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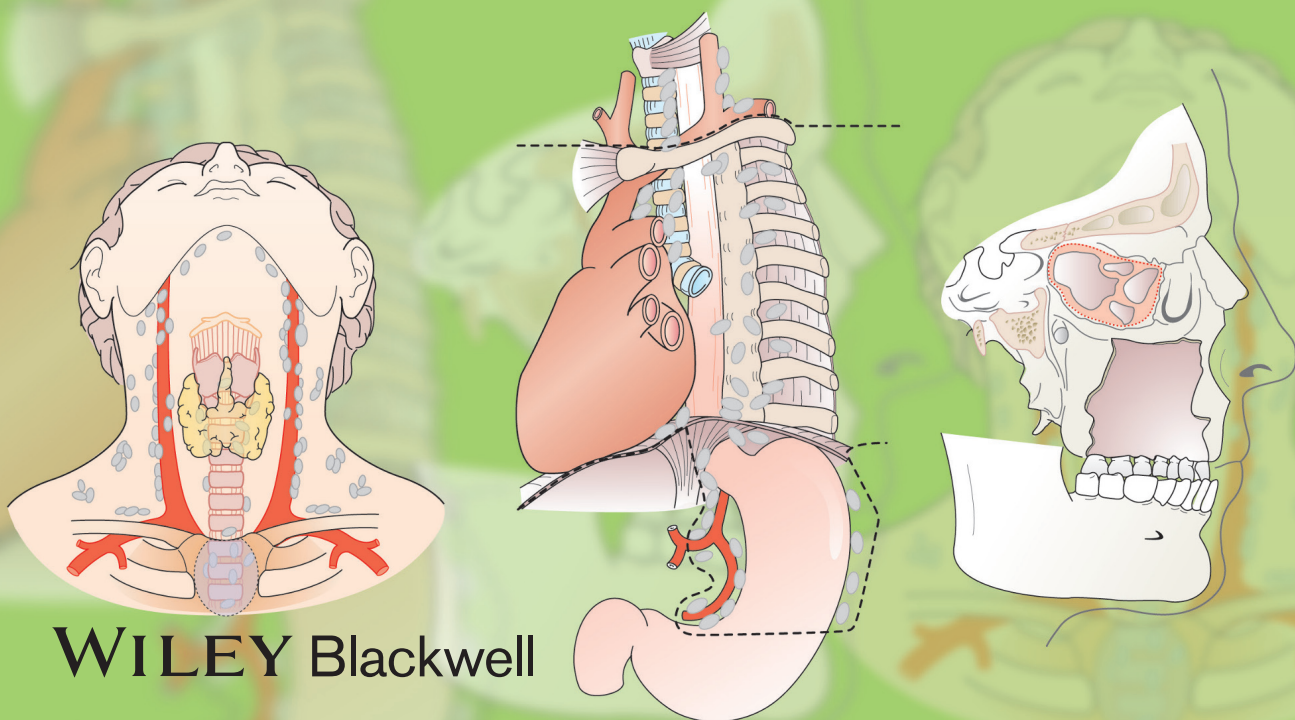
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# TNMA Atlas

SIXTH EDITION

EDITED BY

Ch. WITTEKIND | H. ASAMURA | L. H. SOBIN



WILEY Blackwell





Union for International Cancer Control

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# TNM Atlas

**Illustrated Guide to the TNM Classification  
of Malignant Tumours**

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**Ch. Wittekind**

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# FOREWORD TO THE FIRST EDITION

Confronted with a myriad of T's, N's and M's in the UICC TNM booklet, classifying a malignancy may seem to many cancer clinicians a tedious, dull and pedantic task. But with a look at the *TNM Atlas* all of a sudden lifeless categories become vivid images, challenging the clinician's know-how and investigational skills.

**B. van der Werf-Messing, M.D.**  
**Professor of Radiology**  
**Chairman of the International TNM Committee of the UICC**

Rotterdam, July 1982

# PREFACE TO THE SIXTH EDITION

This new sixth edition of the *TNM Atlas* incorporates the changes in the TNM System that are in the seventh edition of the *TNM Classification of Malignant Tumours*.<sup>1</sup> The most important additions and modifications concern carcinomas of the oesophagus and the oesophagogastric junction, stomach, lung, appendix, biliary tract, skin, and prostate. There are several new classifications: upper aerodigestive mucosal melanoma, gastrointestinal stromal tumour, gastrointestinal carcinoids (neuroendocrine tumours), intrahepatic cholangiocarcinoma, Merkel cell carcinoma, uterine sarcomas, and adrenal cortical carcinoma.

The rules of classification and staging correspond with those appearing in the seventh edition of the *AJCC Cancer Staging Manual* (2009).<sup>2</sup>

Although the Atlas's content follows the time-honoured approach of depicting the Ts, Ns, and Ms in graphic terms, the all-new design, layout, and full-colour artwork provide a refreshing approach to cancer staging. As Professor van der Werf-Messing stated in her Foreword to the First Edition over forty years ago, "all of a sudden lifeless categories become vivid images".

<sup>1</sup>Sobin LH, Gospodarowicz MK, Wittekind C (eds.) *TNM Classification of Malignant Tumours*, Seventh Edition. Oxford: Blackwell Publishing Ltd; 2010

<sup>2</sup>American Joint Committee on Cancer (AJCC) *Cancer Staging Manual* 7th ed. Edge SB, Byrd DR, Compton CC, Fritz AG, Greene FL, Trotti A. Eds. New York: Springer; 2009

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The Editors have much pleasure in acknowledging the great help received from the members of the TNM Prognostic Factors Project Committee and the National Staging Committees Global Representatives and International Organizations listed on pages xv–xix of the *TNM Classification of Malignant Tumours*, Seventh Edition.

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# PRELIMINARY NOTE

The TNM System for describing the anatomical extent of disease is based on assessment of three components:

- T – The extent of the primary tumour
- N – The absence or presence and extent of regional lymph node metastasis
- M – The absence or presence of distant metastasis

The addition of numbers to these three components indicates the extent of the malignant disease, thus:

T0, T1, T2, T3, T4 N0, N1, N2, N3 M0, M1

In effect, the system is a “short-hand notation” for describing the extent of a particular malignant tumour.

Each site is described under the following headings:

- 1) *Anatomy*  
Drawings of the anatomical sites and subsites are presented with the appropriate ICD-O topography numbers<sup>1</sup>.
- 2) *Regional Lymph Nodes*  
The regional lymph nodes are listed and shown in drawings.
- 3) *T/pT Clinical and Pathological Classification of the Primary Tumour*  
The definitions for T and pT categories are presented. In the seventh edition (2010) of the TNM Classification the clinical and pathological classification (T and pT) generally coincide, therefore the same illustrations are valid for the T and pT classification.
- 4) *N/pN Clinical and Pathological Classification of Regional Lymph Nodes*  
The N and pN categories are presented in a fashion similar to the T and pT categories. Differences between N and pN definitions in the seventh edition arise in the case of carcinomas of the breast and penis and germ cell tumours of the testis.
- 5) *M/pM Clinical and Pathological Classification of Distant Metastasis*  
M localization is given only in selected cases because of its many possible variables.

Substantial Changes in the sixth edition compared to the fifth edition are marked by a bar at the left-hand side of the page. The same is true for new classifications of previously unclassified tumours.

<sup>1</sup>ICD-O *International Classification of Diseases for Oncology*, 3rd edn (2000), WHO, Geneva

# RESIDUAL TUMOUR (R) CLASSIFICATION\*

The absence or presence of residual tumour after treatment should be described by the symbol R.

TNM and pTNM describe the anatomical extent of cancer in general without considering treatment. They can be supplemented by the R classification, which deals with tumour status after treatment. The R classification reflects the effects of therapy, influences further therapeutic procedures and is a strong predictor of prognosis.

In the R classification, not only local-regional residual tumour is to be taken into consideration, but also distant residual tumour in the form of remaining distant metastases.

The definitions of the R categories are:

RX Presence of residual tumour cannot be assessed

R0 No residual tumour (Fig. 1a-c)

R1 Microscopic residual tumour (Fig. 2)

R2 Macroscopic residual tumour (Fig. 3a-c)

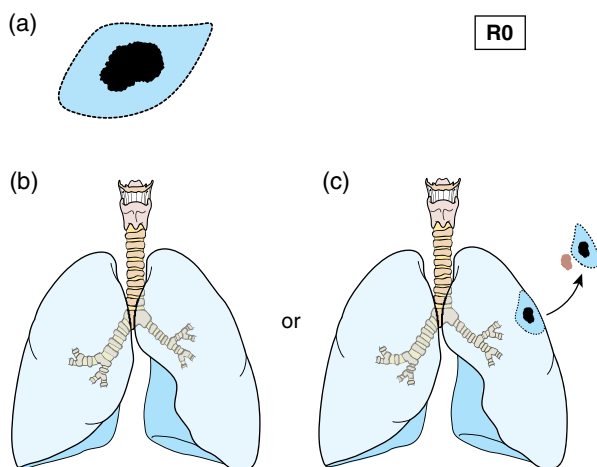


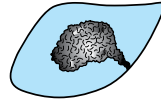
Fig. 1a-c

## Note

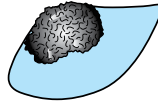
\*Some consider the R classification to apply only to the primary tumour and its local or regional extent. Others have applied it more broadly to include distant metastasis. The specific usage should be indicated when the R is used.

R1

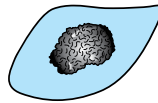
Fig. 2



(a)

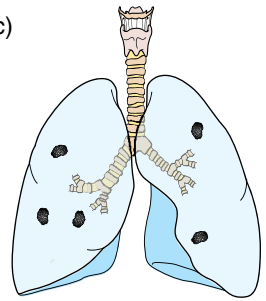


(b)



+

(c)



R2

Fig. 3a-c



# HEAD AND NECK TUMOURS

## Introductory Notes

The following sites are included:

- Lip, oral cavity
- Pharynx: oropharynx, nasopharynx, hypopharynx
- Larynx: supraglottis, glottis, subglottis
- Nasal cavity and paranasal sinuses
- • Malignant melanoma of upper aerodigestive tract
- Major salivary glands
- Thyroid gland

Carcinomas arising in the minor salivary glands of the upper aerodigestive tract are classified according to the rules for tumours of their anatomic site of origin, e.g., oral cavity.

## Regional Lymph Nodes (Fig. 4)

The definitions of the N categories for all head and neck sites except nasopharynx, mucosal malignant melanoma of the upper aerodigestive tract and thyroid are the same.

Midline nodes are considered ipsilateral nodes except in the thyroid.

These include

- (1) Submental nodes
- (2) Submandibular nodes
- (3) Cranial jugular (deep cervical) nodes
- (4) Medial jugular (deep cervical) nodes
- (5) Caudal jugular (deep cervical) nodes
- (6) Dorsal cervical (superficial cervical) nodes along the accessory nerve
- (7) Supraclavicular nodes
- (8) Prelaryngeal, pretracheal\*, and paratracheal nodes
- (9) Retropharyngeal nodes
- (10) Parotid nodes
- (11) Buccal nodes
- (12) Retroauricular and occipital nodes

### Note

\*The pretracheal lymph nodes are sometimes known as "Delphian nodes".

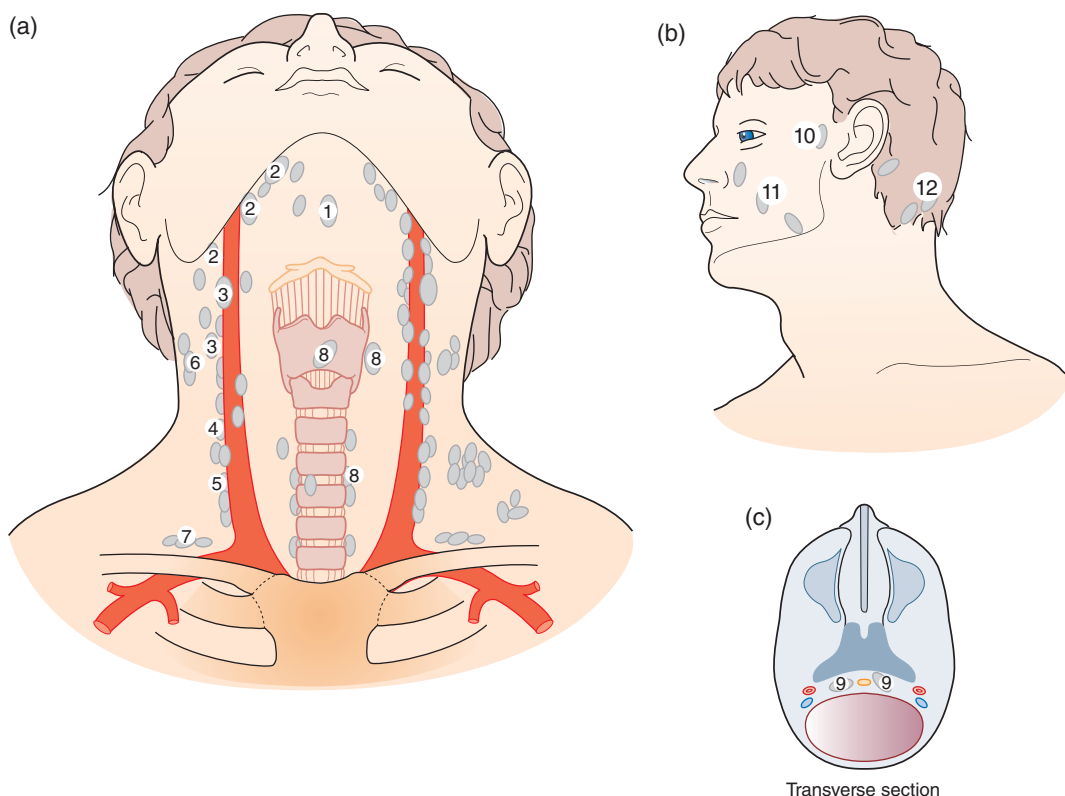


Fig. 4

### N/pN Classification – Regional Lymph Nodes

The definitions of the N categories for all head and neck sites except nasopharynx, mucosal malignant melanoma of the upper aerodigestive tract and thyroid are:

- NX/pNX Regional lymph nodes cannot be assessed
- N0/pN0 No regional lymph node metastasis

**pN0** Histological examination of a selective neck dissection specimen will ordinarily include 6 or more lymph nodes. Histological examination of a radical or modified radical neck dissection specimen will ordinarily include 10 or more lymph nodes. If the lymph nodes are negative, but the number ordinarily examined is not met, classify as pN0. When size is a criterion for pN classification, measurement is made of the metastasis, not of the entire lymph node.

- N1 Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension (Fig. 5)
- 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 than 6 cm in greatest dimension; or in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension

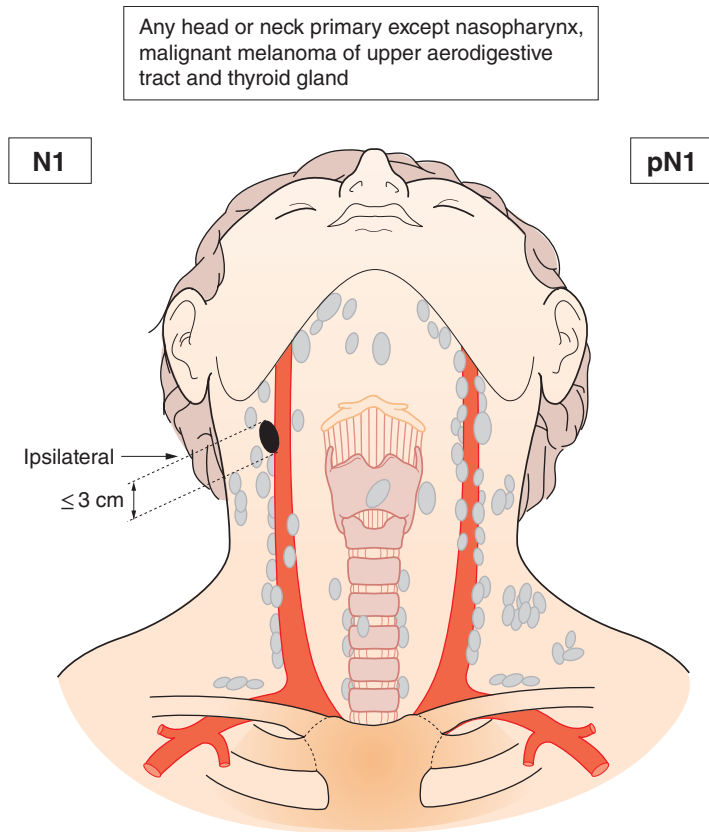


Fig. 5

#### 4 Head and Neck Tumours

N2a Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension (Fig. 6)

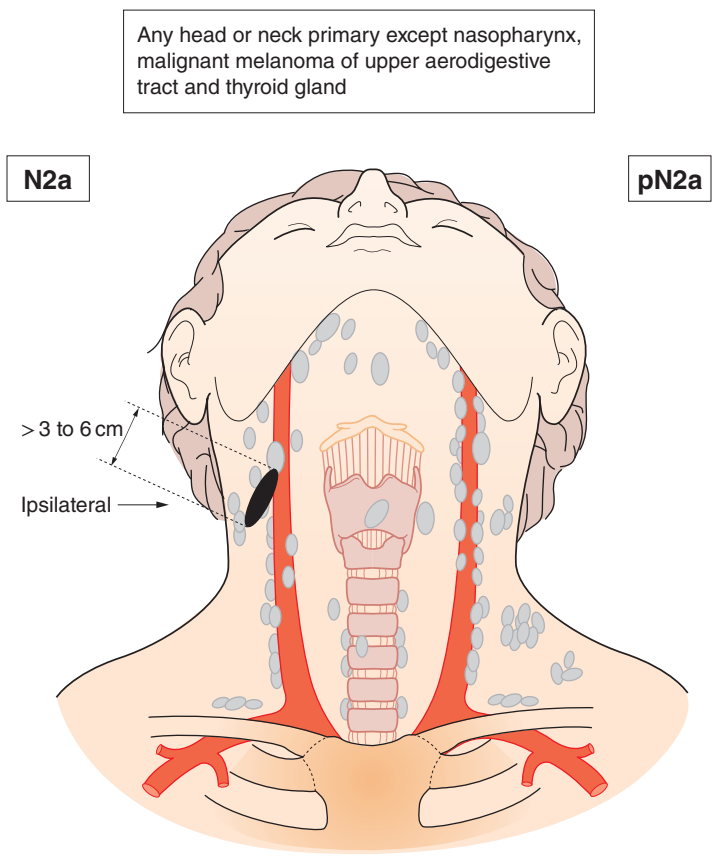


Fig. 6



N2b Metastasis in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension (Fig. 7)

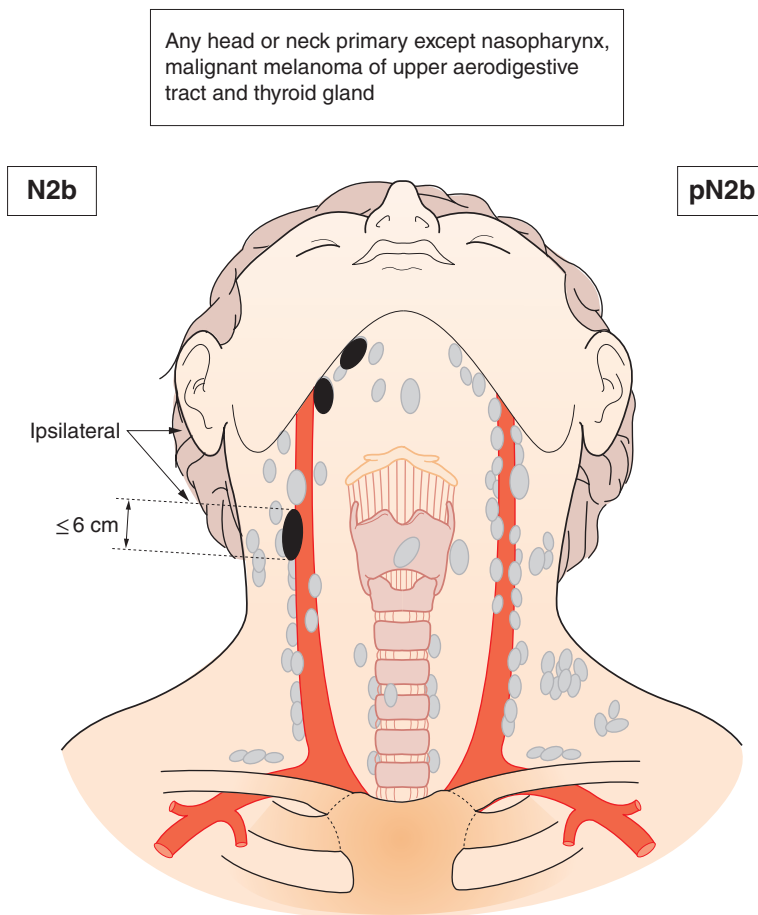
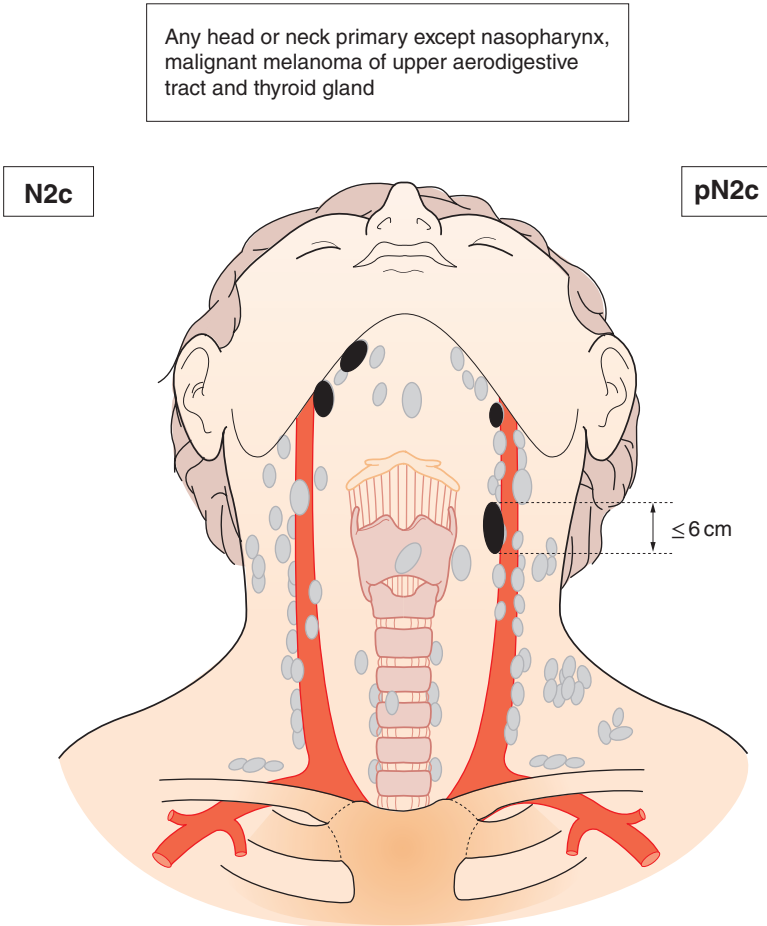


Fig. 7

**6 Head and Neck Tumours**

N2c Metastasis in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension (Fig. 8)



**Fig. 8**

N3 Metastasis in a lymph node more than 6 cm in greatest dimension (Fig. 9)

**Note**

Midline nodes are considered ipsilateral nodes.

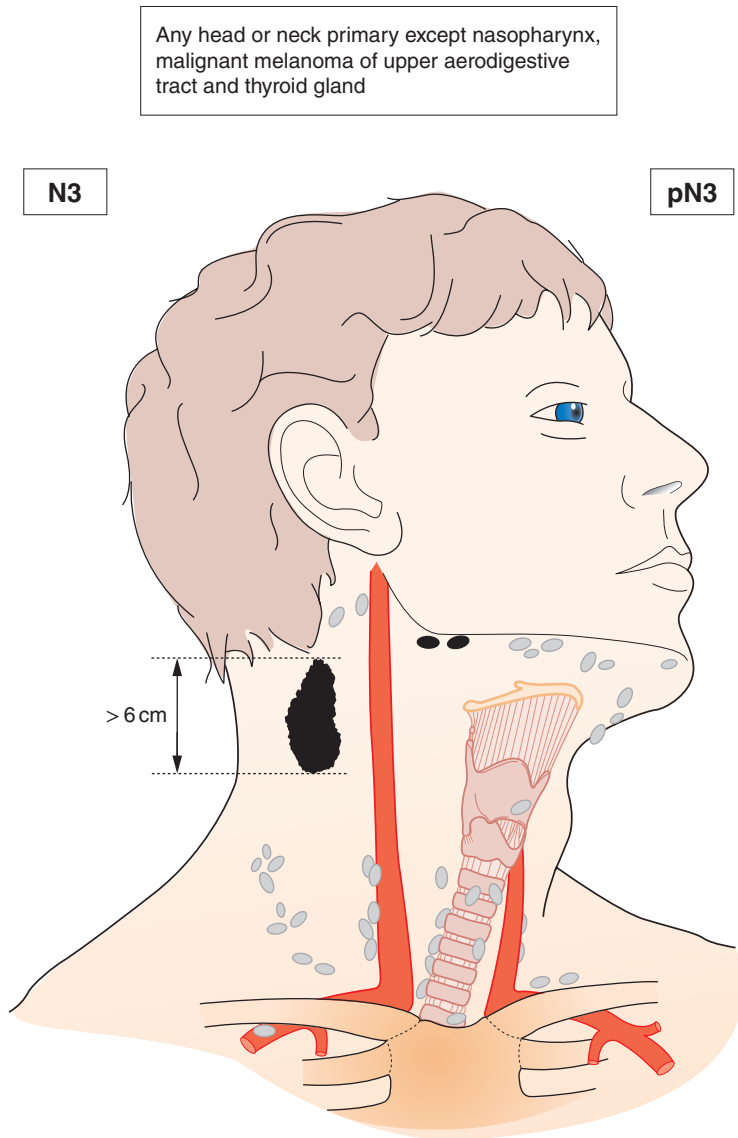


Fig. 9

# LIP AND ORAL CAVITY (ICD-O C00, C02–06)

## Rules for Classification

The classification applies only to carcinomas of the vermilion surfaces of the lips and of the oral cavity, including those of minor salivary glands. There should be histological confirmation of the disease.

## Anatomical Sites and Subsites

### Lip (Fig. 10)

1. External upper lip (vermilion border) (C00.0)
2. External lower lip (vermilion border) (C00.1)
3. Commissures (C00.6)

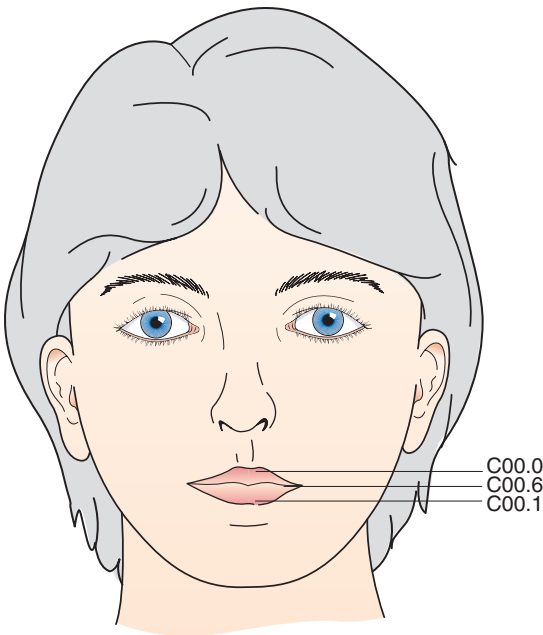
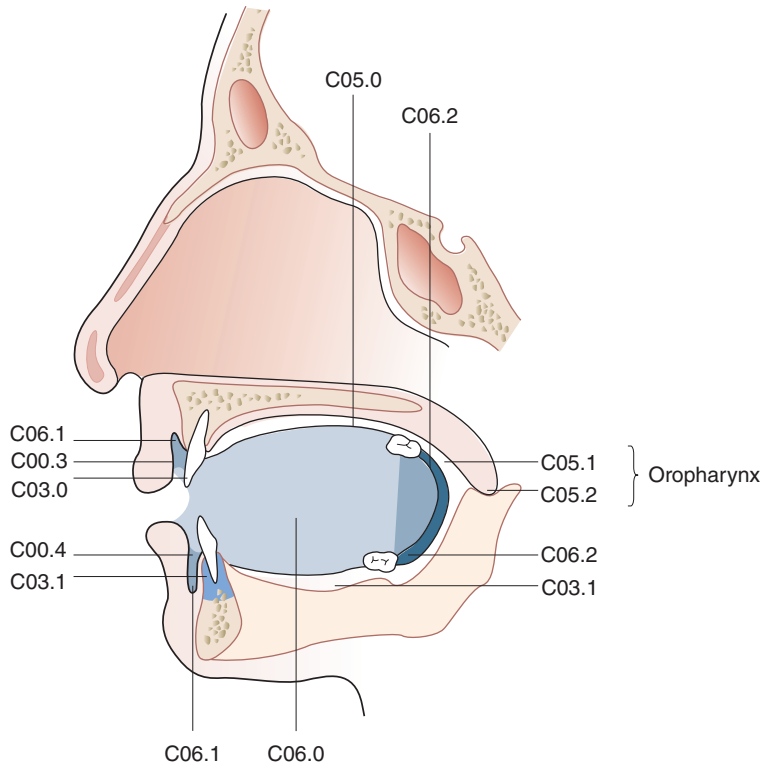


Fig. 10

**Oral Cavity (Figs. 11, 12, 13)**

1. Buccal mucosa
  - (i) Mucosa of upper and lower lips (C00.3, 4)
  - (ii) Cheek mucosa (C06.0)
  - (iii) Retromolar areas (C06.2)
  - (iv) Bucco-alveolar sulci, upper and lower (vestibule of mouth) (C06.1)
2. Upper alveolus and gingiva (upper gum) (C03.0)
3. Lower alveolus and gingiva (lower gum) (C03.1)
4. Hard palate (C05.0)
5. Tongue
  - (i) Dorsal surface and lateral borders anterior to vallate papillae (anterior two-thirds) (C02.0, 1)
  - (ii) Inferior (ventral) surface (C02.2)
6. Floor of mouth (C04)

**Fig. 11**

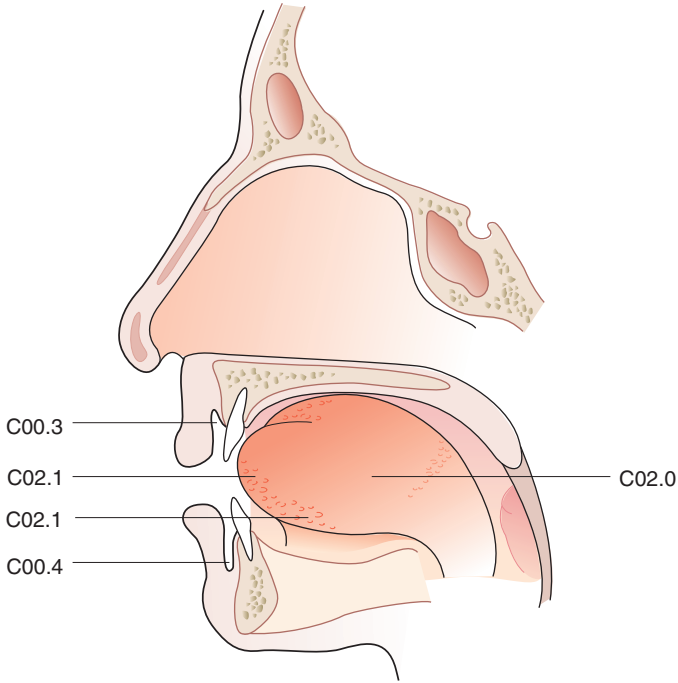


Fig. 12

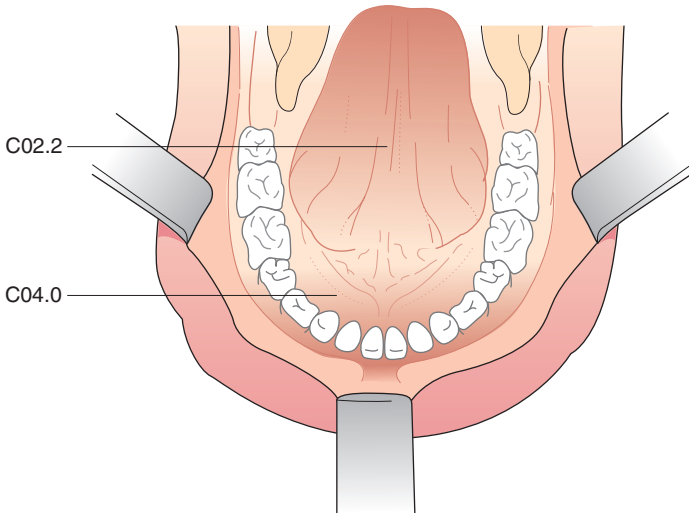


Fig. 13

## N – Regional Lymph Nodes

See Head and Neck Tumours.