Introduction

The History of the TNM System*

The TNM system for the classification of malignant tumours was developed by Pierre Denoix (France) between the years 1943 and 1952.[1]

In 1950, the UICC appointed a Committee on Tumour Nomenclature and Statistics. As a basis for its work on clinical stage classification, it adopted the general definitions of local extension of malignant tumours suggested by the World Health Organization (WHO) Sub-Committee on The Registration of Cases of Cancer as well as Their Statistical Presentation.[2]

In 1958, the Committee published the first recommendations for the clinical stage classification of cancers of the breast and larynx and for the presentation of results.[3]

A second publication in 1959 presented revised proposals for the breast, for clinical use and evaluation over a 5-year period (1960–1964).[4] In 1968, a booklet, the *Livre de Poche*,[5] and, a year later, a complementary booklet were published detailing recommendations for the setting-up of field trials, for the presentation of end results, and for the determination and expression of cancer survival rates.[6] The *Livre de Poche* was subsequently translated into 11 languages. In 1974 and 1978, second and third editions[7,8] were published containing new site classifications, and the fourth edition of TNM was published in 1987.[9]

In 1993, the project published the *TNM Supplement*[10] to promote the uniform use of TNM by providing detailed explanations of the TNM rules with practical examples. Second, third, fourth and fifth editions appeared in 2001, 2003, 2012 and 2019, respectively.[11–14]

The project also publishes the *TNM Atlas: Illustrated Guide to the TNM Classification of Malignant Tumours*; the seventh edition was published in 2021 as a companion to the eighth edition of the *TNM Classification*.[15]

In 1995, the project published *Prognostic Factors in Cancer*,[16] a compilation and discussion of prognostic factors in cancer, both anatomical and non-anatomical, at each of the body sites. This was expanded in the second edition in 2001[17] and the third edition in 2006.[18]

The current ninth edition of TNM contains rules of classification and staging that correspond with those appearing in the eighth edition of the *AJCC Cancer Staging Manual* (2017) and subsequent version 9 series.[19,20] While the aim of the UICC and AJCC is to have identical classifications, small differences exist and are identified as footnotes to the text. Wherever possible, the classifications are

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based on published evidence-based recommendation and analysis of databases that reflect contemporary management.

To develop and sustain a classification system acceptable to all requires the closest liaison between national and international organisations. As noted, while the classification is based on published evidence, in areas where high-level evidence is not available, it is based on international consensus. The continuing objective of the UICC is to present the classification of anatomical extent of cancer for global use in high-, middle- and low-income countries.

Note

* A more detailed history is available on the website at www.uicc.org.

The Principles of the TNM System

The determination of the extent of any malignancy is a prerequisite to determine both prognosis and appropriate treatment for any patient with cancer. The practice of classifying cancer cases into groups according to anatomical extent, termed 'stage', arose from the observation that survival rates were higher for cases in which the disease was localised than for those in which the disease had extended beyond the organ of origin. The stage of disease at the time of diagnosis is a reflection of not only the rate of growth and extension of the neoplasm but also the type of tumour and the tumour–host relationship.

It is important to record accurate information on the anatomical extent of the disease for each site at the time of diagnosis, to meet the following objectives:

1. to aid the clinician in the planning of treatment
2. to give some indication of prognosis for survival
3. to assist in the evaluation of the results of treatment
4. to facilitate the exchange of information between treatment centres and regions
5. to contribute to the continuing investigation of human cancer
6. to support cancer control activities.

Cancer staging is essential to patient care, research and cancer control. Cancer control activities include direct patient-care-related activities, the development and implementation of clinical practice guidelines and centralised activities such as recording disease extent in cancer registries for surveillance purposes and planning cancer systems. Recording of stage is essential for the evaluation of outcomes of clinical practice and cancer programmes, including screening. However, in order to evaluate the long-term outcomes of populations, it is ideal if the classification remains stable. There is therefore a conflict between a classification that is updated to include the most current forms of medical knowledge and a classification that facilitates longitudinal studies. The UICC TNM Project aims to address both needs.

International agreement on the classification of cancer by the extent of disease provides a method of conveying disease extent to others without ambiguity.

There are many axes of tumour classification: for example, the anatomical site and the clinical and pathological extent of disease, the duration of symptoms or signs,

the gender, age, comorbidities and performance status of the patient, and the histological type and grade of the tumour and relevant molecular and genetic markers. All of these have an influence on the outcome of the disease and need to be considered in tailoring the treatment for an individual patient. Classification by the anatomical extent of disease is the one with which the UICC TNM system primarily deals.

The clinician's immediate task when meeting a patient with a new diagnosis of cancer is to make a judgement as to prognosis and decide on the most effective course of treatment. This judgement and decision require, among other things, an objective assessment of the anatomical extent of the disease.

The General Rules of the TNM System*

The TNM system for describing the anatomical extent of disease is based on the 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, extent and the site of distant metastasis

The addition of Arabic numerals determines the categories for each of these three components, which indicate the extent of the malignant disease:

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

In effect, the system is a 'shorthand notation' for describing the extent of a particular malignant tumour.

The general rules applicable to all sites are as follows:

1. All cases should be confirmed microscopically. Any cases not so proved must be analysed and reported separately.
   Two classifications are described for each site.
   a) *Clinical classification*: the pre-treatment clinical classification, designated **cTNM**, is essential to select and evaluate therapy. This is based on evidence acquired before any treatment. Such evidence is gathered from physical examination, imaging, endoscopy, biopsy, surgical exploration and other relevant examinations.
   b) *Pathological classification*: the postsurgical histopathological classification, designated **pTNM**, is based on evidence acquired before treatment, supplemented or modified by additional evidence acquired from surgery and from pathological examination. It is used to provide additional data to estimate prognosis and assessment for any additional treatment. The pathological assessment of the primary tumour (pT) entails resection of the primary tumour or biopsy adequate to confirm the highest pT category. Following two surgical procedures for a single lesion, the pTNM classification should be a composite of the histological examination of the specimens from both operations.

2. The pathological assessment of regional lymph nodes requires examination of at least one lymph node and the pathological assessment of the primary tumour (pT), except in cases of unknown primary (T0). If a biopsy confirms the highest N category, the use of pN is appropriate. An excisional biopsy of a lymph node without pathological assessment of the primary tumour (pT) is insufficient to fully evaluate the pN category and is a clinical N category and stage, except in the case of an unknown primary (T0). The pathological assessment of distant metastasis (pM) entails microscopic examination of metastatic deposit. However, if both the highest T and N categories or the M1 category are confirmed microscopically including biopsy without removal of the primary, the criteria for pathological staging are considered satisfied.
3. After assigning cT, cN and cM and/or pT, pN and pM categories, these may be grouped into stages, which are designated by Roman numerals.
   The TNM classification and stages, once established, must remain unchanged in the medical records. For cancer surveillance purposes, clinical and pathological data may be combined when only partial information is available in either the pathological classification or the clinical classification; this should be noted. How stage grouping is determined should be recorded.
4. If there is doubt concerning the correct T, N, or M category to which a particular case should be allotted, then the lower (i.e., less advanced) category should be chosen. This will also be reflected in the stage; however, the treating physician may recommend treatment as for the higher stage. This rule does not apply to situations where there is insufficient information to stage, where TX or NX should be used, nor does this rule apply to cancer registries interpreting apparently conflicting information.
5. In the case of multiple primary tumours in one organ of the same histology, the tumour with the highest T category should be classified and the multiplicity or the number of tumours should be indicated in parentheses, e.g., T2(m) or T2(5). In simultaneous bilateral primary cancers of paired organs, each tumour should be classified independently. Exceptions include tumours where bilaterality or multiplicity is a component of the T or M category definitions and in malignant melanoma for which, when patients present with multiple primaries, each anatomical skin site is considered a different primary and should be classified separately.
6. Definitions of the TNM categories and stage may be telescoped or expanded for clinical or research purposes as long as the basic definitions recommended are not changed. For instance, any T, N, or M can be divided into subcategories, such as T1a and T1b.
7. Previously the UICC did not specify a specific time frame within which staging information should be obtained. The AJCC recommends that staging should be complete within 4 months of the original diagnosis. Exceptionally, the presence of metastases may be confirmed after 4 months from diagnosis, and if the treating physician is of the opinion that they were present but unconfirmed at diagnosis, that data may be used; otherwise, staging should be complete within 4 months of original diagnosis and remain unchanged.

Note

* An educational module on the general principles is available on the UICC website at www.uicc.org.

Anatomical Regions and Sites

The sites in this classification are listed by code number of the International Classification of Diseases for Oncology.[21] Each region or site is described under the following headings:

- Anatomical sites, and subsites if appropriate
- Definition of the regional lymph nodes
- cTNM clinical classification
- pTNM pathological classification
- G histopathological grading if different from that described on page 8
- Stage and prognostic groups
- Prognostic factors grid

cTNM Clinical Classification

The following general definitions are used throughout:

cT – Primary Tumour

cTX	Primary tumour cannot be assessed
cT0	No evidence of primary tumour
cTis	Carcinoma in situ
cT1–T4	Increasing size* and/or local extent of the primary tumour

Note

* The UICC does not prescribe the way to measure tumour size for pT classification; however, the AJCC Cancer Staging Manual 2017 [19] recommends that pT is derived from the actual measurement of the unfixed tumour in the surgical specimen. It should be noted, however, that up to 30% shrinkage of soft tissues may occur in the resected specimen. Thus, in cases of discrepancies of clinically and pathologically measured tumour size, the clinical measurement should also be considered for the pT classification.

N – Regional Lymph Nodes

cNX	Regional lymph nodes cannot be assessed
cN0	No regional lymph node metastasis
cN1–N3	Increasing involvement of regional lymph nodes

M – Distant Metastasis*

cM0	No distant metastasis
cM1	Distant metastasis

Note

* The MX category is considered to be inappropriate as clinical assessment of metastasis can be based on physical examination alone. (The use of MX may result in exclusion from staging.)

The category M1 may be further specified according to the following notation:

Pulmonary	PUL (C34)	Bone marrow	MAR (C42.1)
Osseous	OSS (C40, 41)	Pleura	PLE (C38.4)
Hepatic	HEP (C22)	Peritoneum	PER (C48.1,2)
Brain	BRA (C71)	Adrenals	ADR (C74)
Lymph nodes	LYM (C77)	Skin	SKI (C44)
Others	OTH		

Subdivisions of TNM

Subdivisions of some main categories are available for those who need greater specificity (e.g., cT1a, cT1b or cN2a, cN2b).

pTNM Pathological Classification

The following general definitions are used throughout:

pT – Primary Tumour

pTX	Primary tumour cannot be assessed histologically
pT0	No histological evidence of primary tumour
pTis	Carcinoma in situ
pT1–4	Increasing size and/or local extent of the primary tumour histologically

pN – Regional Lymph Nodes

pNX	Regional lymph nodes cannot be assessed histologically
pN0	No regional lymph node metastasis histologically
pN1–N3	Increasing involvement of regional lymph nodes histologically

Notes

- Direct extension of the primary tumour into lymph nodes is classified as lymph node metastasis.
- Tumour deposits (TD) represent discrete tumour nodules of any shape, contour or size in peri-rectal and peri-colonic fat, away from the leading edge of the tumour, within the lymph drainage area of the primary carcinoma. TD can originate from different histological structures, including lymph nodes, vessels and nerves. Therefore, TD may contain foci of extramural vascular invasion (EMVI) and perineural invasion (PNI). The feature distinguishing a TD from EMVI and PNI is the presence of unequivocal tumour extension from the vessel or nerve into the surrounding fat or fibroconnective tissue.
- When tumour outgrowth from EMVI and/or PNI is present, the diagnosis of TD and EMVI/PNI should be denoted separately in the report. If the tumour involves an identifiable lymph node, it is considered as lymph node metastasis and not as tumour deposit even if the tumour extends into the perinodal fat.
- Metastasis in any lymph node other than regional is classified as a distant metastasis.

- When size is a criterion for pN classification, measurement is made of the metastasis within the node, not of the entire lymph node. The measurement should be that of the largest dimension of the tumour.
- Cases with micrometastasis only, i.e., no metastasis larger than 2 mm, can be identified by the addition of '(mi)', e.g., pN1(mi).

Sentinel Lymph Node

The sentinel lymph node is the first lymph node to receive lymphatic drainage from a primary tumour. If it contains metastatic tumour, this indicates that other lymph nodes may contain tumour. If it does not contain metastatic tumour, other lymph nodes are not likely to contain tumour. Occasionally, there is more than one sentinel lymph node.

The following designations are applicable when sentinel lymph node assessment is attempted:

(p)N0(sn)	No sentinel lymph node metastasis
(p)N1(sn)	Sentinel lymph node metastasis

Isolated Tumour Cells

Isolated tumour cells (ITCs) are single tumour cells or small clusters of cells not more than 0.2 mm in greatest extent that can be detected by routine H and E stains or immunohistochemistry [22]. An additional criterion has been proposed in breast cancer to include a cluster of fewer than 200 cells in a single histological cross-section. Definitions of ITCs may vary by tumour site. ITCs do not typically show evidence of metastatic activity (e.g., proliferation or stromal reaction) or penetration of vascular or lymphatic sinus walls. Cases with ITCs in lymph nodes should be classified as N0. The same applies to cases with findings suggestive of tumour cells or their components by non-morphological techniques such as flow cytometry or DNA analysis. The exceptions are in malignant melanoma of the skin and Merkel cell carcinoma, wherein ITCs in a lymph node are classified as N1a (clinically occult) or N2a. These cases should be analysed separately.[20] Their classification is as follows:

N0	No regional lymph node metastasis histologically, no examination for isolated tumour cells (ITC)
N0(i–)	No regional lymph node metastasis histologically, negative morphological findings for ITC
N0(i+)	No regional lymph node metastasis histologically, positive morphological findings for ITC
N0(mol–)	No regional lymph node metastasis histologically, negative non-morphological findings for ITC
N0(mol+)	No regional lymph node metastasis histologically, positive non-morphological findings for ITC

Cases with or examined for ITCs in sentinel lymph nodes can be classified as follows:

N0(i–)(sn)	No sentinel lymph node metastasis histologically, negative morphological findings for ITC
N0(i+)(sn)	No sentinel lymph node metastasis histologically, positive morphological findings for ITC
N0(mol–)(sn)	No sentinel lymph node metastasis histologically, negative non-morphological findings for ITC
N0 (mol+)(sn)	No sentinel lymph node metastasis histologically, positive non-morphological findings for ITC

pM – Distant Metastasis*

pM1 Distant metastasis microscopically confirmed

Note

* pM0 and pMX are not valid categories.

The category pM1 may be further specified in the same way as M1 (see page 5).

ITCs found in bone marrow and circulating tumour cells with morphological techniques are classified according to the scheme for N, e.g., M0(i+). For non-morphological findings, 'mol' is used in addition to M0, e.g., M0 (mol+).

Circulating tumour DNA in the absence of established metastases is also classified as M0; to date, there is no identifying suffix for circulating tumour DNA.

Histopathological Grading

In most sites, further information regarding the primary tumour may be recorded under the following heading:

G – Histopathological Grading

GX Grade of differentiation cannot be assessed
G1 Well differentiated
G2 Moderately differentiated
G3 Poorly differentiated
G4 Undifferentiated

Notes

- In some tumour sites, Grades 3 and 4 can be combined as 'G3, poorly differentiated or undifferentiated'.
- In some tumour sites, tumours may be classified as low or high grade.
- Occasionally, special systems of grading are recommended, for example, prostate adenocarcinoma.

Additional Descriptors

For identification of special cases in the TNM or pTNM classification, the m, y, r and a symbols may be used. Although they do not affect the stage grouping, they indicate cases needing separate analysis.

m Symbol. The suffix m, in parentheses, is used to indicate the presence of multiple primary tumours at a single site. See TNM rule no. 5 (page 4).

y Symbol. In those cases in which classification is performed during or following multimodality therapy, the cTNM or pTNM category is identified by a y prefix. The ycTNM or ypTNM categorises the extent of tumour actually present at the time of that examination. The y categorisation is not an estimate of the extent of tumour prior to multimodality therapy. Only viable tumour cells and not signs of regressed tumour tissue such as necrotic cell debris, scars, fibrotic areas, fibrotic nodules, granulation tissue, mucin lakes, etc., should be considered when assigning the yp categories.

r Symbol. Recurrent tumours, when classified after a disease-free interval, are identified by the prefix r. It may also be used for progression after watchful waiting.

a Symbol. The prefix a indicates that classification is first determined at autopsy.

Optional Descriptors

L – Lymphatic Invasion

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

V – Venous Invasion

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

LV – Lymphovascular Invasion

LVX Lymphovascular invasion cannot be assessed
LV0 No lymphovascular invasion
LV1 Lymphovascular invasion

Note
Macroscopic involvement of the wall of veins (with no tumour within the veins) is classified as V2.

Pn – Perineural Invasion

PnX Perineural invasion cannot be assessed
Pn0 No perineural invasion
Pn1 Perineural invasion

In some tumour sites, perineural invasion may be incorporated into the definition of the T category.

Residual Tumour (R) Classification[a,b]

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

cTNM 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. It reflects the effects of therapy, including surgical extent, and is a predictor of prognosis.

The definitions of the R categories are:

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

Notes

[a] Many 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. Detailed definitions of R1 used can vary by tumour type; therefore, the specific usage should be indicated.

[b] After neoadjuvant therapy for certain tumour types, pathological classifications of the extent of the residual disease exist, such as the tumour regression score for rectal cancer and oesophageal cancer and residual cancer burden in breast cancer may be used. Classifications vary by tumour type and there is not as yet universal consensus on definitions.

Unknown Primary

In the absence of a primary tumour, when the origin is histologically identified, such as breast lobular carcinoma, but there is no evidence of a primary tumour, the T category can be coded as T0. The assessments of the N and M categories can be coded as appropriate.

Specifically in the head and neck section, there is a subsection on unknown primary with cervical lymph nodes that assumes that the primary tumour is located somewhere in the head and neck region; see page 44.

If there is evidence of HPV positivity or EB virus positivity, the node is staged as if the primary is from the oropharynx or nasopharynx, respectively.

Staging of Tumours for Which No TNM Classification Is Provided

Staging according to the rules of the SEER Program may be used if no TNM classification is provided (see website link: https://training.seer.cancer.gov/staging/systems/summary.html).

Note may be made of whether the tumour is local, regional, or distant.

Stage and Prognostic Groups

The TNM system is used to describe and record the anatomical extent of disease. For purposes of tabulation and analysis, it is useful to condense these categories into groups. For consistency, in the TNM system, carcinoma in situ is categorised stage 0; in general, tumours localised to the organ of origin as stages I and II, locally extensive spread, particularly to regional lymph nodes as stage III, and those with distant metastasis as stage IV. The stage adopted is such as to ensure, as far as possible, that each group is more or less homogeneous in respect of survival and that the survival rates of these groups for each cancer site are distinctive.

For pathological stages, both pT and pN categories must be assigned unless there is microscopic confirmation of metastasis (pM1). In the absence of pM1, if either the T category is cT or the N category is cN, then a clinical stage is assigned. If both pT and pN categories are assigned, the M category may be clinical (cM) or pathological (pM) for assigning a pathological stage. If the pT category is based on biopsy confirming the highest T category, there must also be microscopic evidence confirming the highest N category to assign a pathological stage; otherwise, the stage is clinical if sufficient tissue has been removed for pathological examination to evaluate the highest T and N categories.

Although the anatomical extent of disease, as categorised by TNM, is a very powerful prognostic indicator in cancer, it is recognised that many factors have a significant impact on predicting outcomes. This has resulted in different stage groups. In thyroid cancer, there are different stage definitions for different histologies and in oropharyngeal cancer. HPV-associated cancer is staged differently from HPV-independent cancer. Some factors have been combined with TNM in the development of stage groupings; for instance, for different histologies (thyroid), different major prognostic factor groups (age in thyroid) and by aetiology (HPV-independent oropharyngeal cancer). In this edition, the term **stage** has been used as defining the anatomical extent of disease while **prognostic group** for classifications that incorporate other prognostic factors such as in oesophageal cancer. Historically, age in differentiated thyroid cancer and grade in soft tissue sarcoma are combined with the anatomical extent of disease to determine the stage, and the stage is retained rather than the prognostic group in these two sites.

Prognostic Factors Classification

Prognostic factors can be classified as those pertaining to:

- **Anatomic extent of disease** describes the extent of disease in the patient at the time of diagnosis. Classically, this is TNM but may also include tumour markers that reflect tumour burden, for instance, prostate-specific antigen (PSA) in prostate carcinoma or carcinoembryonic antigen (CEA) in colorectal carcinoma.
- **Tumour profile** includes pathological (i.e., grade) and molecular features of a tumour and gene expression patterns that reflect behaviour. These can be:
  - predictive factors
  - prognostic factors
  - companion diagnostic marker
- **Patient profile** includes terms related to the host of the cancer. These can be demographic factors, such as age and gender, or acquired, such as immunodeficiency and performance status.
- **Environment/social determinates of health** may include treatment-related and patient education, expertise, access, ageism and healthcare delivery) and quality of management. The WHO has listed examples as follows: income and social protection, education, unemployment and job insecurity, working life conditions, food insecurity, housing, basic amenities and the environment, early childhood development, social inclusion and non-discrimination, structural conflict and access to affordable health services of decent quality.[23]

When describing prognostic factors, it is important to state what outcome the factors are prognostic for and at what point in the patient trajectory. The anatomical extent of disease as described by TNM stage defines prognosis for survival.

In the second edition of the *UICC TNM Classification of Malignant Tumours* for each tumour site, grids were developed that identified prognostic factors for survival at the time of diagnosis and whether they were considered to be essential, additional, or new and promising.[17] The grids were updated for the third edition[18] and have been further updated and incorporated into the ninth edition of the *UICC Manual of Clinical Oncology*.[24] Essential factors are those that are required in addition to the anatomical extent of disease to determine treatment as identified by published clinical practice guidelines. The table is a generic example of the prognostic factors' summary grid and has been revised and updated.

Within the 'tumour-related' column of the grid, no attempt has been made to distinguish between predictive factors, prognostic factors and companion diagnostic markers. It should be noted with the rapid changes in medical knowledge that, in particular the relevant important molecular features that influence prognosis may not be the most current.

Given that environment and social determinants of health are consistent across all tumour sites, this column has been simplified so not all factors are included. Given the rapid changes in knowledge, the new and promising row can quickly become outdated as newer factors are identified and previously promising factors

may be shown not to be relevant; therefore, this row has been eliminated. The grids included are not exhaustive and are not available for some less common tumours.

Prognostic factors	Tumour related	Host related	Environment related
Essential*	TNM Histological type R Status	Age Comorbidities Sex	Distance from treatment centre Access to specific investigations and/or treatments Socioeconomic status
Additional	Tumour bulk Tumour marker level Molecular and genetic markers	Race, gender Smoking history, Alcohol consumption Obesity Level of education	Expertise of a treatment at the specific level (e.g., surgery or radiotherapy) Access to information R status after surgery
New and promising	Molecular markers Gene expression patterns	Germline *mutation*	

* The origin of essential factors as imperatives for treatment decisions are from known and available clinical practice guidelines.

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Essential TNM

Information on the anatomical extent of disease or stage at presentation is central to cancer surveillance to establish cancer burden as it provides additional valuable information to incidence, survival and mortality data.[25] However, cancer registries particularly in low- and middle-income countries frequently have insufficient information to determine complete TNM data, either because of inability to perform necessary investigations or because of lack of recording of information [26]. In view of this, the UICC TNM Project has with the International Agency for Research in Cancer developed 'Essential TNM' that can be used to collect stage data by cancer registrars, when complete TNM information is not available. Essential TNM flowcharts were originally developed for breast, cervix, colon, and prostate carcinomas and have been expanded to now include also oesophageal, hepatocellular, ovarian carcinomas and lymphomas. The User's Guide to Essential TNM is available for download at https://publications.iarc.fr/ and www.uicc.org.

Paediatric Tumours

Since the fourth edition, the UICC TNM Classification of Malignant Tumours has not incorporated any classifications of paediatric tumours. This decision has stemmed from the lack of an international standard staging system for many paediatric tumours. To enable stage data collection by population-based cancer registries, there needs to be agreement on cancer staging. Recognition of this led to a consensus meeting held in 2014 and resulted in the publication of recommendations on the staging of paediatric malignancies for the purposes of population surveillance.[27] The classifications published are not intended to replace the classifications used by the clinician when treating an individual patient but instead to facilitate the collection of stage by population-based cancer registries.

Related Classifications

Since 1958, WHO has been involved in a programme aimed at providing internationally acceptable criteria for the histological diagnosis of tumours. This has resulted in the *International Histological Classification of Tumours,* which contains, in an illustrated multivolume series, definitions of tumour types and a proposed nomenclature. A new series, *WHO Classification of Tumours – Pathology and Genetics of Tumours,* continues this effort. (Information on these publications is at www.iarc.fr.)

The *WHO International Classification of Diseases for Oncology (ICD-O-4)*[21] is a coding system for neoplasms by topography and morphology and for indicating behaviour (e.g., malignant, benign). In the interest of promoting national and international collaboration in cancer research and specifically of facilitating cooperation in clinical investigations, it is recommended that the WHO *Classification of Tumours* be used for classification and definition of tumour types and that the ICD-O-4 code be used for storage and retrieval of data.

Definitions of Additional Terms Used in Cancer Staging[28]

1. Cancer stage (a noun) – 'the stage'
   The UICC has defined the term 'stage' as the anatomical extent of disease.
2. Cancer staging (a verb) – 'to stage'
   It refers to the process of deriving the 'stage'. This includes the investigational work-up, most usually examination and imaging studies, or alternatively, verifying or consulting the T-, N- and M- category definitions and combinations.
3. Stage migration
   The term 'stage migration' describes a change in the proportion of T, N, or M categories following the introduction of new means of assessing disease extent in populations of patients rather than in individual patients. Please see prostate (page 188) for further discussion and example of capturing method of detection.
4. Stage shift
   The term 'stage shift' describes a change in the pattern of stage distribution within a defined population to a lower stage following the introduction of early detection or screening programs or to a higher stage when access to care becomes limited.

5. Downstaging/downsizing/upstaging/understaging
   - The term 'downstaging' is used to describe a reduction in T or N category after neoadjuvant therapy
   - The term 'downsizing' is used to describe a reduction in the size of tumour after neoadjuvant therapy
   - The terms 'upstaging' and 'understaging' are occasionally used and typically relate to different diagnostic accuracies of various staging investigations. We do not recommend their use.

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Substantial changes in the 2025 ninth edition compared to the 2017 eighth edition are marked by a bar at the left-hand side of the page.

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