: Tumor limited to the ipsilateral pleura with **Psum[a] ≤12mm** with no involvement of the fissure (**Fmax[b] ≤5mm**)

PATHOLOGICAL T (pT)
pT1: Tumor limited to the ipsilateral pleura with noinvolvement of the fissure



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Pleural Mesothelioma: Clinical/Pathological Staging & Workup

DIAGNOSTIC WORKUP	DESCRIPTION	SPECIFIC CONTRIBUTION TO T
Clinical Exam		
Physical examination	Assess primary tumor extending into chest wall soft tissues; Supraclavicular or other extrathoracic lymph nodes	T4, N
Mediastinoscopy; EBUS-TBNA; EUS-FNA	Lymph node involvement	N0-N
Laparoscopy	Assess direct tumor extension through diaphragm; assess presence or absence of metastatic disease involving peritoneum	T4, M
Imaging		
CT chest and (upper) abdomen	Chest and upper abdomen	T0-T
PET/CT	Skull base to mid-thigh	T0-T
MRI chest and (upper) abdomen (optional since only CT, not MRI is required for clinical staging in Version 9)	Chest and upper abdomen to assess for chest wall and/or diaphragmatic invasion	T0-T
Laboratory Studies		
CBC, CMP	Assess for anemia, leukocytosis, thrombocytosis, and/or hypoalbuminemia	

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pTX		Not for use by pathologist; assigned only by managing physician	May assign if unable to determine pT category after surgical resection
pT0		No tumor found in specimen and never identified on diagnostic biopsies	No tumor found in specimen and never identified on diagnostic biopsies
pT1	Partial pleurectomy, pleurectomy/ decortication, extended pleurectomy/ decortication, extrapleural pneumonectomy	Location of tumor and areas of invasion or involvement	Pathology reports +/- appropriate clinical exam, imaging studies, and intraoperative findings
pT2			
pT3			
pT4	May not be resected but extent of tumor could be	pT4 may be documented by pathologist if relevant biopsy	Pathological stage may be assigned if confirmed by relevant biopsy

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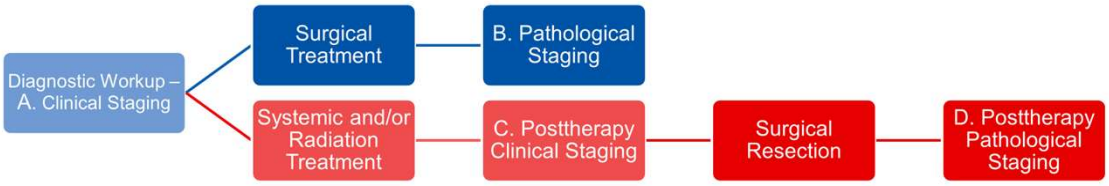
Diffuse Pleural Mesothelioma: Staging Rules



- Common staging scenario
  - Surgical treatment, staging is A and B in figure
  - Initially unresectable, systemic and/or radiation with potential surgical resection
    - More extensive disease
    - Staging is A and C
    - If residual tumor is resectable, staging is also D in figure
    - Important to always assign A (clinical staging) along with posttherapy C and D
    - Need starting point and endpoints to evaluate neoadjuvant therapy

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Information and Questions on AJCC Staging

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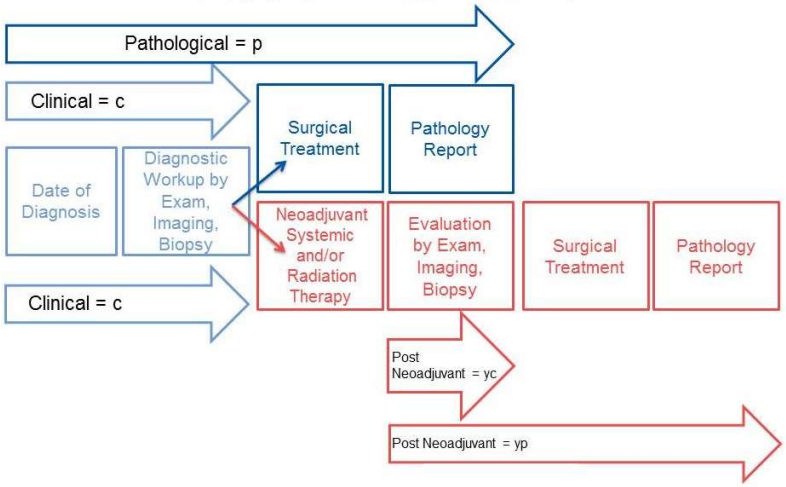
Timing is Everything

AJCC Stage Classifications

Defining Time Frame and Criteria



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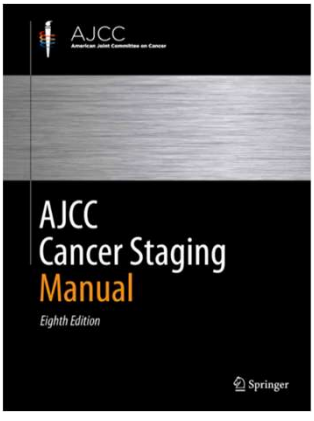
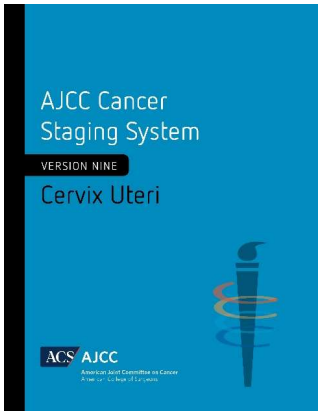
AJCC Web Site

- https://**cancerstaging.org**
- https://www.facs.org/quality-programs/cancer-programs/american-joint-committee-on-cancer/

- General information
  - Overview
  - AJCC Staging Online
  - Version 9
  - Cancer Staging Systems
    - AJCC 8th edition Chapter 1: Principles of Cancer Staging
  - Cancer Staging Education
  - FAQ & Resources





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NEW AJCC Webinars Posted Fall 2023

- Principles of Cancer Staging
  - Blank Vs. X Definitions and Data Interpretation for AJCC Staging
  - Do Not Use Registry Ambiguous Terminology for AJCC Staging
- AJCC 8th Edition Staging
  - Breast
  - Colorectal
  - Lung
  - Melanoma
  - Prostate
- Critical Clarifications
  - AJCC 8th Edition Melanoma Staging – 1-page resource highlighting rules

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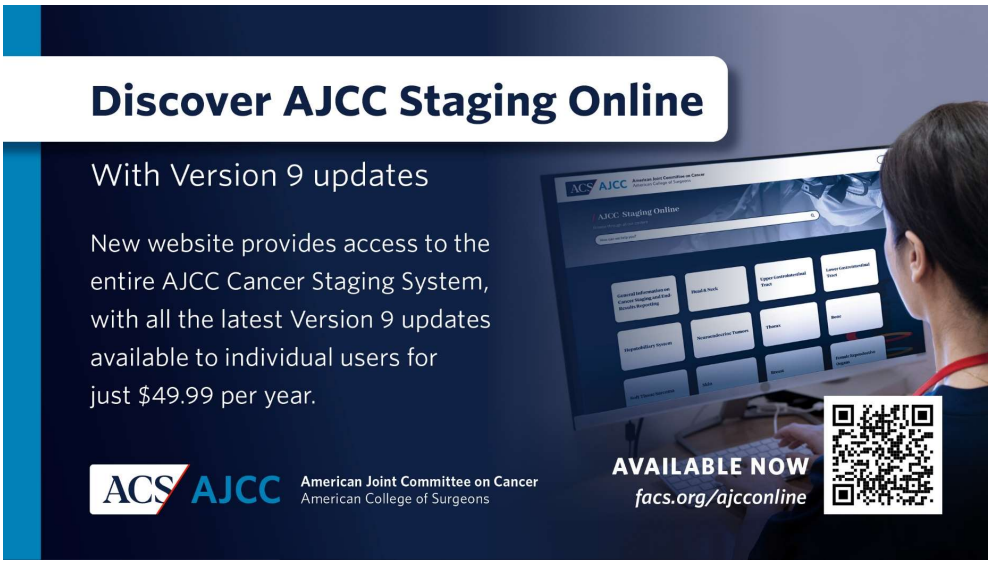
AJCC Staging Online



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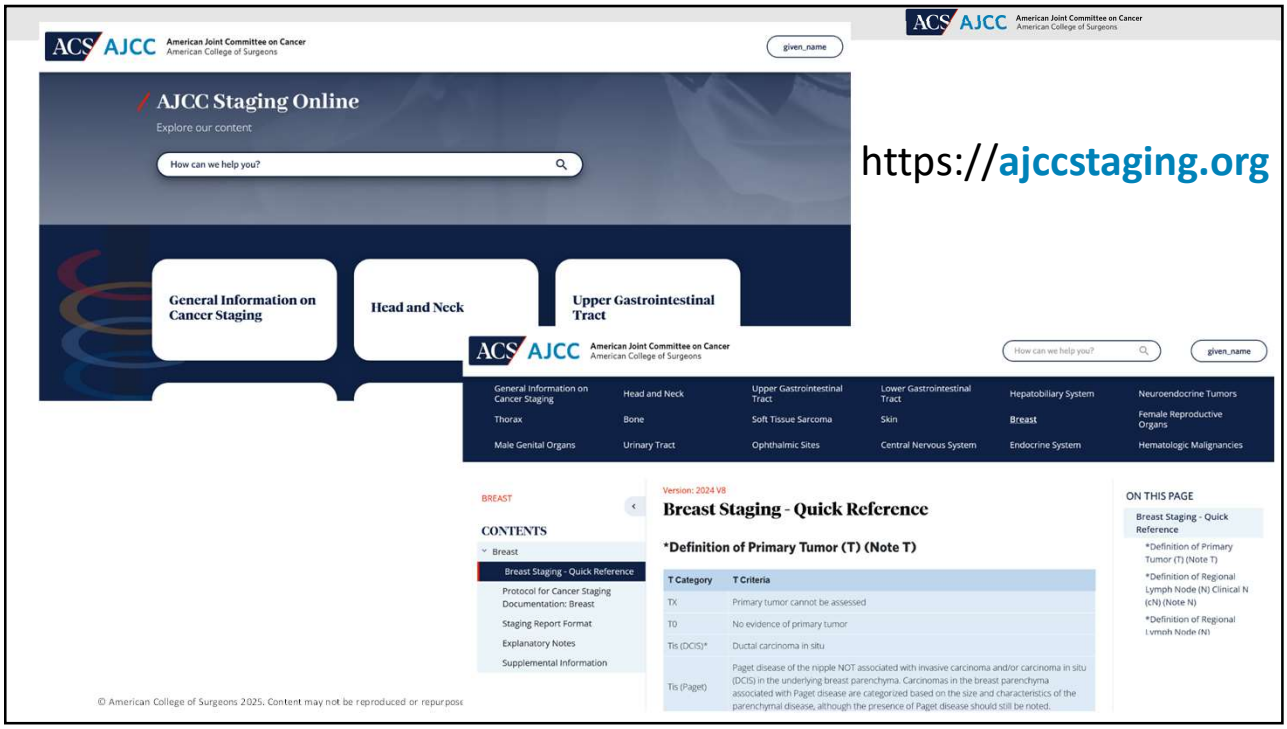

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CAnswer Forum

- Submit questions to AJCC Forum
  - Version 9 Forum
  - 8th Edition Forum
  - Located within CAnswer Forum
  - Provides information for all
  - Allows tracking for educational purposes
- http://cancerbulletin.facs.org/forums/

ACS CAnswer
CAnswer Forum
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Summary

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Summary

- Discussed key points of four new AJCC Version 9 protocols
  - Understanding strategies of new staging systems
- Dissect changes in new staging systems
  - Identified areas of change
  - Explored the rationale
- Examine illustrations, workup tables and disease-specific staging rules
  - New types of illustrations, radiology and some color images
  - New features of AJCC protocols
  - Usage from a registrar's point of view
  - Staging customization compared/contrasted to Timing is Everything graphic

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Thank You

Donna M. Gress, RHIT, ODS-C

Manager, Cancer Staging and Registry Operations
AJCC and Cancer Programs

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