

# Esophagus

**Protocol applies to all invasive carcinomas  
of the esophagus.**

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*Protocol revision date: January 2005  
Based on AJCC/UICC TNM, 6<sup>th</sup> edition*

## **Procedures**

- **Cytology** (No Accompanying Checklist)
- **Incisional or Excisional Biopsy**
- **Resection**

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The College of American Pathologists offers these protocols to assist pathologists in providing clinically useful and relevant information when reporting results of surgical specimen examinations of surgical specimens. The College regards the reporting elements in the "Surgical Pathology Cancer Case Summary (Checklist)" portion of the protocols as essential elements of the pathology report. However, the manner in which these elements are reported is at the discretion of each specific pathologist, taking into account clinician preferences, institutional policies, and individual practice.

The College developed these protocols as an educational tool to assist pathologists in the useful reporting of relevant information. It did not issue the protocols for use in litigation, reimbursement, or other contexts. Nevertheless, the College recognizes that the protocols might be used by hospitals, attorneys, payers, and others. Indeed, effective January 1, 2004, the Commission on Cancer of the American College of Surgeons mandated the use of the checklist elements of the protocols as part of its Cancer Program Standards for Approved Cancer Programs. Therefore, it becomes even more important for pathologists to familiarize themselves with the document. At the same time, the College cautions that use of the protocols other than for their intended educational purpose may involve additional considerations that are beyond the scope of this document.

**Summary of Changes to Checklist(s)**

*Protocol revision date: January 2005*

No changes have been made to the data elements of the checklist(s) since the January 2004 protocol revision.

**Surgical Pathology Cancer Case Summary (Checklist)**

*Protocol revision date: January 2005  
Applies to invasive carcinomas only  
Based on AJCC/UICC TNM, 6<sup>th</sup> edition*

**\*ESOPHAGUS: Biopsy**

**(Note: Use of checklist for biopsy specimens is optional)**

\*Patient name:

\*Surgical pathology number:

**Note: Check 1 response unless otherwise indicated.**

**\*MACROSCOPIC**

**\*Specimen Type**

\*  Incisional biopsy

\*  Excisional biopsy

**\*Tumor Site**

\*Specify, if known: \_\_\_\_\_

\*  Not specified

**\*MICROSCOPIC**

**\*Histologic Type**

\*  Squamous cell carcinoma

\*  Adenocarcinoma

\*  Adenosquamous carcinoma

\*  Small cell carcinoma

\*  Undifferentiated carcinoma

\*  Other (specify): \_\_\_\_\_

\*  Carcinoma, type cannot be determined

**\*Histologic Grade**

\*  Not applicable

\*  GX: Cannot be assessed

\*  G1: Well differentiated

\*  G2: Moderately differentiated

\*  G3: Poorly differentiated

\*  G4: Undifferentiated

4 \* Data elements **with asterisks** are **not required** for accreditation purposes for the Commission on Cancer. These elements may be clinically important, but are not yet validated or regularly used in patient management. Alternatively, the necessary data may not be available to the pathologist at the time of pathologic assessment of this specimen.

**\*Extent of Invasion**

- \*  Cannot be assessed
- \*  Epithelium only (no invasion)
- \*  Lamina propria
- \*  Submucosa
- \*  Muscularis propria

**\*Additional Pathologic Findings (check all that apply)**

- \*  None identified
- \*  Intestinal metaplasia
- \*  Dysplasia
- \*  Esophagitis (type): \_\_\_\_\_
- \*  Other (specify): \_\_\_\_\_

**\*Comment(s)**

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**Surgical Pathology Cancer Case Summary (Checklist)**

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**ESOPHAGUS: Resection**

Patient name:  
 Surgical pathology number:

**Note: Check 1 response unless otherwise indicated.**

**MACROSCOPIC**

**Specimen Type**

- Esophageal resection
- Esophagogastrectomy
- Other (specify): \_\_\_\_\_
- Not specified

**Tumor Site**

- Specify, if known: \_\_\_\_\_
- Not specified

**Tumor Size**

- Greatest dimension: \_\_\_\_ cm
- \*Additional dimensions: \_\_\_\_ x \_\_\_\_ cm
- Cannot be determined (see Comment)

**MICROSCOPIC**

**Histologic Type**

- Squamous cell carcinoma
- Adenocarcinoma
- Adenosquamous carcinoma
- Small cell carcinoma
- Undifferentiated carcinoma
- Other (specify): \_\_\_\_\_
- Carcinoma, type cannot be determined

6                    \* Data elements **with asterisks** are **not required** for accreditation purposes for the Commission on Cancer. These elements may be clinically important, but are not yet validated or regularly used in patient management. Alternatively, the necessary data may not be available to the pathologist at the time of pathologic assessment of this specimen.

**Histologic Grade**

- Not applicable  
 GX: Cannot be assessed  
 G1: Well differentiated  
 G2: Moderately differentiated  
 G3: Poorly differentiated  
 G4: Undifferentiated

**Pathologic Staging (pTNM)**Primary Tumor (pT)

- pTX: Cannot be assessed  
 pT0: No evidence of primary tumor  
 pTis: Carcinoma in situ  
 pT1: Tumor invades lamina propria or submucosa  
 \*  pT1a: Tumor invades lamina propria  
 \*  pT1b: Tumor invades submucosa  
 pT2: Tumor invades muscularis propria  
 pT3: Tumor invades adventitia  
 pT4: Tumor invades adjacent structures

Regional Lymph Nodes (pN)

- pNX: Cannot be assessed  
 pN0: No regional lymph node metastasis  
 pN1: Regional lymph node metastasis  
 \*  pN1a: 1 to 3 nodes involved  
 \*  pN1b: 4 to 7 nodes involved  
 \*  pN1c: More than 7 nodes involved  
 Specify: Number examined: \_\_\_\_  
           Number involved: \_\_\_\_

Distant Metastasis (pM)

- pMX: Cannot be assessed  
 pM1: Distant metastasis, cannot further subclassify  
 pM1a: Lower thoracic esophagus: metastasis in celiac lymph nodes;  
           Mid-thoracic esophagus: not applicable;  
           Upper thoracic esophagus: metastasis in cervical nodes  
 pM1b: Lower thoracic esophagus: other distant metastasis;  
           Mid-thoracic esophagus: nonregional lymph nodes and/or other  
           distant metastasis;  
           Upper thoracic esophagus: other distant metastasis  
           Specify location of other distant metastases, if possible:  
           \_\_\_\_\_

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**Margins (check all that apply)**

Proximal Margin

- Cannot be assessed
- Uninvolved by invasive carcinoma
- Involved by invasive carcinoma
- Carcinoma in situ absent at proximal margin
- Carcinoma in situ present at proximal margin

Distal Margin

- Cannot be assessed
- Uninvolved by invasive carcinoma
- Involved by invasive carcinoma
- Carcinoma in situ absent at distal margin
- Carcinoma in situ present at distal margin

Circumferential (Adventitial) Margin

- Cannot be assessed
- Uninvolved by invasive carcinoma
- Involved by invasive carcinoma

If all margins uninvolved by invasive carcinoma:

Distance of invasive carcinoma from closest margin: \_\_\_ mm

Specify margin: \_\_\_\_\_

**\*Venous (Large Vessel) Invasion (V)**

- \*  Absent
- \*  Present
- \*  Indeterminate

**\*Lymphatic (Small Vessel) Invasion (L)**

- \*  Absent
- \*  Present
- \*  Indeterminate

**\*Additional Pathologic Findings (check all that apply)**

- \*  None identified
- \*  Intestinal metaplasia
- \*  Dysplasia
- \*  Esophagitis (type): \_\_\_\_\_
- \*  Gastritis (type): \_\_\_\_\_
- \*  Other (specify): \_\_\_\_\_

**\*Comment(s)**

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## Background Documentation

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Protocol revision date: January 2005

### I. Cytologic Material

#### A. Clinical Information

1. Patient identification
  - a. Name
  - b. Identification number
  - c. Age (birth date)
  - d. Sex
2. Responsible physician(s)
3. Date of procedure
4. Other clinical information
  - a. Relevant history (eg, previous diagnoses, previous radiotherapy or chemotherapy)
  - b. Relevant findings (eg, endoscopic/imaging studies)
  - c. Clinical diagnosis
  - d. Procedure (eg, brushing, washing, other)
  - e. Anatomic site(s) of specimen(s)

#### B. Macroscopic Examination

1. Specimen
  - a. Unfixed/fixed (specify fixative)
  - b. Number of slides received, if appropriate
  - c. Quantity and appearance of fluid specimen, if appropriate
  - d. Other (eg, cytologic preparation from tissue)
  - e. Results of intraprocedural consultation
2. Material submitted for microscopic evaluation
3. Special studies (specify) (eg, cytochemistry, immunocytochemistry, DNA analysis [specify type], morphometry, cytogenetic analysis)

#### C. Microscopic Evaluation

1. Adequacy of specimen (if unsatisfactory for evaluation, specify reason)
2. Tumor, if present
  - a. Histologic type, if possible (Note **A**)
  - b. Histologic grade, if possible (Note **B**)
  - c. Other features (eg, necrosis)
3. Additional pathologic findings, if present
4. Results/status of special studies (specify)
5. Comments
  - a. Correlation with intraprocedural consultation, as appropriate
  - b. Correlation with other specimens, as appropriate
  - c. Correlation with clinical information, as appropriate

### II. Incisional or Excisional Biopsy

#### A. Clinical Information

1. Patient identification
  - a. Name
  - b. Identification number
  - c. Age (birth date)
  - d. Sex
2. Responsible physician(s)
3. Date of procedure

4. Other clinical information
  - a. Relevant findings (eg, endoscopic/imaging studies)
  - b. Clinical diagnosis
  - c. Procedure (eg, endoscopic biopsy/polypectomy)
  - d. Operative findings
  - e. Anatomic site(s) of specimen(s)

**B. Macroscopic Examination**

1. Specimen
  - a. Unfixed/fixed (specify fixative)
  - b. Number of pieces
  - c. Largest dimension of each piece
  - d. Results of intraoperative consultation
2. Tumor, if discernible
  - a. Location
  - b. Descriptive features
  - c. Dimensions
  - d. Configuration
  - e. Relation to margins (excisional biopsy) (Note **C**)
3. Tissue submitted for microscopic evaluation
  - a. Incisional biopsy: all
  - b. Excisional biopsy: lesion; margin(s) of excision, if identified
  - c. Frozen section tissue fragment(s) (unless saved for special studies)
4. Special studies (specify) (eg, histochemistry, immunohistochemistry, DNA analysis [specify type], morphometry, cytogenetic analysis)

**C. Microscopic Evaluation**

1. Tumor
  - a. Histologic type (Note **A**)
  - b. Histologic grade (Note **B**)
  - c. Extent of invasion, as appropriate
  - d. Venous/lymphatic vessel invasion
2. Additional pathologic findings, if present
  - a. Esophagitis
  - b. Intestinal metaplasia
  - c. Squamous dysplasia
  - d. Glandular dysplasia
  - e. Microorganisms
  - f. Other(s)
3. Status/results of special studies (specify)
4. Comments
  - a. Correlation with intraoperative consultation, as appropriate
  - b. Correlation with other specimens, as appropriate
  - c. Correlation with clinical information, as appropriate

**III. Esophageal Resection****A. Clinical Information**

1. Patient identification
  - a. Name
  - b. Identification number
  - c. Age (birth date)
  - d. Sex
2. Responsible physician(s)
3. Date of procedure

4. Other clinical information
  - a. Relevant history (eg, previous diagnoses, previous radiotherapy or chemotherapy)
  - b. Relevant findings (eg, endoscopic and/or imaging studies)
  - c. Clinical diagnosis
  - d. Procedure
  - e. Operative findings
  - f. Anatomic site(s) of specimen(s)

**B. Macroscopic Examination**

1. Specimen
  - a. Organ(s)/tissue(s) included
  - b. Unfixed/fixed (specify fixative)
  - c. Open/unopened
  - d. Dimensions (measure each piece separately)
  - e. Orientation, if indicated by surgeon
  - f. Results of intraoperative consultation
2. Tumor
  - a. Location (Note **D**)
  - b. Configuration (Note **E**)
  - c. Dimensions (3)
  - d. Descriptive features (eg, color, consistency)
  - e. Ulceration/perforation
  - f. Distance from margins (Note **C**)
    - (1) proximal
    - (2) distal
    - (3) radial (soft tissue margin closest to deepest tumor penetration)
  - g. Estimated depth of invasion
  - h. Extension to other organ(s)/structure(s) (specify)
3. Lesions in noncancerous esophagus
  - a. Intestinal metaplasia
  - b. Ulcer
  - c. Other(s)
4. Regional lymph nodes (Note **F**)
  - a. Number
  - b. Location, if possible
5. Other organs/tissues submitted (eg, nonregional lymph nodes)
6. Tissues submitted for microscopic evaluation
  - a. Carcinoma, including
    - (1) point of deepest penetration
    - (2) interface with adjacent proximal and distal esophagus
  - b. Margins (Note **C**)
    - (1) proximal
    - (2) distal
    - (3) radial (soft tissue margin closest to deepest tumor penetration)
  - c. All lymph nodes (Note **F**)
  - d. Other lesions (eg, ulcers/polyps/Intestinal metaplasia)
  - e. Esophagus uninvolved by tumor
  - f. Frozen section tissue fragment(s) (unless saved for special studies)
  - g. Other organ(s)/tissue(s)
7. Special studies (specify) (eg, histochemistry, immunohistochemistry, DNA analysis [specify type], morphometry, cytogenetic analysis)

**C. Microscopic Examination**

1. Tumor
  - a. Histologic type (Note A)
  - b. Histologic grade (Note B)
  - c. Depth of invasion (pT) (Note G)
  - d. Invasion into stomach
  - e. Venous/lymphatic vessel invasion
2. Margins (Note C)
  - a. Proximal
  - b. Distal
  - c. Radial (soft tissue margin closest to deepest tumor penetration)
  - d. Additional pathologic findings, if present
    - (1) squamous dysplasia
    - (2) intestinal metaplasia
    - (3) glandular dysplasia
    - (4) therapy-related atypia
    - (5) other(s)
3. Regional lymph nodes (Note G)
  - a. Number (location, if possible)
  - b. Number with metastatic tumor
4. Distant metastasis (specify sites) (Note G)
5. Other organs/tissues submitted
6. Results/status of special studies (specify)
7. Comments
  - a. Correlation with intraoperative consultation, as appropriate
  - b. Correlation with other specimens, as appropriate
  - c. Correlation with clinical information, as appropriate

**Explanatory Notes****A. Histologic Type**

For consistency in reporting, the histologic classification proposed by the World Health Organization (WHO) is recommended.<sup>1</sup> However, this protocol does not preclude the use of other systems of classification or histologic types.

**WHO Classification of Carcinoma of the Esophagus**

Squamous cell carcinoma  
 Verrucous (squamous) carcinoma  
 Spindle cell (squamous) carcinoma  
 Adenocarcinoma  
 Adenosquamous carcinoma  
 Mucoepidermoid carcinoma<sup>#</sup>  
 Adenoid cystic carcinoma<sup>#</sup>  
 Small cell carcinoma<sup>#</sup>  
 Undifferentiated carcinoma<sup>#</sup>  
 Others

<sup>#</sup> These types are not generally graded.

The term “carcinoma, NOS (not otherwise specified)” is not part of the WHO classification.

**B. Histologic Grade**

The histologic grades for esophageal squamous cell carcinomas are:

Grade X	Grade cannot be assessed
Grade 1	Well differentiated
Grade 2	Moderately differentiated
Grade 3	Poorly differentiated

If there are variations in the differentiation within the tumor, the highest (least favorable) grade is recorded. In general, mucoepidermoid carcinoma and adenoid cystic carcinoma of the esophagus are not amenable to grading.

For adenocarcinomas, a suggested grading system based on the proportion of the tumor that is composed of glands is as follows.

Grade X	Grade cannot be assessed
Grade 1	Well differentiated (greater than 95% of tumor composed of glands)
Grade 2	Moderately differentiated (50% to 95% of tumor composed of glands)
Grade 3	Poorly differentiated (49% or less of tumor composed of glands)

Undifferentiated tumors cannot be categorized as squamous cell carcinoma or adenocarcinoma (or other) type. They are classified as "undifferentiated carcinomas" in the WHO classification of tumor types (see above) and may be assigned grade 4. Small cell carcinomas are not typically graded but are high-grade tumors and would correspond to grade 4.

**C. Margins**

Margins include the proximal, distal, and radial margins. The radial margin represents the adventitial soft tissue margin closest to the deepest penetration of tumor. Sections to evaluate the proximal and distal resections margins can be obtained in 2 orientations: (1) *en face* sections parallel to the margin, or (2) longitudinal sections perpendicular to the margin. Depending on the closeness of the tumor to the margin, select the orientation(s) that will most clearly demonstrate the status of the margin. The distance from the tumor edge to the closest resection margin(s) should be measured. Proximal and distal resection margins should be evaluated for dysplasia and/or Barrett metaplasia. It may be helpful to mark the margin(s) closest to the tumor with ink. Margins marked by ink should be designated in the macroscopic description.

**D. Location**

The location of the tumor with respect to the gastroesophageal junction (defined as where the tubular esophagus meets the stomach) should be noted. For tumors involving the gastroesophageal junction (GEJ), specific observations should be recorded in an attempt to establish the exact site of origin of the tumor. GEJ is defined as the junction of the tubular esophagus and the stomach irrespective of the type of epithelial lining of the esophagus. The pathologist should record the:

- proportion of tumor mass located in the esophagus and stomach;
- greatest dimensions of esophageal and gastric portions of the tumor;
- anatomic location of the center of the tumor (cervical, upper thoracic, mid-thoracic, lower thoracic).

For tumors involving the gastroesophageal junction, specific observations should be recorded in an attempt to establish the exact site of origin of the tumor. The gastroesophageal junction is defined as the junction of the tubular esophagus and the stomach irrespective of the type of epithelial lining of the esophagus.

If more than 50% of the tumor involves the esophagus, the tumor is classified as esophageal. If more than 50% of the tumor involves the stomach, the tumor is classified as gastric.<sup>2</sup> If the tumor is equally located above and below the gastroesophageal junction and/or is designated as being at the junction (anatomic center of the tumor), carcinomas of the squamous, small cell, and undifferentiated types are classified as esophageal, whereas adenocarcinomas and signet-ring cell carcinomas are classified as gastric.<sup>3</sup>

### E. Configuration

Configuration includes exophytic (fungating), endophytic (ulcerative), and diffusely infiltrative, but overlap among these types is common. Reporting of complex configurations may require more than 1 descriptor.

### F. Regional Lymph Nodes

Regional lymph nodes comprise the cervical nodes (including the supraclavicular nodes) for the cervical esophagus and the mediastinal nodes for the intrathoracic esophagus.<sup>4</sup>

### G. TNM and Stage Groupings

The TNM staging system for esophageal carcinoma of the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC) is recommended and shown below.<sup>4-5</sup> Category T1 has been expanded according to recommendations published in the *TNM Supplement*.<sup>3</sup>

By AJCC/UICC convention, the designation “T” refers to a primary tumor that has not been previously treated. The symbol “p” refers to the pathologic classification of the TNM, as opposed to the clinical classification, and is based on gross and microscopic examination. pT entails a resection of the primary tumor or biopsy adequate to evaluate the highest pT category, pN entails removal of nodes adequate to validate lymph node metastasis, and pM implies microscopic examination of distant lesions. Clinical classification (cTNM) is usually carried out by the referring physician before treatment during initial evaluation of the patient or when pathologic classification is not possible.

Pathologic staging is usually performed after surgical resection of the primary tumor. Pathologic staging depends on pathologic documentation of the anatomic extent of disease, whether or not the primary tumor has been completely removed. If a biopsied tumor is not resected for any reason (eg, when technically unfeasible) and if the highest T and N categories or the M1 category of the tumor can be confirmed microscopically, the criteria for pathologic classification and staging have been satisfied without total removal of the primary cancer.

#### Primary Tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ (including high-grade dysplasia)
T1	Tumor invades lamina propria or submucosa
T1a	Tumor invades lamina propria <sup>#</sup>
T1b	Tumor invades submucosa <sup>#</sup>
T2	Tumor invades muscularis propria
T3	Tumor invades adventitia
T4	Tumor invades adjacent structures

# Separation into T1a and T1b is justified by differences in frequency of lymph node metastasis and subsequent prognosis.<sup>3,6-8</sup> T1a and T1b correlate with lymph node metastasis and prognosis as follows.<sup>8</sup>

	Lymph Node Metastasis	5-Year Survival Rate
T1a	0%	100%
T1b	47%	86% without nodal metastasis 43% with nodal metastasis

**Regional Lymph Nodes (N)#**

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis<sup>##</sup>
- N1 Regional lymph node metastasis
- N1a Metastasis in 1 to 3 regional lymph nodes<sup>###</sup>
- N1b 4 to 7 nodes involved<sup>##</sup>
- N1c More than 7 nodes involved<sup>###</sup>

# A mediastinal lymphadenectomy specimen will ordinarily include 6 or more regional lymph nodes.

##Regional Lymph Nodes (pN0): Isolated Tumor Cells

Isolated tumor cells (ITCs) are single cells or small clusters of cells not more than 0.2 mm in greatest dimension. Lymph nodes or distant sites with ITCs found by either histologic examination, immunohistochemistry, or nonmorphologic techniques (eg, flow cytometry, DNA analysis, polymerase chain reaction [PCR] amplification of a specific tumor marker) should be classified as N0 or M0, respectively. Specific denotation of the assigned N category is suggested as follows for cases in which ITCs are the only evidence of possible metastatic disease.<sup>3,9</sup>

- pN0 No regional lymph node metastasis histologically, no examination for isolated tumor cells (ITCs)
- pN0(i-) No regional lymph node metastasis histologically, negative morphologic (any morphologic technique, including hematoxylin-eosin and immunohistochemistry) findings for ITCs
- pN0(i+) No regional lymph node metastasis histologically, positive morphologic (any morphologic technique, including hematoxylin-eosin and immunohistochemistry) findings for ITCs
- pN0(mol-) No regional lymph node metastasis histologically, negative nonmorphologic (molecular) findings for ITCs
- pN0(mol+) No regional lymph node metastasis histologically, positive nonmorphologic (molecular) findings for ITCs

### Separation into N1a, N1b, and N1c is justified by differences in prognosis, as shown below.<sup>3</sup> For esophageal carcinoma, survival decreases in a step-wise fashion with increasing number of involved regional lymph nodes. In patients with a limited number of involved nodes, long-term survival is possible with radical resection and extensive lymphadenectomy.<sup>10</sup>

	<b>2-Year Survival Rate</b>	<b>5-Year Survival Rate</b>	<b>Median Survival (Months)</b>
N1a	22%	11%	12
N1b	18%	0%	9
N1c	0%	0%	6

**Distant Metastasis (M)**

- MX Distant metastasis cannot be assessed
- M0 No distant metastasis
- M1 Distant metastasis<sup>#</sup>

# For tumors of the lower thoracic esophagus:

- M1a Metastasis in celiac lymph nodes
- M1b Other distant metastasis

# For tumors of the mid-thoracic esophagus:

- M1a Not applicable
- M1b Nonregional lymph nodes and/or other distant metastasis

# For tumors of the upper thoracic esophagus:

- M1a Metastasis in cervical nodes
- M1b Other distant metastasis

Tumors of the mid-thoracic esophagus are staged only M1b, since tumors with metastasis in nonregional lymph nodes as well as in other sites have an equally poor prognosis.

**Stage Groupings**

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage IIA	T2	N0	M0
	T3	N0	M0
Stage IIB	T1	N1	M0
	T2	N1	M0
Stage III	T3	N1	M0
	T4	Any N	M0
Stage IV	Any T	Any N	M1
Stage IVA	Any T	Any N	M1a
Stage IVB	Any T	Any N	M1b

**TNM Descriptors**

For identification of special cases of TNM or pTNM classifications, the “m” suffix and “y,” “r,” and “a” prefixes are used. Although they do not affect the stage grouping, they indicate cases needing separate analysis.

The “m” suffix indicates the presence of multiple primary tumors in a single site and is recorded in parentheses: pT(m)NM.

The “y” prefix indicates those cases in which classification is performed during or following initial multimodality therapy (ie, neoadjuvant chemotherapy, radiation therapy, or both chemotherapy and radiation therapy). The cTNM or pTNM category is identified by a “y” prefix. The ycTNM or ypTNM categorizes the extent of tumor actually present at the time of that examination. The “y” categorization is not an estimate of tumor prior to multimodality therapy (ie, before initiation of neoadjuvant therapy).

The “r” prefix indicates a recurrent tumor when staged after a documented disease-free interval, and is identified by the “r” prefix: rTNM.

The “a” prefix designates the stage determined at autopsy: aTNM.

### Additional Descriptors

#### Residual Tumor (R)

Tumor remaining in a patient after therapy with curative intent (eg, surgical resection for cure) is categorized by a system known as R classification, shown below.

RX	Presence of residual tumor cannot be assessed
R0	No residual tumor
R1	Microscopic residual tumor
R2	Macroscopic residual tumor

For the surgeon, the R classification may be useful to indicate the known or assumed status of the completeness of a surgical excision. For the pathologist, the R classification is relevant to the status of the margins of a surgical resection specimen. That is, tumor involving the resection margin on pathologic examination may be assumed to correspond to residual tumor in the patient and may be classified as macroscopic or microscopic according to the findings at the specimen margin(s).

#### **Vessel Invasion**

By AJCC/UICC convention, vessel invasion (lymphatic or venous) does not affect the T category indicating local extent of tumor unless specifically included in the definition of a T category. In all other cases, lymphatic and venous invasion by tumor are coded separately as follows.

#### Lymphatic Vessel Invasion (L)

LX	Lymphatic vessel invasion cannot be assessed
L0	No lymphatic vessel invasion
L1	Lymphatic vessel invasion

#### Venous Invasion (V)

VX	Venous invasion cannot be assessed
V0	No venous invasion
V1	Microscopic venous invasion
V2	Macroscopic venous invasion

### References

1. Gabbert HE, Shimoda T, Hainaut P, Nakamura Y, Field JK, Inoue H. Tumours of the oesophagus. In: Hamilton SR, Aaltonen LA, eds. *World Health Organization Classification of Tumours. Pathology and Genetics. Tumours of the Digestive System*. Lyon: IARC Press; 2000:9-30.

2. Wittekind C, Compton CC, Greene FL, Sobin LH. Residual tumor classification revisited. *Cancer*. 2002;94:2511-2516.
3. Wittekind C, Henson DE, Hutter RVP, Sobin LH, eds. *TNM Supplement. A Commentary on Uniform Use*. 2<sup>nd</sup> ed. New York: Wiley-Liss; 2001.
4. Sobin LH, Wittekind C, eds. *UICC TNM Classification of Malignant Tumours*. 6<sup>th</sup> ed. New York: Wiley-Liss; 2002.
5. Greene FL, Page DL, Fleming ID, et al, eds. *AJCC Cancer Staging Manual*. 6<sup>th</sup> ed. New York: Springer; 2002.
6. Endo M, Takeshita K, Yoshino K. Oesophagoscopy for the diagnosis of superficial oesophageal cancer. *Surg Endosc*. 1988;2:205-208.
7. Hirayama K, Mori S. Prognostic factors in early esophageal cancer. *Gan To Kagaku Ryoho*. 1990;17:37-45.
8. Yoshinaka H, Shimazu H, Fukumoto T, Baba M. Superficial esophageal carcinoma: a clinicopathologic review of 59 cases. *Am J Gastroenterol*. 1991;86:1413-1418.
9. Singletary SE, Greene FL, Sobin LH. Classification of isolated tumor cells: clarification of the 6<sup>th</sup> edition of the American Joint Committee on Cancer Staging Manual. *Cancer*. 2003 Dec 15;90(12):2740-2741.
10. Gospodarowicz MK, Henson DE, Hutter RVP, et al, eds. *Prognostic Factors in Cancer*. 2<sup>nd</sup> ed. New York: Wiley-Liss; 2001.

### Bibliography

- Ide H, Nakamura T, Hayashi K, et al. Esophageal squamous cell carcinoma: pathology and prognosis. *World J Surg*. 1994;18:321-330.
- Klimstra D. Pathologic prognostic factors in esophageal carcinoma. *Semin Oncol*. 1994;21:425-430.
- Kuwano H, Watanabe M, Sadanaga N, et al. Univariate and multivariate analyses of the prognostic significance of discontinuous intramural metastasis in patients with esophageal cancer. *J Surg Oncol*. 1994;57:17-21.
- Lal N, Bhasin DK, Malik AK, Gupta NM, Singh K, Mehta SK. Optimal number of biopsy specimens in the diagnosis of carcinoma of the oesophagus. *Gut*. 1992;33:724-726.
- Lieberman MD, Shriver CD, Bleckner S, Burt M. Carcinoma of the esophagus: prognostic significance of histologic type. *J Thorac Cardiovasc Surg*. 1995;9:130-138.
- Paraf F, Flejou J-F, Pignon J-P, Fekete F, Potet F. Surgical pathology of adenocarcinoma arising in Barrett's esophagus: analysis of 67 cases. *Am J Surg Pathol*. 1995;19:183-191.
- Robey-Cafferty SS, el-Naggar AK, Sahin AA, Bruner JM, Ro JY, Cleary KR. Prognostic factors in esophageal squamous carcinoma: a study of histologic features, blood group expression, and DNA ploidy. *Am J Clin Pathol*. 1991;95:844-849.
- Roder JD, Stein HJ, Siewart JR. Esophageal carcinoma. In: Hermanek P, Gospodarowicz MK, Henson DE, Hutter RVP, Sobin LH, eds. *Prognostic Factors in Cancer*. Berlin-New York: Springer-Verlag; 1995:37-46.
- Sarbia M, Bittinger F, Porschen R, Dutkowski P, Willers R, Gabbert HE. Prognostic value of histopathologic parameters of esophageal squamous cell carcinoma. *Cancer*. 1995; 76:922-927.
- Sarbia M, Porschen R, Borchard F, Horstmann O, Willers R, Gabbert HE. Incidence and prognostic significance of vascular and neural invasion in squamous cell carcinomas of the esophagus. *Int J Cancer*. 1995;61:333-336.
- Theunissen PH, Borchard F, Poortvliet DC. Histopathologic evaluation of oesophageal carcinoma: the significance of venous invasion. *Br J Surg*. 1991;78:930-932.