QUICK REFERENCE GUIDE TO

# TNM Staging of Head and Neck Cancer and Neck Dissection Classification

Fourth Edition

AMERICAN ACADEMY OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY FOUNDATION

AMERICAN HEAD & NECK SOCIETY 1954 • 1998 • 1958

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# TNM Staging of Head and Neck Cancer and Neck Dissection Classification

*Copublished by*
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# Preface

Staging is the language essential to the proper and successful management of head and neck cancer patients. It is the core of diagnosis, treatment planning, application of therapeutics from multiple disciplines, recovery, follow-up, and scientific investigation. Staging must be consistent, efficient, accurate, and reproducible. The head and neck cancer caregiver can never be too fluent in this mode of communication, as we educate patients and navigate them toward cure. The simple clarification that Stage IV disease is not synonymous with a "death sentence" has powerful impact for patients and their families. With this imperative, the American Academy of Otolaryngology—Head and Neck Surgery Foundation and the American Head and Neck Society present the fourth edition of *Quick Reference Guide to TNM Staging of Head and Neck Cancer and Neck Dissection Classification.*

Just as our knowledge of and therapeutics for head and neck cancer evolve, so does the language we use in managing the disease. Such terms as "chemo-radiation," "organ preservation," "HPV positive," and "de-escalation" are now central to care planning discussions. Likewise, the staging system evolves to incorporate current knowledge and reflect state-of-the-art treatments.

This new edition of *Quick Reference Guide to TNM Staging of Head and Neck Cancer and Neck Dissection Classification* incorporates the changes from the seventh edition of the American Joint Commission on Cancer (AJCC) Cancer Staging Manual, as well as updated discussions of site-specific cancers.

We hope this *Quick Reference Guide* will serve the practitioner and the patient equally well as we ready ourselves for further evolution of head and neck cancer staging and management.

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# Acknowledgments

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All photos have been graciously donated by Richard V. Smith, MD.

# II. American Joint Committee on Cancer (AJCC) Tumor Staging by Site

## A. Oral Cavity

*The anterior border is the junction of the skin and vermilion border of the lip. The posterior border is formed by the junction of the hard and soft palates superiorly, the circumvallate papillae inferiorly, and the anterior tonsillar pillars laterally. The various sites within the oral cavity include the lip, gingival, hard palate, buccal mucosa, floor of mouth, anterior two-thirds of tongue, and retromolar trigone.*

### PRIMARY TUMOR (T)

| | |
|---|---|
| TX | Primary tumor cannot be assessed |
| T0 | No evidence of primary tumor |
| Tis | Carcinoma *in situ* |
| T1 | Tumor 2 cm or less in greatest dimension |
| T2 | Tumor more than 2 cm but not greater than 4 cm in greatest dimension |
| T3 | Tumor more than 4 cm in greatest dimension |
| T4a | Moderately advanced local disease*<br>Tumor invades through cortical bone, inferior alveolar nerve, floor of mouth, or skin of face—that is, chin or nose (oral cavity). Tumor invades adjacent structures (e.g., through cortical bone, into deep [extrinsic] muscle of tongue [genioglossus, hypoglossus, palataglossus, and styloglossus], maxillary sinus, skin of face) |
| T4b | Very advanced local disease<br>Tumor invades masticator space, pterygoid plates, or skull base and/or encases internal carotid artery |

**Note: Superficial erosion alone of bone/tooth socket by gingival primary is not sufficient to classify as T4.*

## B. Oropharynx

*The oropharynx includes the base of the tongue, the inferior surface of the soft palate and uvula, the anterior and posterior tonsillar pillars, the glossotonsillar sulci, the pharyngeal tonsils, and the lateral and posterior pharyngeal walls.*

### PRIMARY TUMOR (T)

| | |
|---|---|
| TX | Primary tumor cannot be assessed |
| T0 | No evidence of primary tumor |
| Tis | Carcinoma *in situ* |
| T1 | Tumor 2 cm or less in greatest dimension |
| T2 | Tumor more than 2 cm but not more than 4 cm in greatest dimension |
| T3 | Tumor more than 4 cm in greatest dimension or extension to lingual surface of epiglottis |
| T4a | Moderately advanced local disease<br>Tumor invades the larynx, deep/extrinsic muscle of the tongue, medial pterygoid, hard palate, or mandible* |
| T4b | Very advanced local disease<br>Tumor invades the lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base, or encases the carotid artery |

**Note: Mucosal extension to lingual surface of epiglottis from primary tumors of the base of the tongue and vallecula does not constitute invasion of larynx.*

## C. Larynx

*The larynx includes all laryngeal structures from the tip of the epiglottis to the cricoid cartilage inferiorly and is subdivided into three specific sites: supraglottis, glottis, and subglottis.*

### Sites of the Larynx

| *Site* | *Subsite* |
|---|---|
| **Supraglottis** | Suprahyoid epiglottis<br>Infrahyoid epiglottis<br>Aryepiglottic folds (laryngeal aspect)<br>Arytenoids<br>Ventricular bands (false vocal folds) |

| | |
|---|---|
| **Glottis** | True vocal folds, including anterior and posterior commissures; occupies a horizontal place 1 cm in thickness, extending inferiorly from the lateral margin of the ventricle |
| **Subglottis** | Region extending from the lower boundary of the glottis to the lower margin of the cricoid cartilage |

## PRIMARY TUMOR (T)

TX Primary tumor cannot be assessed

T0 No evidence of primary tumor

Tis Carcinoma *in situ*

***Supraglottis***

T1 Tumor limited to one subsite of the supraglottis with normal vocal fold mobility

T2 Tumor invades mucosa of more than one adjacent subsite of the supraglottis or glottis or region outside the supraglottis (e.g., mucosa of base of tongue, vallecula, medial wall of pyriform sinus) without fixation of the larynx

T3 Tumor limited to the larynx with vocal fold fixation and/or invades any of the following: postcricoid area, pre-epiglottic tissues, paraglottic space, and/or inner cortex of thyroid cartilage

T4a Moderately advanced local disease
Tumor invades through the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus)

T4b Very advanced local disease
Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

***Glottis***

T1 Tumor limited to the vocal fold(s) (may involve anterior or posterior commissure) with normal mobility

T1a Tumor limited to one vocal fold

T1b Tumor involves both vocal folds

T2 Tumor extends to the supraglottis and/or subglottis, and/or with impaired vocal fold mobility

T3 Tumor limited to the larynx with vocal fold fixation and/or invasion of paraglottic space, and/or inner cortex of the thyroid cartilage

T4a Moderately advanced local disease
Tumor invades the outer cortex of the thyroid cartilage and/or invades

tissues beyond the larynx (e.g., trachea, soft tissues of the neck, including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus)

T4b Very advanced local disease
Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

***Subglottis***

T1 Tumor limited to the subglottis

T2 Tumor extends to the vocal cord(s) with normal or impaired mobility.

T3 Tumor imited to the larynx with vocal fold fixation.

T4a Moderately advanced local disease
Tumor invades cricoid or thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of the neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus)

T4b Very advanced local disease
Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

## D. Hypopharynx

*The hypopharynx includes the pyriform sinuses, the lateral and posterior hypopharyngeal walls, and the postcricoid region.*

### PRIMARY TUMOR (T)

TX Primary tumor cannot be assessed

T0 No evidence of primary tumor

Tis Carcinoma *in situ*

T1 Tumor limited to one subsite of the hypopharynx and is 2 cm or less in greatest dimension

T2 Tumor invades more than one subsite of the hypopharynx or an adjacent site, or measures more than 2 cm but not more than 4 cm in greatest dimension without fixation of the hemilarynx or extension to the esophagus

T3 Tumor more than 4 cm in greatest dimension or with fixation of the hemilarynx or extension to the esophagus

T4a Moderately advanced local disease
Tumor invades thyroid/cricoid cartilage, hyoid bone, thyroid gland, esophagus, or central compartment soft tissue*

T4b Very advanced local disease
Tumor invades prevertebral fascia, encases carotid artery, or involves mediastinal structures

**Note: Central compartment soft tissue includes prelaryngeal strap muscles and subcutaneous fat.*

## E. Nasal Cavity and Paranasal Sinuses

*The paranasal sinuses include the ethmoid, maxillary, sphenoid, and frontal sinuses.*

### PRIMARY TUMOR (T)

TX Primary tumor cannot be assessed
T0 No evidence of primary tumor
Tis Carcinoma *in situ*

#### *Maxillary Sinus*

*The maxillary sinus is a pyramid-shaped cavity within the maxillary bone. The medial border is the lateral nasal wall. Superiorly, the sinus abuts the orbital floor and contains the infraorbital canal. The posterolateral wall is anterior to the infratemporal fossa and pterygopalatine fossa. The anterior wall is posterior to the facial skin and soft tissue. The floor of the maxillary antrum extends below the nasal cavity floor and is in close proximity to the hard palate and maxillary tooth roots.*

T1 Tumor limited to the maxillary sinus mucosa with no erosion or destruction of bone
T2 Tumor causing bone erosion or destruction, including extension into the hard palate and/or middle nasal meatus, except extension to the posterior wall of the maxillary sinus and pterygoid plates
T3 Tumor invades any of the following: bone of the posterior wall of the maxillary sinus, subcutaneous tissues, floor or medial wall of the orbit, pterygoid fossa, or ethmoid sinuses
T4a Moderately advanced local disease
Tumor invades anterior orbital contents, skin of cheek, pterygoid plates, infratemporal fossa, cribriform plate, sphenoid or frontal sinuses
T4b Moderately advanced local disease
Tumor invades any of the following: orbital apex, dura, brain, middle cranial fossa, cranial nerves other than maxillary division of trigeminal nerve ($V_2$), nasopharynx, or clivus

### *Nasal Cavity and Ethmoid Sinus*

*The nasal cavity includes the nasal antrum and the olfactory region. The subsites within the nasal cavity include the septum; superior, middle, and inferior turbinates; and olfactory region of the cribriform plate. The ethmoid sinus is made up of several thin-walled air cells. Laterally, the ethmoid sinus is bound by a thin bone called the lamina papyracea, which separates it from the medial orbit. The posterior border of the ethmoid sinus is close to the optic canal. The anterosuperior border or roof of the ethmoid is formed by the fovea ethmoidalis, which separates it from the anterior cranial fossa. The perpendicular plate of the ethmoid bone separates the ethmoid cavity into left and right sides.*

| | |
|---|---|
| T1 | Tumor restricted to any one subsite, with or without bony invasion |
| T2 | Tumor invades two subsites in a single region or extending to involve an adjacent region within the nasoethmoidal complex, with or without bony invasion |
| T3 | Tumor extends to invade the medial wall or floor of the orbit, maxillary sinus, palate, or cribriform plate |
| T4a | Moderately advanced local disease<br>Tumor invades any of the following: anterior orbital contents, skin of nose or cheek, minimal extension to anterior cranial fossa, pterygoid plates, sphenoid or frontal sinuses |
| T4b | Very advanced local disease<br>Tumor invades any of the following: orbital apex, dura, brain, middle cranial fossa, cranial nerves other than $V_2$, nasopharynx, or clivus |

## F. Salivary Glands

*The salivary glands include the parotid, submandibular, sublingual, and minor salivary glands.*

### PRIMARY TUMOR (T)

| | |
|---|---|
| TX | Primary tumor cannot be assessed |
| T0 | No evidence of primary tumor |
| T1 | Tumor 2 cm or less in greatest dimension without extraparenchymal extension |
| T2 | Tumor greater than 2 cm but not more than 4 cm in greatest dimension without extraparenchymal extension* |

T3 Tumor more than 4 cm and/or tumor having extraparenchymal extension

T4a Moderately advanced local disease
Tumor invades the skin, mandible, ear canal, and/or facial nerve

T4b Very advanced local disease
Tumor invades the skull base and/or pterygoid plates and/or encases the carotid artery

**Note: Extraparenchymal extension is a clinical macroscopic evidence of invasion of soft tissues. Microscopic evidence alone does not constitute extraparenchymal extension for classification purposes.*

## G. Neck Staging under the TNM Staging System for Head and Neck Tumors

This staging system excludes the nasopharynx and thyroid.

### REGIONAL LYMPH NODES (N)

NX Regional lymph nodes cannot be assessed

N0 No regional nodes metastasis

N1* Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension

N2* Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension; or in multiple ipsilateral lymph nodes, none more that 6 cm in greatest dimension; or in bilateral or contralateral lymph nodes, none greater than 6 cm in greatest dimension

N2a* Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension

N2b* Metastasis in multiple ipsilateral lymph nodes, none more that 6 cm in greatest dimension

N2c* Metastasis in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension

N3* Metastasis in a lymph node more than 6 cm in greatest dimension.

**Note: A designation of "U" or "L" may be used for any N stage to indicate metastasis above the lower border of the cricoid cartilage (U) or below the lower border of the cricoid cartilage (L). Similarly, clinical/radiological ECS should be recorded as E– or E+.*

### DISTANT METASTASIS (M)

MX Distant metastasis cannot be assessed
M0 No distant metastasis
M1 Distant metastasis

## H. TNM Staging for the Larynx, Oropharynx, Hypopharynx, Oral Cavity, Salivary Glands, and Paranasal Sinuses

### Stage Grouping

| | | | |
|---|---|---|---|
| **Stage 0** | Tis | N0 | M0 |
| **Stage I** | T1 | N0 | M0 |
| **Stage II** | T2 | N0 | M0 |
| **Stage III** | T3 | N0 | M0 |
| | T1 | N1 | M0 |
| | T2 | N1 | M0 |
| | T3 | N1 | M0 |
| **Stage IVA** | T4a | N0 | M0 |
| | T4a | N1 | M0 |
| | T1 | N2 | M0 |
| | T2 | N2 | M0 |
| | T3 | N2 | M0 |
| | T4a | N2 | M0 |
| **Stage IVB** | Any T | N3 | M |
| | T4b | Any N | M0 |
| **Stage IVC** | Any T | Any N | M1 |

### Clinical Stage Grouping by T and N Status

| N | T1 | T2 | T3 | T4a | T4b |
|---|---|---|---|---|---|
| N0 | I | II | III | IVa | IVb |
| N1 | III | III | III | IVa | IVb |
| N2 | IVa | IVa | IVa | IVa | IVb |
| N3 | IVb | IVb | IVb | IVb | IVb |

The American Academy of Otolaryngology—Head and Neck Surgery Foundation's education initiatives are aimed at increasing the quality of patient outcomes through knowledgeable, competent, and professional physicians. The goals of education are to provide activities and services for practicing otolaryngologists, physicians-in-training, and nonotolaryngologist health professionals.

The Foundation's AcademyU® serves as the primary education resource for otolaryngology–head and neck surgery activities and events. These include expert-developed knowledge resources, subscription products, live events, eBooks, and online education. In addition, the AAO-HNSF Annual Meeting & OTO EXPO℠ is the world's largest gathering of otolaryngologists, offering a variety of education seminars, courses, and posters. Many of the Foundation's activities are available for *AMA PRA Category 1 Credit™*.

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## AHNS MISSION

On May 13, 1998, The American Head and Neck Society (AHNS) became the single largest organization in North America for the advancement of research and education in head and neck oncology. The merger of two societies, the American Society for Head and Neck Surgery and the Society of Head and Neck Surgeons, formed the American Head and Neck Society. The American Head and Neck Society remains dedicated to the common goals of its parental organizations:

- To promote and advance the knowledge of prevention, diagnosis, treatment, and rehabilitation of neoplasms and other diseases of the head and neck,
- To promote and advance research in diseases of the head and neck, and
- To promote and advance the highest professional and ethical standards.

For more information about the AHNS, visit www.ahns.info.

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