Manual for Staging of Cancer 1977

AMERICAN JOINT COMMITTEE
FOR
CANCER STAGING AND END-RESULTS REPORTING

SPONSORING ORGANIZATIONS

American Cancer Society
National Cancer Institute
College of American Pathologists
American College of Physicians
American College of Radiology
American College of Surgeons

American Joint Committee
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INTRODUCTION

This manual brings together all currently available information on the state of the art of staging cancer at various anatomic sites as developed by the American Joint Committee. Although not all of the schemes included here are uniform in design, and some are more firmly established than others, the manual will permit some consistency in describing the extent of the neoplastic diseases of different anatomic systems or organs.

Proper classification and staging of cancer will allow the physician to determine treatment for the patient more appropriately, to evaluate results of management more reliably, and to compare statistics reported from various institutions more confidently.

Staging of cancer is not an exact science. As new information becomes available about etiology and various methods of diagnosis and treatment, the classification and staging of cancer will change. Periodically, this manual will be revised so that it reflects the changing state of the art. However, changes will occur only at reasonable periods.

It is hoped that the programs included in this manual may be used as published — or at least, modified only minimally — so that consistency in data gathering will be possible.

The American Joint Committee for Cancer Staging and End-Results Reporting was organized on January 9, 1959, for the purpose of developing a system of clinical staging of cancer by site acceptable to the American medical profession. The sponsoring organizations are: The American College of Surgeons, the American College of Radiology, the College of American Pathologists, the American College of Physicians, the American Cancer Society, and the National Cancer Institute. Each of the sponsoring organizations designates members of the Committee. The American College of Surgeons serves as administrative sponsor. Subcommittees, designated as "task forces," have been appointed to consider malignant neoplasms of selected anatomic sites for the purpose of developing classifications. Each task force is composed of committee members and other professional appointees whose special interests and skills are appropriate to the site under consideration.

The American Joint Committee attempts to develop classifications that are compatible, as far as possible, with those published by the International Union Against Cancer (Union Internationale Contre le Cancer, UICC)* and that are within the current standards of practice in American medicine. In developing its classifications, the American Joint Committee has employed the principle of the TNM system as described by the UICC where appropriate, but not in all instances if other staging recommendations are already accepted and widely used.

The TNM Committee and the AJC Committee have attempted to come to agreement on cancer at many anatomic sites. Where variance is present it is indicated by a footnote, publication of both recommendations, or otherwise indicated under each chapter.

*TNM Classification of Malignant Tumors, Second Edition, International Union Against Cancer, 3 rue du Conseil-General, 1205 Geneva, Switzerland.

Members of the AJC, its task forces, and committees, as well as the sponsoring organizations, owe a debt of gratitude to the many physicians and other persons who have contributed, voluntarily, so greatly to this effort in the hope that more patients with cancer will survive in the future and that the quality of life of the cancer patient can be as near normal as possible. The contributions of the TNM Committee of the UICC and other international organizations with the same purposes are gratefully acknowledged.

Staging recommendations are included for cancers at most anatomic sites. However, there are several regions or organs not as yet considered, such as the liver, adrenal, eye, gallbladder, bile ducts, small intestine, urethra, and penis. Several of the recommendations are preliminary, either based on earlier studies by the AJC, current studies now underway but not yet completed, or expert opinion by specialists in the field. These include cancer of the thyroid, salivary glands, and pancreas. Last, it is recognized that data are not available in certain instances to arrive at preliminary recommendations so none are given, but reference to other studies and protocols for prospective studies are mentioned.

Under any circumstance a cancer at any anatomic site can be recorded as localized, regional. or distant depending on the findings until a more refined classification and staging are developed.

Publications Committee
Oliver H. Beahrs, Chairman
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PART I. GENERAL INFORMATION ON CANCER STAGING AND END-RESULTS REPORTING

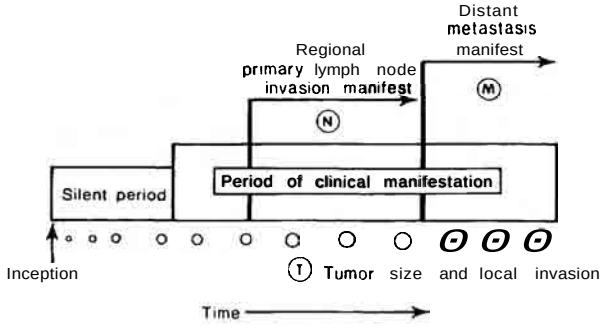
PHILOSOPHY OF CLASSIFICATIONS AND STAGING *BY THE TNM* SYSTEM

The classification of cancer encompasses all possible degrees of progression in the usual events that make up the life history of a cancer — the extent of disease! or other features! or both — in accordance with an agreed upon plan. In general, it can be applied meaningfully only to cancers that are alike as to site or histologic type or both. The basis for using extent of disease is that survival time and apparent recovery rates are greater in most cases that have lesser extension

The American Joint Committee classification is based logically on a simple concept of the life history or progression of a cancer. From beginning to end (death or cure) there is a finite time, and at certain points of this time line significant events occur (or become manifest). The size of the primary tumor increases throughout this period! so that the size of the tumor (T) is a significant feature.

Although the early part of the life of a cancer is silent, at some time it becomes manifest by signs or symptoms, and the time at which it is diagnosable, or at which the diagnosis is actually made, is a significant point of time and is used as a standard time for the first (clinical-diagnostic) stage classification.

As the primary tumor increases in size throughout its time span, at some point (probably early) local invasion occurs, followed by spread to the regional lymph nodes draining the area of the tumor. The period when this spread is manifest or discernible by available methods of clinical examination is thus another significant marker in the progression of the cancer (N). It is usually later? and often in the middle or older period of life span of the cancer! that distant spread or metastasis (M) becomes evident from clinical examination. Thus metastasis (M) is the third and usually latest time marker.



These three significant events in the life history of a cancer, tumor growth (T), spread to primary lymph nodes (N), and metastasis (M), are used as they appear (or do not appear) on clinical examination? before definitive therapy begins! to indicate the degree of extension of the cancer. This shorthand method of indicating the extension of disease at a particular designated time is the stage of the cancer in its evolution. However! it may be used, sometimes with other features added, in a scheme of stage classification. When retrospective or prospective studies of cases show that certain groupings of TNM or other features can be made that have valid significance for staging?a stage classification may be devised.

Events such as local spread! including spread to primary lymph nodes, and metastasis sometimes occur before they are discernible by clinical examination. Thus, examination at the time of a surgical procedure and histologic examination of the surgically removed tissues may identify the significant markers of the life history of the cancer (T, N, and M) as being different from what could be discerned clinically before therapy. Although this may be the basis of a stage classification (surgical-evaluative or based on pathologic examination), it cannot be mixed with clinical staging for evaluative and reporting purposes. It may, nevertheless, be a more accurate depiction of the period in the life history of the cancer and be valuable for prognostic purposes.

Therapeutic procedures, even if not curative! may alter the course and life history of cancer. Although cancers that are recurrent after therapy may be staged using the same markers as in pretreatment clinical-diagnostic staging! their significance may not be the same. Hence the stage classification of recurrent cancer must be considered separately for therapeutic guidance, prognosis, and end-results reporting.

The significance of the marker points in their life history differs for tumors of different sites and of different histologic types. Hence the marker points, even if T, N, and M, must be defined for each type of tumor in order to be valid and have maximum significance. In certain types of tumors, such as Hodgkin's disease and lymphomas! a different system for designating the extent of the disease and for stage classification is necessary to accomplish the goal of usefulness. In these cases other symbols or descriptive markers may be used rather than T, N, and M.

Stage classification is thus a method of designating the state of a cancer at various points in time and is related to the natural course of this particular type of cancer. It is intended to provide a way by which this information can be readily communicated to others, to assist in decisions regarding treatment, and to be a factor in judgment as to prognosis. Ultimately, it provides a mechanism for comparing like or unlike groups of cases, particularly in regard to the results of different therapeutic procedures.

In addition to anatomic extent, the histopathologic analysis and grade of the tumor are important determinants in classification. The type of tumor and the grade are also most important variables affecting choices of treatment. For sarcomas the tumor grade may prove to be the most important index.

Nomenclature in Morphology of Cancer

Canoer therapy decisions are made after an assessment of the patient and his tumor, using many methods that often include sophisticated technical procedures. For most types of cancer, the extent to which the disease has spread is probably the most important factor determining prognosis and must be given prime consideration in evaluating and comparing different therapeutic regimens.

Staging classifications are based on description of the extent of disease and their design requires a thorough knowledge of the natural history of each type of cancer. Such knowledge has been and continues to be derived primarily from morphologic studies, which also provide us with the definitions and classifications of tumor types.

An accurate histologic diagnosis, therefore, is an essential element in a meaningful evaluation of the tumor patient. In certain types of cancer, biochemical or immunologic measurements of normal or abnormal cellular function have become important elements in typing tumors precisely. Increasingly, definitions and classifications should include function as a component of the pathologist's anatomic diagnosis. One may also anticipate that special techniques in histochemistry, cytogenetics, and tissue culture will be used more routinely for typing and characterizing tumor behavior.

The most complete and best known compendium of tumor definitions and illustrations in English is the multiple volumes that constitute the Atlas of Tumor Pathology published by the Armed Forces Institute of Pathology. These are under constant revision and are used as a basic reference by pathoiogists throughout the world.

In 1956, the World Health Organization initiated a program designed to provide an internationally acceptable histologic classification of tumors. For each tumor site, a draft classification is prepared by a small group of international experts. A reference center and several collaborating laboratories are then designated by the World Health Organization. After intensive review of large amounts of histologic and clinical material, the proposed classification is revised and tested in the field. The product is the "blue book" publication, which includes the definition of the tumors in a given organ site or system, along with abundant illustrations. The terms used for each tumor type represent the preferrred nomenclature and their arrangement may be considered a working classification. Fourteen books have now been published and the series will be complete in 1978 with publication of two more.

In the interest of promoting national and international collaboration in cancer research, and specifically to facilitate cooperation in clinical investigation, the AJC recommends that the International Classification of Diseases for Oncology (ICD-O) be accepted and its use encouraged for coding neoplasms by topography and histology (morphology) and for indicating behavior (malignant, benign, in situ, uncertain, or metastatic). This coded nomenclature is based on the Manual of Tumor Nomenclature and Coding (MOTNAC) published by the American Cancer Society in 1968.

REFERENCES

1. World Health Organization: ICD-O — International Classification of Diseases for Oncology. WHO, Geneva, 1976

2. World Health Organization: Internationai Histological Classification of Tumours. Vol. 1-14. WHO, Geneva, 1967 to 1976

3. Atlas of Tumor Pathology: Published by the Armed Forces Institute of Pathology

4. Manual of Tumor Nomenclature and Codlng: American Cancer Society, 1968

GENERAL RULES AND *THE RELATIONSHIP BETWEEN TIME AND THE STAGING OF CANCER*

To facilitate the use of the TNM system and to standardize its application in the classification of various cancers, the AJC has adopted the following general rules:

1. The TNM system provides a basis for categorizing the extent of disease and, when appropriate?will be used. When the TNM system is used the letter T represents the primary tumor, with appropriate suffixes to describe increasing sizes of the tumor, or involvement by direct extension, or both. The letter N represents the regional lymph node involvement, with appropriate suffixes to describe the absence of involvement or increasing degrees of such involvement. The letter M represents distant metastasis, with appropriate suffixes to describe the absence of such metastasis or increasing degrees of such dissemination of the tumor. The various categories of T, N, and M may be grouped into appropriate combinations to create a small number of stages of the disease.

2. Different types of evaluative evidence are used for classifying the extent of disease at different sites and at different time periods. The terms are:

   cTNM: clinical-diagnostic staging

   sTNM: surgical-evaluative staging

   pTNM: postsurgical treatment-pathologic staging

   rTNM: retreatment staging (clinical-diagnostic stage — classification when restaging is necessary for additional or secondary treatment)

   aTNM: autopsy staging

3. CLINICAL-DIAGNOSTIC STAGING
   For cancers at certain accessible sites, especially those that can be treated in an appropriate manner by more than one treatment modality, the extent of the cancer should be determined and recorded before definitive treatment is carried out. This provides a Clinical-Diagnostic Stage Classification and makes it possible to compare the results of different modalities of treatment of certain accessible lesions, such as carcinoma of the cervix, larynx?and oral cavity.

4. SURGICAL-EVALUATIVE STAGING
   The term surgical-evaluative stage classification is to be used to describe the known extent of disease after a major surgical exploration or biopsy, or both. For cancers at sites inaccessible to thorough clinical evaluation, such as carcinoma of the ovary, stomach, colon, kidney, and lung, information obtained by surgical exploration or histopathologic studies of biopsy specimens, or both, may be used, along with the available clinical data, in describing the extent of disease.

5. POSTSURGICAL TREATMENT-PATHOLOGIC STAGING
   The term postsurgical treatment-pathologic staging is to be used to describe the known extent of the disease following the complete examination of the therapeutically resected specimen. Residual tumor, if any, following surgical resection should be recorded (see rule 9).

6. For cancers of some sites it may be desirable to record a Clinical-Diagnostic Stage Classification, a Surgical-Evaluative Stage Classification, and/or a Postsurgical Treatment-Pathologic Stage Classification.

7. Varying amounts of information may be used in determining each stage classification for each primary site. Specific recommendations as to which information should be used for each type of staging will be given in the recommendations for each primary site.

8. Once the extent of disease has been established according to any stage classification, the stage classification should not be changed thereafter. The subsequent course of the neoplasm does not alter the original description or extent of tumor or stage classification.

9. At the time of surgical resection of a cancer all gross evidence of cancer may have been removed. On the other hand, gross residual cancer may have been left behind. This residual tumor must be identified under ''R'' to facilitate and aid in additional or further treatment of the patient. ''R'' does not enter into the staging of the tumor.

10. RETREATMENT STAGING
Cases in which treatment has failed and additional definitive treatment is being considered should be assigned an additional Retreatment Stage at the time of retreatment to describe the extent of disease at that time. Such cases should not be combined with a primary treatment series but should be grouped together and evaluated and reported separately. However, they must not be deleted from the original primary treatment series.

11. AUTOPSY STAGING
In case of death of the cancer patient, all information obtained at autopsy should be used for an autopsy stage and so designated as aTNM.

12. Histologic or cytologic verification of cancer is always necessary for classification and to establish the extent of tumor or stage.

13. The degree of anaplasia, whether well-differentiated, moderately well-differentiated, or undifferentiated! should be recorded as determined on histologic study under the letter "G." If grading is well accepted at an anatomic site by numbers 1 through 4, then four groups may be used.

14. The performance index of the host, considering all cofactors, should be recorded at the time of each stage classification and at follow-up examinations. This should be done on the oncology record forms under the letter designation "H."

In stage classification of cancer at various anatomic sites, an attempt has been made to simplify the staging as much as possible, consistent with accuracy. Also an attempt is made to have definitions of the various symbols as similar as can be from one site to another.

DEFINITIONS OF SYMBOLS

Three capital letters
are used to describe
extent of cancer

- T PRIMARY TUMOR
- N REGIONAL LYMPH NODES
- M DISTANT METASTASIS

Type of classification

- c Clinical-diagnostic
- s Surgical-evaluative
- p Postsurgical treatment-pathologic
- r Retreatment
- a Autopsy

This classification is extended by the following designations:

TUMOR

TX	Tumor cannot be assessed
TO	No evidence of primary tumor
TIS	Carcinoma in situ
T1 T2 T3 T4	Progressive increase in tumor size and involvement

NODES

NX	Regional lymph nodes cannot be assessed clinically
N0	Regional lymph nodes not demonstrably abnormal
N1 N2 N3 N4	Increasing degrees of demonstrable abnormality of regional lymph nodes

METASTASIS

MX	Not assessed
M0	No (known) distant metastasis
M1	Distant metastasis present
	Specify sites of metastasis _____

HISTOPATHOLOGY

The cellular type of cancer.
Grade (G)

G1	Well-differentiated
G2	Moderately well-differentiated
G3-G4	Poorly to very poorly differentiated
	Use whichever indicator is most appropriate (term or G + number)

Residual Tumor (R)

(This information does not enter into establishing stage of tumor but should be recorded on data form for use in considering additive therapy).

When the cancer is treated by definitive surgical procedures, residual cancer, if any, is recorded.

Residual tumor following surgical treatment

R0 No residual tumor
R1 Microscopic residual tumor
R2 Macroscopic residual tumor
Specify _____

HOST PERFORMANCE SCALE AFTER TREATMENT

The host performance status is determined at the time of clinical-diagnostic classification and recorded at subsequent times of classification as well as at each follow-up examination to measure that quality of life.

HOST

H is the physical state (performance scale) of the patient considering all cofactors determined at the time of stage classification and subsequent follow-up examinations.

H0 Normal activity

H1 Symptomatic and ambulatory — cares for self

H2 Ambulatory more than 50% of time — occasionally needs assistance

H3 Ambulatory less than 50% of time — nursing care needed

H4 Bedridden — may need hospitalization

The ECOG/Zubrod scale and the Karnofsky scale are frequently used to record the physical state of the patients before treatment and at each subsequent examination.

"Performance Status'' (Karnofsky scale)

Criteria of Performance Status (PS)		
Able to carry on normal activity: no special care is needed	100	Normal; no complaints; no evidence of disease
	90	Able to carry on normal activity; minor signs or symptoms of disease
	80	Normal activity with effort; some signs or symptoms of disease
Unable to work; able to live at home and care for most personal needs: a varying amount of assistance is needed	70	Cares for self; unable to carry on normal activity or to do active work
	60	Requires occasional assistance but is able to care for most of his needs
	50	Requires considerable assistance and frequent medical care
Unable to care for self; requiresequivalent of institutional or hospital care; disease may be progressing rapidly	40	Disabled; requires special care and assistance
	30	Severely disabled; hospitalization is indicated although death not imminent
	20	Very sick; hospitalization necessary; active supportive treatment is necessary
	10	Moribund, fatal processes progressing rapidly
	0	Dead

PERFORMANCE SCALE (PS) (â,¬CO

GRADE

0 — Fully active, able to carry on all predisease activities without restriction (Karnofsky 90-100)

1 — Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature. For example, light housework, office work (Karnofsky 70-80)

2 — Ambulatory and capable of all self-care but unable to carry out any work activities. Up and about more than 50% of waking hours (Karnofsky 50-60)

3 — Capable of only limited self-care, confined to bed or chair more than 50% of waking hours (Karnofsky 30-40)

4 — Completely disabled. Can not carry on any self-care. Totally confined to bed or chair (Karnofsky 10-20)

GENERAL ONCOLOGY DATA FORMS

The preparation of data collection forms that will fit the requirements of all cancer programs, hospitals, and clinics is difficult. The needs of institutions as to format and special content vary considerably. In general, there are four basic types of such data collection forms: (1) general oncologic; (2) specific site; (3) summary of extent of disease and treatment; and (4) follow-up.

Specific site forms are to be found in most of the specific anatomic site recommendations. Data identified to be collected is that considered essential to proper classification and staging of cancer at the anatomic site and does not represent a complete cancer history form. On the reverse side symbols and definitions are recorded. As yet, forms have not been standardized. Any of the suggested forms in this manual may be duplicated or revised to suit individual programs, hospitals, or institutions. The important thing is that essential data be collected to better serve the cancer patient through more accurate evaluation and more adequate management.

A list of the data that might be recorded for any cancer patient during diagnosis and treatment follows. These data are readily collectable on the form titled General Oncology Data Form used by the Commission on Cancer of the American College of Surgeons and published in its **Manual for Cancer Programs.** The form is copyrighted but may be duplicated for noncommercial use.

The summary form for extent of disease and for treatment is a satisfactory way to gather the information that allows each cancer to be classified and staged. It should be completed promptly to be sure the record actually contains this information and if it does not to discover such deficiency in time to correct it.

If cancer patients are to be managed properly, they must be followed at regular intervals as long as they live to be sure their treatment is adequate, to rehabilitate them so that the quality of life is the best attainable for them, and to watch for evidence of recurrent or new cancer. Performance status considering all cofactors should be measured and recorded; any of several scales may be used, such as the Karnofsky scale (recorded under H on Site-Specific Data Forms).

The follow-up form illustrated is essentially one devised at Duke University Medical School. The definitions of terms used on it and the codes that allow easy recording appear on the reverse side.

Proper recording of information about the biologic behavior of cancer, its response to treatment, and the prognosis related to various forms of therapy will provide uniformity of collection that makes possible meaningful exchange of information among physicians and among institutions.

GENERAL ONCOLOGY DATA TO BE COLLECTED ON CANCER PATIENTS

A. Patient Identification

Name	Major occupation(s)
Street address	Medical record number
City	Accession number
State	Spouse name
Zip code	Name of relative
Phone number	(follow-up contact)
Social security number	Relationship
Place of birth	Relative street address
Date of birth	Relative city
Age	Relative state
Sex	Relative zip code
Race	Relative phone number

B. Family History of Cancer

Ancestors	Site
Siblings	Site

C. Previous History

Previously diagnosed elsewhere ___ yes ___ no
Place original diagnosis
Previous treatment ___ no ___ yes, specify:
Referring physician
Referring physician address

D. Diagnosis

Primary anatomic site
Site code (ICD-0) _ _ _ . _
Histologic diagnosis
Morphologic code (ICD-0) _ _ _ _ / _
Diagnosis confirmed this institution ___ yes ___ no
Date of admission
Date first diagnosis
Class of case ___ analytic ___ nonanalytic
Methods of diagnosis:

___ Autopsy	___ Hematology
___ Histology	___ Roentgenology
___ Cytology	___ Clinical
___ Other, specify	_____

Stage at this admission:

___ In situ
___ Localized
Regional
___ Direct extension
___ Regional nodes
___ Both nodes and extension
Regional NOS
___ Distant
___ Unknown
___ Not applicable

T ___ N ___ M ___ STAGE ___

Sequence this tumor:

___ First site
Subsequent site, specify other sites _____

E. Pretreatment Performance Status

___ % Karnofsky scale or other appropriate scale

F. Treatment: First Course This Hospital

Type of treatment (check all and record actual treatments and dates)

___ Surgery
___ Beam radiation
Other radiation
___ Chemotherapy
___ Hormone therapy
___ Endocrine surgery
Endocrine radiation
___ Immunotherapy
___ Supportive
___ Other treatment (none of above)
___ No treatment (specify reason)
___ Modified treatment (specify reason)

Treatment considered

___ Curative
___ Palliative

G. Entered into protocol ___ Yes ___ No

H. Space for individualization and/or remarks (exposure to irradiation, hormonal drugs, etc.)

I. Miscellaneous

Attending physicians _____
Responsible service or clinic _____
Abstractor _____
Date of abstract _____
Reviewed by _____

GENERAL ONCOLOGY DATA FORM

PATIENT IDENTIFICATION

1 NAME (LAST) (FIRST) (MIDDLE/MAIDEN)

2 STREET ADDRESS

3 CITY | 4 STATE | 5 ZIP | 6 PHONE NO.

7 SOCIAL SECURITY NUMBER | 8 PLACE OF BIRTH | 9 DATE OF BIRTH | 10 AGE | 11 SEX | 12 RACE

13 RELATIVE (FOLLOW-UP CONTACT) | 14 RELATIONSHIP | 15 MEDICAL RECORD NO.

16 RELATIVE STREET ADDRESS | 17 ACCESSION NO.

18 CITY | 19 STATE | 20 ZIP | 21 PHONE NO. | 22 SPOUSE NAME

22A Lifetime Occupation:

PREVIOUS HISTORY

23 PREVIOUSLY DIAGNOSED ELSEWHERE ☐ YES ☐ NO

24 PLACE ORIGINAL DIAGNOSIS

25 PREVIOUS TREATMENT
☐ NO ☐ YES. SPECIFY:

28 REFERRING PHYSICIAN

29 PHYSICIAN ADDRESS

26 PRIMARY ANATOMIC SITE | 37 SITE CODE (FCD-O) ____

38 HISTOLOGIC DIAGNOSIS

38A Morphology Code (ICD-0): — — — —/—

38B Diagnosis Confirmed This Institution:
___ yes ___ no

39 DATE OF ADMISSION

40 DATE FIRST DIAGNOSIS

41 CLASS OF CASE
O ANALYTIC
☐ NON-ANALYTIC

42 METHODS OF DIAGNOSIS
O Autopsy
☐ Histology
☐ Cytology
☐ Hematology
☐ Clinical
☐ Other. Specify

43 STAGE AT THIS ADMISSION
a In Situ
☐ Localized
☐ Regional
☐ Direction Extension
☐ Regional Nodes
☐ Both Nodes and Extension
☐ Regional NOS
☐ Distant
☐ Unknown
☐ Not Applicable

44 SEQUENCE OF TUMOR
☐ 1st Site
☐ Subsequent Site
(Specify all previous and subsequent sites and dates):

DESCRIBE EXTENT:

44A Performance Status Pretreatment

30 REMARKS

31 ATTENDING PHYSICIAN(S)

32 ABSTRACTOR

33 DATE OF ABSTRACT

34 REVIEWED BY

31A Responsible Service/Clinic:

35 OPTIONAL DATA (Institutional Variations Here):

TREATMENT: FIRST COURSE THIS HOSPITAL

45 TYPE OF PRIMARY TREATMENT (CHECK ALL)
☐ Surgery
☐ Beam Radiation
☐ Other Radiation
☐ Chemotherapy
☐ Hormone Therapy
O Endocrine Surgery
☐ Endocrine Radiation
☐ Immunotherapy
☐ Supportive
☐ Other Treatment
None of Above
☐ No Treatment
Specify Reason
Curative
Palliative

RECORD ACTUAL TREATMENTS AND DATE(S)

This case entered in protocol study: ___ yes

FOLLOW-UP INFORMATION

46 DATE OF LAST CONTACT	47 SOURCE OF CONTACT (SEE CODES)	48 STATUS (SEE CODES)		49 QUALITY OF SURVIVAL (SEE CODES)			50 REMARKS:	51 SURVIVAL	
		VITAL A = ALIVE D = DEAD	DISEASE	STATUS	REASON	CARE NEEDS		YEARS	MONTHS

CODES

47. Source of Contact
- 0 Hospital Readmission
- 1 Clinic or OPD Visit
- **2** M.D. Office with Physical Exam
- 3 M.D. Office. No Exam
- **4** Direct Patient Contact
- 5 Other, Specify in Remarks

48. Disease Status
- **0** No Clinical Evidence
- 1 Local Recurrence
- 2 Residual Cancer
- **4** Metastatic Disease
- **7** Remission
- 9 Unknown

49. Quality of Survival

Performance Status
- 0 Capable of Normal Activities
- 1 Capable but not Performing
- 2 Limited Capability
- 3 Capable, Extent Unknown
- **4** Incapable
- 9 Alive. No Other Information

Reason for Limitation
- **0** None
- 1 Cancer
- 2 Residual of Cancer Treatment
- 3 Psychological
- 4 Other Causes
- **5** Cancer Plus Other Causes
- 9 Unknown

Nursing Care Needs
- 0 None
- 1 Needs Part-time Care
- 2 Needs Full-Time Care
- **9** Care Needs Unknown

SUMMARY: SUBSEQUENT TREATMENT

52 TYPE OF TREATMENT (CHECK ALL)

- a Surgery
- ☐ Beam Radiation
- ☐ Other Radiation
- ☐ Chemotherapy
- ☐ Hormone Therapy
- ☐ Endocrine Surgery
- ☐ Endocrine Radiation
- ☐ Immunotherapy
- ☐ Supportive
- ☐ Other Treatment
- None of Above

RECORD ACTUAL TREATMENT AND RATES

DEATH INFORMATION

53 DATE OF DEATH **54** PLACE OF DEATH

55 CAUSE OF DEATH

56 AUTOPSY
☐ NO ☐ YES, FINDINGS

CANCER PATIENT FOLLOW-UP DATA FORM

I. Identification
   A. Patient's name
   B. Patient's number
   C. Secession number

II. Recapitulation initial workup
   A. Status
   B. Extent
   C. Performance status

III. Each entry (dated; if no change: check only)
   A. Status
      REM: Alive, no evidence of residual cancer (remission)
      PER: Alive, with evidence of persistent cancer
      REC: Alive, with evidence of recurrence (after remission)
      D/C: Dead, of cancer
      D/O: Dead, other causes
      D/U: Dead, unknown causes
      UN: Unknown (lost to F/U)
      NEW: Alive, untreated cancer
   B. Extent
      I/S: In situ
      LOC: Localized
      INV: Invasive primary disease
      LXM: Spread to regional lymph nodes
      MET: Metastatic
      DIF: Diffuse disease
      UN: Unknown
      Stage: Staging, appropriate to specific malignancy
   C. Metastasis

RLN: Regional lymph nodes	LI: Liver
LU: Lung parenchyna	PER: Peritoneum
CNS: Brain	BO: Bone
BM: Bone marrow	SK: Skin
PL: Pleura	OT: Other (describe)

   D. Evidence for metastasis
      BI: Biopsy
   E. Special site data: Here should be listed results of determinations of WBC, CEA, gonadotropins, etc., as appropriate in follow-up of a particular site
   F. Performance status (Karnofsky)
      100% Normal, no complaints; no evidence of disease
      90% Able to carry on normal activity; no major signs or symptoms of disease
      80% Normal activity with effort; some signs and symptoms of disease
      70% Cares for self; unable to carry on normal activity or do active work
      60% Requires occasional assistance but is able to care for most needs
      50% Requires considerable assistance and frequent medical care
      40% Disabled; requires special care and assistance
      30% Severely disabled; hospitalization is indicated, although death not imminent
      20% Very sick; hospitalization necessary; active supportive treatment is necessary
      10% Moribund, fatal processes progressing rapidly
   G. Reason for limitation (check all)
      ___ 0 None
      ___ 1 Cancer
      ___ 2 Residual of cancer treatment
      ___ 3 Psychological
      ___ 4 Other causes
      ___ 5 Cancer plus other causes
      ___ 6 Unknown
   H. Treatment given
      S: Surgical
      C: Chemotherapy
      R: Radiation
      RI: Radioisotopes
      IT: Immunotherapy
      E: Endocrine
      OT: Other

I. Supportive services needed
   N: Nursing
   R: Rehabilitation
   0 : Other
   U: Unknown

J. Hospitalization

   1. Dates:
   2. Service:

K. Physical examination this visit
   ___yes ___no

L. In treatment protocol
   ___yes ___no

M. Death
   1. Date:
   2. Place:
   3. Autopsy ___yes ___no

Name of Hospital

(Name of Patient) (Hospital Number) (Date Admitted) (Date Discharged)

POST-TREATMENT & EXTENT of DISEASE SUMMARY

MALIGNANT SOLID TUMORS

(Organ Site or Location) (Area of Organ) ☐ Right ☐ Left, (Paired Organ)

(Histologic Type)

(Depth or Level of Invasion)

☐ Well differentiated
☐ Moderately well differentiated
☐ Poorly differentiated
☐ Anaplastic
☐ Unknown
(Grade)

Blood Vessel Invasion

Lymphatic Invasion

(Other Pathologic Information)

EXTENT OF DISEASE: ☐ In situ ☐ Localized ☐ Regional < ☐ Adj. Organ ☐ Lymph Nodes ☐ Distant ☐ Unknown

Primary Tumor - Descriptors
Size ____ cm - max. diam.
Mobility: ☐ Free ☐ Limited ☐ Fixed ☐ NOS
Other Information:

Regional Area - Descriptors
Extension to Adjacent Organs or Tissue: ☐ yes ☐ no
Specify Organ(s) ☐ Histo. conf. ☐ x-ray conf.

Extension to Reg. Lymph Nodes
Specify Nodes ☐ yes ☐ no ☐ Histo. conf. ☐ X-ray conf.

Distant Area - Descriptors
Extension to Distant Organa or Tissue: ☐ yes ☐ no
Specify Organ(s) ☐ Histo. conf. [X-ray conf.

Extension to Distant Lymph Nodes
Specify Nodes ☐ yes ☐ no ☐ Histo. conf. ☐ x-ray conf.

(TREATMENT: SPECIFY PROCEDURE)

☐ Surgery	☐ Radiation	☐ Chemotherapy	☐ Hormone Therapy	☐ Immunotherapy
☐ Curative	☐ Curative	☐ Curative	☐ Curative	☐ Curative
☐ Palliative	☐ Palliative	☐ Palliative	☐ Palliative	☐ Palliative
	☐ Adjunctive	☐ Adjunctive	☐ Adjunctive	☐ Adjunctive
Procedure:	Procedure:	Procedure:	Procedure:	Procedure:

RESULT: ☐ Improved ☐ Unimproved ☐ Worsened ☐ Dead Autopsy ☐ yes ☐ no

CANCER PATIENT FOLLOW-UP DATA FORM

	Recapitulation initial work-up	Accession no.:		Name: Hx no.:	
Date D M Y					
No change					
Status					
Extent					
New site of metastasis					
Evidence for metastasis					
Special site					
Performance status	%	%	%	%	%
Reason for limitation					
Treatment protocol #1					
Y: Yes N: No #2					
#3					
#4					
Hospitalized: A: Admission D: Discharge S: Service					
Physical exam: Y: Yes N: No					
Date of death D M Y	Place of death: _____ city state county			Autopsy: yes___ no___	
Notes:					

REPORTING OF CANCER SURVIVAL AND END RESULTS

To evaluate the efficacy of treatment and to provide a sound base for therapeutic planning for cancer patients, it is necessary to describe the survival and the results of treatment of different patient groups in comparable form. The objective of this report is to define a method of reporting end results that may be uniformly meaningful. Throughout this chapter, the term "survival time" is used, although the guidelines apply equally to reporting length of response time, time to recurrence of disease, time to development of tumor, or any other function of response time.

Certain basic information must be included in every report on cancer survival and end results. Such information should include:

1. A description of the cancer patients reported on
2. A definition of the starting time or "zero" time for the measurement of survival
3. An explanation of the method used in calculating survival rates

The specific definitions and methods used in a particular study will depend on the nature and purpose of that study.

Description of Case Material

Before any meaningful interpretation of survival data can be made, the case material from which the data are derived must be described. A fact not adequately appreciated is that the description of case material is quite independent of the actual mechanics of handling the data and determining survival rates.

In organizing the material for presentation, consideration should be given to the following:

1. Reports should account for every case diagnosed as having the particular cancer under consideration. If some cases are excluded, the characteristics and number of these cases should be stated. The report should give the dates during which the patients were studied and should state whether the results are based on the experience of an entire institution, on the experience of a single clinic or hospital service, or on the experience of a single physician or group of physicians. The general nature of the institution and the general characteristics of the patients should be Indicated, because factors such as race and socioeconomic status may influence end results.

2. All diagnoses shouid be confirmed histologically or cytologically. Those not confirmed at any time during the course of the disease or at autopsy should be reported and tabulated separately. Where indicated, the findings for histologically distinct types of cancers should be reported separately. So that the effects of morphology on survival may be appreciated, reports should be stratified by histologic type where it is indicated.

3. The clinical stage or anatomic extent of disease at the time of diagnosis is of particular importance in evaluating treatment and in making valid comparisons of end results reported from different sources. Where it is applicable, patients should be stratified by stage of disease. The TNM system provides a common language for categorizing the primary lesion and the extent of involvement.

The TNM assignments are grouped into appropriate combinations to create a small number of stages. usually four. such that the force of mortality increases from one stage to the next.

Specific criteria modify this system according to the primary site. The "clinical-diagnostic" classification for cancer at certain accessible sites, such as the uterine cervix, includes all diagnostic and evaluative information obtained up to the date that tumor-directed treatment begins or the decision for no treatment is made. Information obtained by surgical exploration or histopathologic studies, or both, may be used in describing extent of d sease at sites inaccessible to clinical evaluation, such as carcinoma of the ovary, kidney, and stomach. These cancers are reported in terms of "surgical-evaluative" stage or "postsurgical treatment-pathologic" stage of disease.

4. Data on groups of patients previously treated should be presented separately from the data on new patients not previously treated. Such patients are classified according to the stage at time of retreatment.

5. The number of groups into which a patient series is subdivided will depend on the total number of patients, the purpose of the study, and the nature of the case material. For example, in reporting on cancer of the prostate, the patients might be grouped into three age groups, such as: under **60, 60** to **69,** and **70** and over. An entirely different age grouping would be used in reporting on patients with leukemia. Generally, it is desirable to subdivide with respect to histologic type, sex, stage, and treatment.

Definition of Starting Time

The starting time for determining survival of patients depends on the purpose of the study. For example, the starting time for studying the natural history of a particular cancer might be defined in reference to the appearance of the first symptom. Various reference dates are commonly used as starting times for evaluating the effects of therapy. These include: (1) date of diagnosis; (2) date of first visit to physician or clinic; (3) date of hospital admission; and (4) date of beginning treatment. If the time to recurrence of a tumor after apparent complete remission is being studied, the starting time is the date of apparent complete remission. The specific reference date used should be clearly specified in every report.

The date of initiation of therapy should be used as the starting time forevaluating therapy. For untreated patients, the most comparable date is the time at which it was decided that no tumor-directed treatment would be given. For both treated and untreated patients, the above times from which survival rates are calculated

will usually coincide with the date of the staging of cancer.

Vital Status

At any given time the vital status of each patient is defined as: alive, dead, or unknown (i.e., lost to follow-up). The end point of each patient's participation in the study is either (1) a specified "terminal event" such as death, or (2) survival to the completion of the study, or (3) loss to follow-up. In each case "survival" time is the time from the starting point to the terminal event, or to the end of the study, or to the date of last observation. This "survival" time may be further described in terms of patient status at the end point such as:

Alive, tumor-free — no recurrence
Alive, tumor-free — after recurrence
Alive with recurrent or metastatic disease
Alive with primary tumor
Dead — tumor-free
Dead — with cancer (primary, recurrent, or metastatic disease)
Dead — postoperative
Unknown — lost to follow-up

Completeness of the follow-up is crucial in any study of survival time because even a small number of patients lost to follow-up may bias the data.

Survival Intervals

The total survival time is broken up into arbitrary units or intervals in terms of days, months, or years. This provides a description of the population under study, with respect to the dynamics of survival, over a specified time. The time interval used should be selected with regard to the natural history of the disease under consideration. In diseases with a long natural history, the duration of study could be 5 to 10 years and survival intervals of 6 to 12 months will provide a meaningful description of the survival dynamics. If the population being studied has a very poor prognosis (e.g., patients with carcinoma of the esophagus or pancreas), the total duration of study may be 2 to 3 years and the survival intervals described in terms of 1 to 3 months. In interpreting survival rates one must also take into account the number of individuals entering a survival interval. Survival rates probably should not be computed for intervals in which fewer than **10** patients enter the interval alive.

Calculation of Survival Rates

A properly calculated survival rate is the best single statistical index available for measuring the efficacy of cancer therapy. The basic concept is simple: Of a given number of patients, what percentage will be alive at the end of a specified interval, such as 5 years? For example, let us begin with 1,000 patients in a defined diagnostic category such as localized carcinoma of the uterine cervix. If we observe each member of this group until she is dead and enumerate the women alive 5 years, 10 years, and 15 years after initiation of therapy, then the ratios of these numbers to the original 1,000 patients give respectively the 5-year, 10-year, and 15-year survival rates. In practice, however, we do not begin literally with a given group and follow them all continuously until death before calculating survival rates. In a body of actual data, the group considered will generally contain persons who were treated at different times, so that different persons will have been observed for different lengths of time. On the closing date of the study, some will be known to be dead, others will be known to be alive, and some will have been lost to follow-up and it will not be known whether they are alive or dead.

To illustrate the approach to dealing with this type of situation let us consider, in detail, a moderately small series of patients. Table 1 lists 50 patients with melanoma of the skin treated in one hospital during the 15-year period October 1952 to June 1967. The survival experience of these patients is to be assessed on the basis of information available through the end of 1969, that is, the nominal closing date of the study is Dec. 31, 1969. For each patient, the list provides the following basic information:

1. Sex
2. Age at initiation of treatment
3. Date treatment started (month and year)
4. Date of last contact (month and year)
5. Vital status at date of last contact (alive or dead)
6. Presence of melanoma at date of last contact (yes or no)

Patients are listed consecutively by date of first treatment.

Calculation by the Direct Method. — The simplest procedure for summarizing patient survival is to calculate the percentage of patients alive at the end of a specified interval such as 5 years, using for this purpose only patients exposed to the risk of dying for at least 5 years. This approach is known as the direct method.

In this set of data there were contacts with patients during 1969, but these contacts occurred during different months of the year. We know that all patients last contacted in 1969 were alive on Dec. 31, 1968, but we do not know whether they were all alive at the end of 1969. Thus, we will designate Dec. 31, 1968, as the effective closing date of the study. Consequently, all patients first treated on Jan. 1, 1964, or later were not at risk of dying for at least 5 years as of the closing date. This means that 20 of the 50 patients (numbers 31 to 50) must be excluded from the calculation by the direct method.

Examining the entries in the "vital status" column in Table 1 for the 30 patients at risk for at least 5 years, we find that 16 patients were alive at last contact and 14 had died before December 1968. However, patient 2, although known to have died in January 1960, had been alive on his fifth anniversary. Therefore we have 17 of the 30 patients alive 5 years after their respective dates of first treatment and, thus, the 5-year survival rate is 57%.

Calculation by the Actuarial Method. — The direct method for calculating a survival rate does not use all the information available. For example, we know that patient 31 died in the fourth year after treatment was started and that patient 32 lived for more than 4 years. Such information should be useful, but we were unable to use it under the rules of the direct method because the patients were diagnosed after December 1963.

The actuarial, or life-table, method provides a means for using all follow-up information accumulated up to the closing date of the study. The actuarial method has the further advantage of providing information on the survival pattern, that is, the manner in which the patient group was depleted during the total period of observation.

The procedures described here are designed for the individual investigator who wants to analyze carefully the survival experience of a small series of patients — in this illustration, 50 patients. However, the same underlying methodology is used in analyzing large series with electronic computers.

Patient Data Card. — To facilitate sorting and counting it is advisable to prepare a data card on each patient, such as the one shown in Figure 1. The upper part (above the double line) provides for the following items of basic descriptive information:

1. Name: a case number, in addition to the name, may be useful for identification
2. Age: completed years of age at time of initiation of treatment
3. Race and sex
4. Dates of first treatment and of last contact: month and year
5. Follow-up year of last observation (e.g., patient 2 died in the sixth year of observation, i.e., 5 years 6 months after initiation of treatment)
6. Vital status and presence of disease: information on presence or absence of cancer at time of death is highly desirable
7. Diagnostic: site of the tumor, histologic type, and stage of disease
8. Treatment: brief summary

Observed Survival Rate. — The life-table method for calculating a survival rate, using all the follow-up information available on the 50 patients under study, is illustrated in Table 2. There are six steps necessary in preparing such a table:

1. The patient data cards are tallied for vital status and follow-up year of last observation (columns 3 and 4). The sum of the entries in columns 3 and 4 must equal the total number of patients. Note that the 17 patients alive at the beginning of the last interval of observation in column 2 (6 years and over) were also entered in column 4 (number last seen alive during year).
2. The number of patients alive at the beginning of each year is entered in column 2 and is obtained by successive subtraction. Thus, of 50 patients alive at start of treatment, that is,

Table 1. — Listing of 50 White Patients With Melanoma of the Skin

Patient number	Sex	Age	Date treatment started	Last contact: Date	Last contact: Vital status*	Last contact: Melanoma present?	Follow-up (years)
1	M	63	Oct. 1952	Nov. 1952	D	Yes	1
2	M	42	Jul. 1954	Jan. 1960	D	No†	6
3	M	41	Mar. 1955	Apr. 1955	D	Yes	1
4	F	57	Jun. 1955	Jul. 1956	D	Yes	2
5	M	35	Sep. 1955	Oct. 1969	A	No	15
6	F	48	Oct. 1955	Aug. 1956	D	Yes	1
7	M	43	Apr. 1956	Feb. 1959	D	Yes	3
8	F	27	Jan. 1957	Jan. 1957	D	Yes	1
9	F	56	Dec. 1958	Oct. 1969	A	No	11
10	F	33	Jan. 1959	Nov. 1969	A	Yes	11
11	F	37	Apr. 1959	Apr. 1969	A	No	11
12	F	58	Sep. 1959	Aug. 1969	A	No	10
13	M	21	Feb. 1960	May 1960	D	No†	1
14	M	71	Feb. 1960	Nov. 1968	A	No	9
15	F	66	Jun. 1961	Aug. 1961	D	Yes	1
16	F	35	Jul. 1961	Dec. 1969	A	No	9
17	F	31	Oct. 1961	Nov. 1969	A	No	9
18	M	35	Mar. 1962	Jun. 1969	A	No	8
19	F	44	Apr. 1962	Jul. 1969	A	No	8
20	M	26	Apr. 1962	Oct. 1969	A	No	8
21	M	57	Oct. 1962	Jun. 1963	D	Yes	1
22	M	54	Dec. 1962	Feb. 1963	D	Yes	1
23	M	63	Jan. 1963	Jan. 1964	D	Yes	2
24	F	32	Jan. 1963	Oct. 1965	D	Yes	3
25	F	43	Apr. 1963	Feb. 1969	A	No	6
26	F	76	Jul. 1963	Feb. 1969	D	Yes	5
27	M	31	Sep. 1963	Nov. 1969	A	No	7
28	M	77	Nov. 1963	Feb. 1969	A	No	6
29	F	59	Nov. 1963	Apr. 1969	A	No	6
30	F	76	Dec. 1963	Sep. 1969	A	No	6
31	M	39	Mar. 1964	Aug. 1967	D	Yes	4
32	F	50	Jul. 1964	Apr. 1969	A	No	5
33	F	38	Sep. 1964	Jun. 1969	D	Yes	5
34	F	82	Mar. 1965	Dec. 1969	A	No	5
35	M	65	Apr. 1965	Jul. 1965	D	Yes	1
36	M	40	Apr. 1965	Oct. 1969	A	Yes	5
37	M	22	Jun. 1965	Feb. 1969	A	No	4
38	F	25	Jan. 1966	Nov. 1969	A	No	4
39	M	33	Apr. 1966	Nov. 1969	A	No	4
40	F	51	May 1966	Jul. 1969	A	No	4
41	F	40	Jul. 1966	Nov. 1969	A	No	4
42	M	70	Sep. 1966	Sep. 1967	D	No†	2
43	M	47	Sep. 1966	Dec. 1967	D	Yes	2
44	M	67	Oct. 1966	Apr. 1968	D	No†	2
45	F	58	Jan. 1967	Aug. 1969	A	No	3
46	M	75	Jan. 1967	Oct. 1969	A	No	3
47	M	40	Apr. 1967	Jul. 1969	A	No	3
48	F	35	Apr. 1967	Jul. 1969	A	Yes	3
49	F	49	May 1967	Dec. 1968	D	Yes	2
50	F	21	Jun. 1967	Mar. 1969	A	No	2

A , Alive; D, Dead.
†Died of intercurrent disease.

John Doe	42	W	M	July 1954
(Name)	(Age)	(Race)	(Sex)	(Date Treatment Started)
January 1960	6		Dead	No
(Date of Last Contact)	(Follow-Up Year)		(Vital Status)	(Melanoma Present)
Right Forearm	Melanoma		Localized	Surgery
(Site)	(Type)		(Stage)	(Treatment)

Interval of Observation	Age at Entry	Year of Entry	Expected Survival Probability
0-5	42	1954	0.979

Fig. 1. Data card: patient 2, Table 1.

at the beginning of the first year of observation, 9 died during the first year and 41 were alive at the beginning of the second year.

3. The "effective number exposed to risk of dying" (column 5) is based on the assumption that patients last seen alive during any year of follow-up were, on the average, observed for one-half of that year. Thus, for the third year the "effective number" is 34 – (½ x 4) = 32.0, and for the fourth year it is 28 – (½ x 5) = 25.5.

4. The proportion dying during any year (column 6) is found by dividing the entry in column 3 by the entry in column 5. Thus, for the first year, the proportion dying is 9 ÷ 50.0 = 0.180 and for the second year it is 6 – 40.5 = 0.148.

5. The proportion surviving the year (column 7), that is, the observed annual survival rate, is obtained by subtracting the proportion dying (column 6) from 1 (1.000).

6. The proportion surviving from first treatment to the end of each year (column 8), that is, the observed cumulative survival rate, is the product of the annual survival rates for the given year and all preceding years. For example, for the fifth year the proportion 0.567 is the product of all entries in column 7 from the first through the fifth years.

The 5-year survival rate calculated by the life-table method is 0.567 or 57%. In this instance, the calculation obtained by using the information available on all 50 patients agrees with the rate based on the 30 patients eligible for inclusion in the calculation by the direct method. Such close agreement by the two methods will usually not occur when some patients have to be excluded from the calculation of a survival rate by the direct method. In such instances, the life-table method is more reliable because it is based on more information.

One advantage of the life-table method is that it provides information about changes in the risk of dying in successive intervals of observation. Thus, we see from column 6 that the proportion of patients dying in each of the first 4 years after treatment decreased from 18% in the first year to 4% in the fourth. (The increase to 10% in the fifth year may be due to chance, since we are dealing here with small numbers — only 22 patients were alive at the beginning of the fifth year.)

Table 2. — Calculation of Observed Survival Rate by the Actuarial (Life-Table) Method

Year of last observation (1)	No. alive at beginning of year (2)	No. dying during year (3)	No. last seen alive during year (4)	Effective no. exposed to risk of dying (5)	Proportion dying during year (6)	Proportion surviving year (7)	Proportion surviving from first treatment to end of year (8)
1	50	9	0	50.0	0.180	0.820	0.820
2	41	6	1	40.5	0.148	0.852	0.699
3	34	2	4	32.0	0.063	0.937	0.655
4	28	1	5	25.5	0.039	0.961	0.629
5	22	2	3	20.5	0.098	0.902	0.567
≥6	17	...	17	...	...	...	...
Total		20	30				

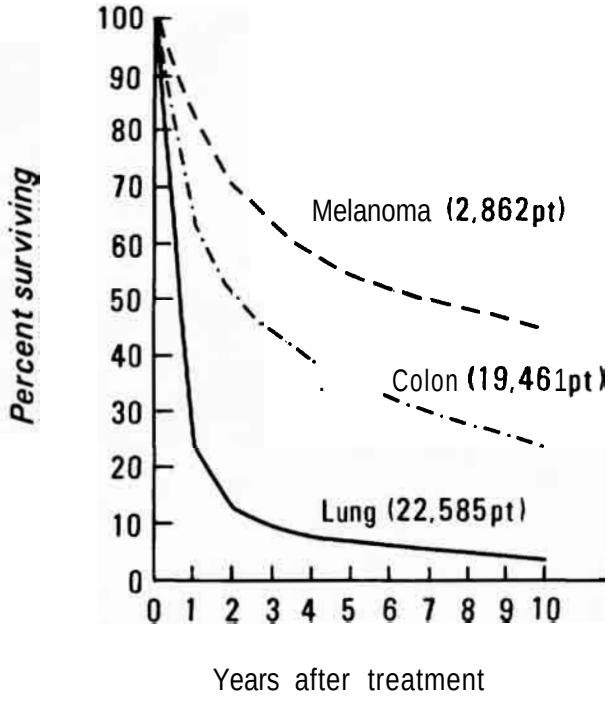


Fig. 2. Survival curves for patients with melanoma, colon cancer, and lung cancer: arithmetic scale. (Data from End Results Group: End Results in Cancer: Report No. 4 [DHEW publication NIH 73-272]. Bethesda, National Cancer Institute, 1972.)

The cumulative rates in column 8 may be used to plot survival curves, which provide a pictorial description of the survival pattern. In Figure 2, the survival pattern for patients with melanoma of the skin (based on a large series) is compared with the patterns for cancers of the colon and of the lung. The curves are shown for a 10-year period of observation.

The same set of survival rates was plotted in Figure 3 using a logarithmic scale, which provides a pictorial representation of changes in the rate at which patients are dying — a steep slope indicates a high rate, a shallow slope indicates a low rate. For each disease group, the death rate slowed appreciably after the third year; the slope of each curve becomes shallower. However, it is clear from Figure 3 that patients with lung cancer were dying at a greater rate from the third through the tenth years than patients with cancer of the colon or with melanomas. In contrast, examination of Figure 2 might lead one to the erroneous conclusion that beyond the third year, lung cancer patients died at a lower rate. This is because Figure 2 portrays **absolute** changes, while Figure 3 provides a true picture of **relative** changes.

Adjusted Survival Rate. — The **observed** survival rate described above accounts for all deaths, regardless of cause. While this is a true reflection of total mortality in the patient group, we are frequently interested in describing mortality attributable to the disease under study. Examination of Table 1 reveals that in four instances melanoma was not present at time of death (patients 2, 13, 42, and **44).** Three of these deaths occurred within the first 5 years of follow-up and thus influenced the 5-year survival rate calculated in Table 2.

Whenever reliable information on cause of death is available, an adjustment can be made for deaths due to causes other than the disease under study. The procedure is shown in Table 3. Observed deaths are recorded as "with disease" (column 3a) or "without disease" (column 3b). Patients who died "without disease" are treated in the same manner as patients "last seen alive during year" (column 4), that is, both groups are withdrawn from the risk of dying from melanoma. Thus, "the effective number exposed to risk of dying" (from melanoma) in the second year of observation is equal to $41 - (\frac{1}{2}[2 + 1]) = 39.5$.

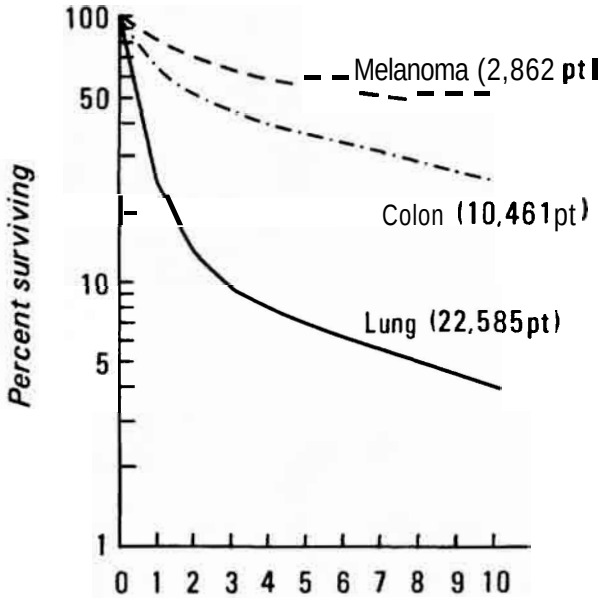


Fig. 3. Survival curves for patients with melanoma, colon cancer, and lung cancer: logarithmic scale. (Data from End Results Group: End Results in Cancer: Report No. 4 [DHEW Publication NIH 73-272]. Bethesda, National Cancer Institute, 1972.)

Table 3. — Calculation of Adjusted Survival Rate

Year of last observation (1)	No. alive at beginning of year (2)	No. dying during year: With disease (3a)	No. dying during year: Without disease (3b)	No. last seen alive during year (4)	Effective no. exposed to risk of dying (5)	Proportion dying during year (6)	Proportion surviving to end of year (7)	Cumulative proportion surviving (8)
1	50	8	1	0	49.5	0.162	0.838	0.838
2	41	4	2	1	39.5	0.101	0.899	0.754
3	34	2	0	4	32.0	0.063	0.937	0.706
4	28	1	0	5	25.5	0.039	0.961	0.679
5	22	2	0	3	20.5	0.098	0.902	0.613
⩾6	17	...	...	17				
Total		17	3	30				

The 5-year **adjusted** survival rate is 61% compared to an **observed** rate of 57%. The adjusted rate indicates that 61% of patients with melanoma escaped the risk of death from the diseasewithin 5 years of treatment.

Use of the adjusted rate is particularly important in comparing patient groups that may differ with respect to factors such as sex, age, race, and socioeconomic status. Of the 50 patients listed in Table 1, **24** are males and 26 females. The observed survival curves are plotted in the upper part of Figure **4.** There is a large gap between the curves for the two sexes. However, 3 of the 12 males who died during the first 5 years of observation had no evidence of melanoma at time of death. In contrast, melanoma was present at time of death in all eight females who died. The effect of the adjustment for cause of death is shown in the lower portion of Figure 4. The survival curve for males is still below the curve for females, but the gap has been narrowed. The 5-year adjusted survival rate is 58% for males and 65% for females. The corresponding observed rates are 48% and 65%, a much larger difference.

Relative Survival Rate. — Information on cause of death is sometimes unavailable or unreliable. Under such circumstances, it is not possible to compute an adjusted survival rate. However, it is possible to account for differences among patient groups in "normal mortality expectation," that is, differences in the risk of dying from causes other than the disease under study. This can be done by means of the relative survival rate, which is the ratio of the observed survival rate to the expected rate for a group of people in the general population similar to the patient group with respect to race, sex, age, and calendar period of observation.

Table 4 provides 5-year "normal" survival probabilities for white males and females in the United States, based on mortality experience in calendar years 1950, 1955, 1960, and 1965. The appropriate probability, depending on the sex and age of the patient and the calendar year of entry to observation, is taken from this table and entered in the lower portion of the patient data card (Fig. 1). Thus, for example, for patient **2** (Table 1), who is a 42-year-old man with a 1954 date of entry, the 5-year expected survival probability is 0.979. For patient 17, a 31-year-old woman who entered observation in 1961, the expected probability is 0.995. Thus, for the hypothetical group of patients in Table 1, the

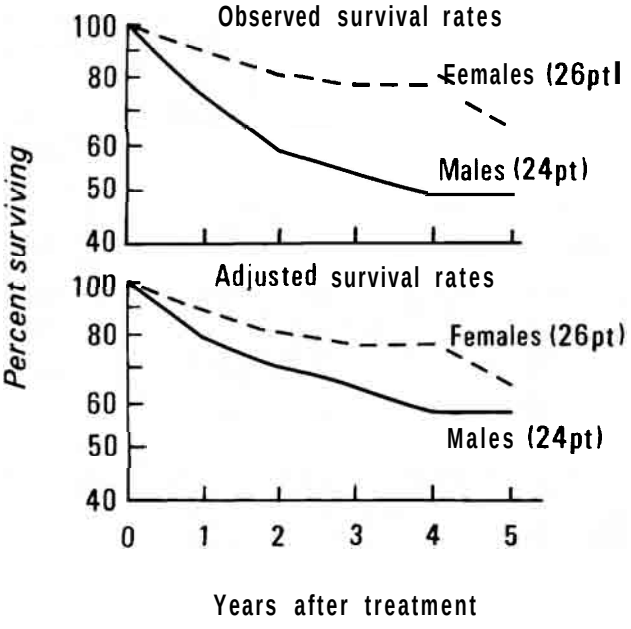


Fig. **4.** Comparison of survival curves (logarithmic scale) for males and females with melanoma: observed and adjusted survival rates.

Table 4. — Five-Year Survival Probabilities for U.S. Whites: 1950, 1955, 1960, and 1965

Age in years (inclusive range)	Male				Female			
	1950 (1948-1952)	1955 (1953-1957)	1960 (1958-1962)	1965 (1963-1967)	1950 (1948-1952)	1955 (1953-1957)	1960 (1958-1962)	1965 (1963-1967)
< 1	0.964	0.969	0.970	0.972	0.972	0.976	0.977	0.979
1 and 2	0.995	0.996	0.996	0.996	0.996	0.997	0.997	0.997
5 (3-7)	0.997	0.997	0.998	0.998	0.998	0.998	0.998	0.998
10 (8-12)	0.997	0.997	0.997	0.998	0.998	0.998	0.999	0.999
15 (13-17)	0,993	0.994	0.994	0.994	0.997	0.997	0.998	0.998
20 (18-22)	0.991	0.991	0.992	0.991	0.996	0.997	0.997	0.997
25 (23-27)	0.992	0.992	0.992	0.992	0.996	0.996	0.996	0.997
30 (28-32)	0.991	0.991	0.991	0.991	0.994	0.995	0.995	0.995
35 (33-37)	0.986	0.987	0.988	0.987	0.991	0.992	0.993	0.993
40 (38-42)	0.978	0.979	0.980	0.980	0.987	0.988	0.988	0.988
45 (43-47)	0.963	0.965	0.966	0.966	0.980	0.982	0.982	0.982
50 (48-52)	0.942	0.944	0.943	0.944	0.969	0.972	0.972	0.972
55 (53-57)	0.912	0.916	0.915	0.913	0.953	0.959	0.960	0.959
60 (58-62)	0.869	0.873	0.872	0.873	0.925	0.934	0.937	0.939
65 (63-67)	0.814	0.815	0.815	0.813	0.883	0.890	0.900	0.901
70 (68-72)	0.741	0.746	0.745	0.741	0.816	0.832	0.841	0.846
75 (73-77)	0.633	0.642	0.650	0.649	0.708	0.727	0.746	0.754
80 (78-82)	0.499	0.504	0.509	0.520	0.558	0.580	0.592	0.611
⩾85	0.350	0.349	0.349	0.350	0.406	0.394	0.400	0.405

Source: National Center for Health Statistics.

average expected 5-year survival probability is the sum of the individual probabilities (46.257) divided by the number of patients (50) and equals 0.92. The ratio of the observed (57%) to the expected survival rate (92%) is 62%. This is the relative rate and in this instance is almost identical with the adjusted rate.

While, in this illustration, 5-year results were used to depict the relative survival rate calculation, it is conventional to calculate relative survival rates for each interval and cumulatively for successive follow-up intervals. For the more detailed analysis, one must consult more extensive expected rate tables and more explicit methodology (see reference 6).

In Figure 5, comparison is made between the survival curves based on the observed, adjusted, and relative rates. It can be seen that the values along the adjusted and relative survival curves are not always nearly identical. In practice, if the series is not too small and the patients are roughly representative of the population of the United States (taking race, sex, and age into account), the relative survival rate provides a useful estimate of the probability of escaping the risk of dying from the specific disease under study. However, if reliable information on cause of death is available, it is preferable to use the adjusted rate. This is particularly true if the series is small or if the patients are largely drawn from a particular socioeconomic segment of the population.

In reporting on patient survival, the specific method used in calculating the rates must be specified. The different types of rates described above are all useful, but rates computed by different methods are not directly comparable with each other. Thus, in comparing the survival of different patient groups, rates must be computed by the same method.

Standard Error of a Survival Rate

A survival rate describes the experience of the specific group of patients from which it is com-

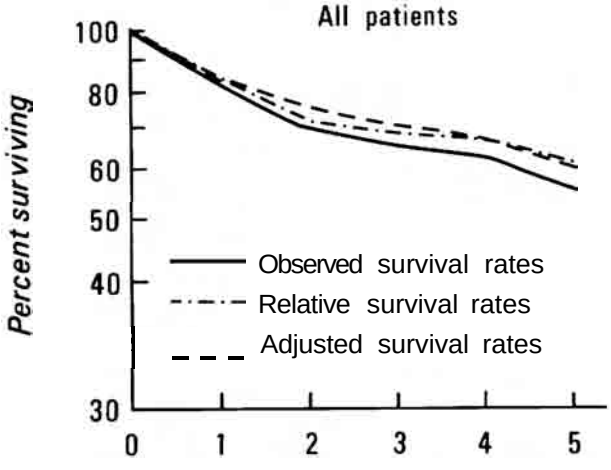


Fig. 5. Comparison of survival curves based on observed, adjusted, and relative rates (logarithmic scale).

puted. These results are frequently used to generalize to a larger popuiation or universe. The existence of universal values is postulated and these values are estimated from the group under study, which thus represents a sample from the larger population. If a survival rate were calculated from a second sample taken from the same universe, it is unlikely that the results would be exactly the same. The difference between the two results is called the sampling variation (chance variation or sampling error). The standard error is a measure of the extent to which sampling variation influences the computed survival rate. In repeated observations, under the same conditions, the true or population survival rate will lie within the range of two standard errors on either side of the computed rate about 95 times in 100. This range is called the 95% confidence Interval.

When the observed survival rate has been computed by the direct method, the standard error is computed from the formula

$$\sqrt{\frac{p\,(1-p)}{n}}$$

where "p" is the survival rate and "n" is the number of patients exposed to risk of death. In the illustration of the direct method, a 5-year survival rate of 57% was obtained based on the experience of 30 patients (17 ÷ 30 = 0.567). Thus, the standard error is equal to 0.090 (square root of [0.567 x 0.433 ÷ 30]). To obtain the 95% confidence interval, twice the standard error (18%) is subtracted from and added to the survival rate. This means that the chances are about 95 in 100 that the true 5-year rate is between 39% and 75% for our example.

Standard Error of the Actuarial Survival Rate. — In order to calculate the standard error of the 5-year survival rate when the actuarial method is used (see references 2, 10, 12), two columns of figures may be added to Table 2 as shown in Table 5. The first additional column (column 9) is obtained by subtracting the values in column 3 from the values in column 5 of Table 2. The last column needed (column 10) is obtained by dividing the entries in column 6 by the corresponding figures in column 9. The sum of the figures in column 10 is also entered into the table and in this example equals 0.0176.

The standard error of the 5-year survival rate by the actuarial method is the calculated 5-year survival rate multiplied by the square root of the total of the entries in column 10 of Table 5, that is, 0.567 $\sqrt{0.0177}$ = 0.075. The approximate 95% confidence interval for the population 5-year survival rate is found, as shown earlier for the direct method, by adding and subtracting two times the standard error to and from the 5-year survival rate that has been calculated, that is, 0.567 plus and minus (2 x 0.075), which gives an interval from 0.42 to 0.72.

If the above computations seem to be too involved, an approximation to the standard error of the actuarial survival rate may be quickly obtained from published tables prepared by Ederer (see reference 5).

It is noteworthy that the standard error of the survival rate obtained by the actuarial method is smaller than the standard error of the survival rate calculated by the direct method (0.076 vs. 0.090). This difference reflects the advantage in terms of statistical reliability of using all available information, that is, information on patients under observation for less than 5 years. The issue is discussed in detail in reference 2.

Standard Error of Relative Survival Rate. — The standard error of the relative survival rate is easily obtained by dividing the standard error of the observed survival rate (obtained by either the direct or actuarial method) by the expected survival rate. Thus from the actuarial method the 5-year survival rate is 57% and the expected survival rate is 92% with a resulting relative survival rate of 62%. The standard error of the observed survivai rate is 0.075.

In this example the standard error of the 5-year relative survival rate is:

$$\frac{\text{Standard Error of Observed Rate}}{\text{Expected Survival Rate}} = \frac{0.075}{0.920} = 0.082$$

The 95% confidence limits for the 5-year relative survival rate are therefore:

$$0.62 \pm 2(.08) = 0.46, 0.78.$$

Comparison of Survival Rates in Two Patient Groups. — In comparing survival rates of two patient groups, the statistical significance of the observed difference is of interest. The essential question is: What is the probability that the observed difference may have occurred by chance? The standard error of the survival rate provides a simple means for appraising this

Table 5. — Calculation of Standard Error of Survival Rate by Actuarial (Life-Table) Method

Year of last observation	No. alive at beginning of year	No. dying during year	No. last seen alive during year	Effective no. exposed to risk of dying	Proportion dying during year	Proportion surviving year	Proportion surviving from first treatment to end of year	Entry (5) minus entry (3)	Entry (6) divided by entry (9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	50	9	0	50.0	0.180	0.820	0.820	41.0	0.0044
2	41	6	1	40.5	0.148	0.852	0.699	34.5	0.0043
3	34	2	4	32.0	0.063	0.937	0.655	30.0	0.0021
4	28	1	5	25.5	0.039	0.961	0.629	24.5	0.0016
5	22	2	3	20.5	0.098	0.902	0.567	18.5	0.0053
≥6	17	...	17	...	...	...	...	...	
Total		20	30						0.0177

Standard Error of 5-Year Survival Rate = 5-Year Survival Rate x $\sqrt{\text{Total of Column (10)}}$

$= 0.567 \times \sqrt{0.0177} = 0.567 \times 0.1330 = 0.075$

question. If the 95% confidence intervals of two survival rates do not overlap, the observed difference would be customarily considered as statistically significant, that is, unlikely to be due to chance.

Standard statistical texts describe the z-test, which provides a numeric estimate of the probability that the observed difference occurred by chance. The statistic z is calculated by the formula:

$$z = \frac{p_1 - p_2}{\sqrt{(SE_1)^2 + (SE_2)^2}}$$ in which

p_1 is the survival rate for group 1,
p_2 is the survival rate for group 2,

$\overline{p_1 - p_2}$ is the absolute value of the difference,

SE_1 is the standard error of p_1, and

SE_2 is the standard error of p_2.

If $z \geq 1.96$, the probability that the observed difference occurred by chance is ≤ 5%. If $z \geq 2.56$, the probability is ≤ 1%.

For more precise and more refined methods for testing the statistical significance of observed differences in the survival experience of two patient groups see references 3, 4, 7, 9, 11.

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PART II. STAGING OF CANCER AT SPECIFIC ANATOMIC SITES

STAGING OF CANCER AT HEAD AND NECK SITES

ORAL CAVITY, PHARYNX, LARYNX, **and** PARANASAL SINUSES*

Cancers of the head and neck occur on all lining membranes of the upper aerodigestive tract. The "T" classifications indicating the extent of the primary tumor are generally similar but differ in specific details for each site because of anatomic considerations. The "N" classification for cervical lymph node metastasis is uniform for all head and neck sites. The staging systems presented in this chapter are all clinical-diagnostic staging, based on the best possible estimate of the extent of disease before treatment. Although surgical-evaluative classifications and pathologic classifications are possible, they are of less practical importance in the management of these tumors. However, when surgical treatment is carried out, cancer of the head and neck can be staged during these time periods of management utilizing all information available.

This chapter presents the clinical-diagnostic staging classification for four major head and neck sites: the oral cavity, the pharynx (nasopharynx, oropharynx, hypopharynx), the larynx, and paranasal sinuses.

ORAL CAVITY

1.0 ANATOMY

1.1 Primary Site: The oral cavity extends from the skin-vermillion junction of the lips to the junction of the hard and soft palate above and to the line of circumvollate papillae below and is divided into the following specific areas:

Lip — The lip begins at the junction of the vermillion border with the skin and includes only the vermillion surface or that portion of the lip which comes into contact with the opposing lip. It is well defined into an upper and lower lip joined at the commissures of the mouth.

'Note: Definitions of T and M vary somewhat from those published by the UICC for lip, oral cavity, oropharynx, nasopharynx, hypopharynx, and larynx for trial periods ending in 1977 or earlier.

Buccal Mucosa — This includes all the membrane lining of the inner surface of the cheeks and lips, from the line of contact of the opposing lips to the line of attachment of mucosa of the alveolar ridge (upper and lower) and pterygomandibular raphe.

Lower Alveolar Ridge — This ridge includes the alveolar process of the mandible and its covering mucosa, which extends from the line of attachment of mucosa in the buccal gutter to the line of free mucosa of the floor of the mouth. Posteriorly, it extends to the ascending ramus of the mandible.

Upper Alveolar Ridge — The upper ridge is the alveolar process of the maxilla and its covering mucosa, which extends from the line of attachment of mucosa in the upper gingival buccal gutter to the junction of the hard palate. Its posterior margin is the upper end of the pterygopalatine arch.

Retromolar Gingiva (Retromolar Trigone) — This is the attached mucosa overlying the ascending ramus of the mandible from the level of the posterior surface of the last molar tooth to the apex superiorly, adjacent to the tuberosity of the maxilla.

Floor of the Mouth — This is a semilunar space over the mylohyoid and hyoglossus muscles, extending from the inner surface of the lower alveolar ridge to the undersurface of the tongue. Its posterior boundary is the base of the anterior pillar of the tonsil. It is divided into two sides by the frenulum of the tongue and contains the ostia of the submaxillary and sublingual salivary glands.

Hard Palate — This is the semilunar area between the upper alveolar ridge and the mucous membrane covering the palatine process of the maxillary palatine bones. It extends from the inner surface of the superior alveolar ridge to the posterior edge of the palatine bone.

Anterior Two-Thirds of the Tongue (Oral Tongue) — This is a freely mobile portion of the tongue which extends anteriorly from the line of circumvallate papillae to

the undersurface of the tongue at the junction of the floor of the mouth. It is composed of four areas: the tip. the lateral borders, the dorsum, and the undersurface (nonvillous surface of the tongue).

1.2 Nodal Stations: The main routes of drainage are into the **first** station nodes, which are the jugulodigastric, jugulo-omohyoid, upper deep cervical, lower deep cervical, and submaxillary and submental lymph nodes. Some primary sites drain bilaterally. **Second** station nodes include parotid lymph nodes.

1.3 Metastatic Sites: Distant spread to the lungs is common; skeletal or hepatic metastases occur less often. Mediastinal lymph node metastases are considered distant metastases.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The assessment of the primary tumor is based upon inspection and palpation of the oral cavity and neck. Additional studies may include plain, tomographic, and contrast roentgenograms, particularly evaluating bone invasion of the mandible or upper alveolus. Examinations for distant metastases include chest film, blood chemistries, blood count, and other routine studies as indicated.

2.2 Surgical-Evaluative Staging: Confirmation of the extent of disease is made by biopsy of suspected mucosal or submucosal spread, aspiration, or open biopsy of suspicious nodes. Biopsy of suspected distant metastasis is desirable but not required.

2.3 Postsurgical Treatment-Pathologic Staging: Complete resection of primary sites and radical nodal dissections allow for the use of this designation. Specimens that are resected after radiation and/or chemotherapy need to be especially noted.

2.4 Retreatment Staging: Utilization of available procedures noted above is required, particularly confirmation by biopsy since previous treatment by surgery or irradiation leads to scarring and induration. A reevaluation for distant metastases is important as well as T and N classifications.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX No available information on primary tumor

TO No evidence of primary tumor

TIS Carcinoma in situ

T1 Greatest diameter of primary tumor less than 2 cm

T2 Greatest diameter of primary tumor 2 to 4 cm

T3 Greatest diameter of primary tumor more than 4 cm

T4 Massive tumor greater than **4** cm in diameter with deep invasion to involve antrum, pterygoid muscles, root of tongue, or skin of neck

3.2 Nodal Involvement (N)

Cervical Node Classification — The following regional node classification is applicable to all malignant head and neck tumors. In clinical evaluation, the actual size of the nodal mass should be measured and allowance should be made for intervening soft tissues. It is recognized that most masses over 3 cm in diameter are not single nodes, but are confluent nodes or tumor in soft tissues of the neck. There are three stages of clinically positive nodes: N1, N2, and N3. The use of subgroups a, b, and c is not required, but is recommended. Midline nodes are considered as homolateral nodes.

NX Nodes cannot be assessed

NO No clinically positive nodes

N1 Single clinically positive homolateral node less than 3 cm in diameter

N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter

N2a Single clinically positive homolateral node 3 to 6 cm in diameter

N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter

N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)

N3a Clinically positive homolateral node(s), none over 6 cm in diameter

N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)

N3c Contralateral clinically positive node(s) only

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

Stage I T1 N0 M0

Stage II T2 N0 M0

Stage III T3 N0 M0
T1 or T2 or T3, N1, M0

Stage IV T4, N0 or N1, M0
Any T, N2 or N3, M0
Any T, Any N, M1

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is squamous cell carcinoma; pathologic diagnosis is required to utilize this classification. Tumor grading is recommended utilizing Broders' classification. Other tumors of glandular epithelium, odontogenic apparatus origin, lymphoid tissue, soft tissue, and bone and cartilage origin require special consideration and are not to be included. Reference to the WHO nomenclature is recommended.

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

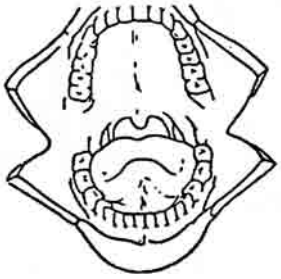
Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age ____ Sex ____ Race ____

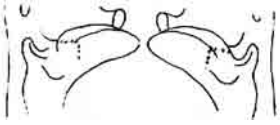
Institutional Identification
Hospital or Clinic _____
Address _____

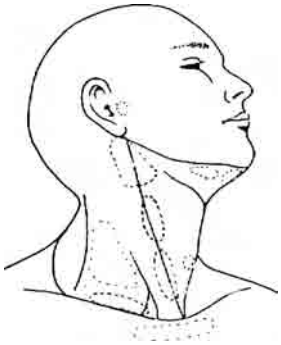
ONCOLOGY RECORD

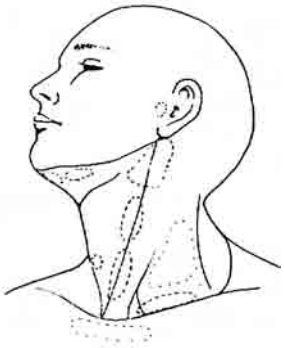
Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____

Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____









SITE-SPECIFIC INFORMATION — ORAL CAVITY
Status Before Treatment Anywhere

Location of Tumor	Site of origin (check one)	Site(s) also involved
Lips: Upper		
Lower		
Buccal mucosa		
Floor of mouth		
Oral tongue		
Hard palate		
Gingivae: Upper		
Lower		
Retromolar trigone		

Size of Tumor
<2 cm _____ 2-4 cm _____ >4 cm _____ T _____

Characteristics of Tumor
Exophytic _____
Superficial _____
Moderately infiltrating _____
Deeply infiltrating _____
Ulcerated _____
Extends to or overlies bone _____
Gross erosion of bone _____
Radiographic destruction of bone _____

Involvement of Neighboring Regions
Tonsillar pillar or soft palate _____
Nasal cavity or antrum _____
Nasopharynx _____
Pterygoid muscles _____
Soft tissues or skin of neck _____

Regional Lymph Nodes (check one only)
N0 _____ N3a _____
N1 _____ N3b _____
N2a _____ N3c _____
N2b _____
If bilateral nodes present, stage each side separately:
Right _____ Left _____

Distant Metastasis
MX _____ M0 _____ M1 _____ Specify _____

Classification
T _____ N _____ M _____

Stage _____

Residual Tumor
R _____

Host — Performance Status (H)
H ____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic, rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- TX Tumor that cannot be assessed by rules
- TO No evidence of primary tumor
- TIS Carcinoma in situ
- T1 Tumor 2 cm or less in greatest diameter
- T2 Tumor greater than 2 cm but not greater than 4 cm in greatest diameter
- T3 Tumor greater than 4 cm in greatest diameter
- T4 Massive tumor greater than 4 cm in diameter with deep invasion to involve antrum, pterygoid muscles, root of tongue, or skin of neck

Nodal Involvement (N)

- NX Nodes cannot be assessed
- NO No clinically positive node
- N1 Single clinically positive homolateral node less than 3 cm in diameter
- N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter
  - N2a: Single clinically positive homolateral node, 3 to 6 cm in diameter
  - N2b: Multiple clinically positive homolateral nodes, none over 6 cm in diameter
- N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)
  - N3a Clinically positive homolateral node(s), none over 6 cm in diameter
  - N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)
  - N3c Contralateral clinically positive node(s) only

Distant Metastasis (M)

- MX Not assessed
- MO No (known) distant metastasis
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

HISTOPATHOLOGY

Predominant cancer is squamous cell carcinoma

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I	T1 NO MO
Stage II	T2 NO MO
Stage III	T3 NO MO
	T1 or T2 or T3, N1, MO
Stage IV	T4, NO or N1, MO
	Any T, N2 or N3, MO
	Any T, Any N, M1

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

Specify _____

HOST (H) — **Performance** Status **of** Host	ECOG/ Zubrod scale	Karnofsky scale (%)
HO Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

PHARYNX

1.0 ANATOMY

1.1 Primary Site: The pharynx is divided into three regions: nasopharynx, oropharynx, and hypopharynx. Each region is subdivided into sites that are designated below:

Nasopharynx — The anterior limit of the nasopharynx is the choana, through which it is continuous with the nasal cavity. Its roof is attached to the base of the skull and slopes downward to become continuous with the posterior pharyngeal wall. The lateral wall is composed of the torus tubarius, the eustachian tube orifice, and that portion of the mucosa of the fossa of Rosenmueller extending up to its apex and junction with the roof. The inferior limit of the nasopharynx is level with the plane of the hard palate.

Oropharynx — The oropharynx extends from the plane of the hard palate, superiorly, to the plane of the hyoid bone, inferiorly, and is continuous with the oral cavity. The faucial arch includes both the surfaces of the entire soft palate and the uvula, the anterior border and base of the anterior tonsillar pillar, and the line of the circumvallate papillae. The base of the tongue extends from the line of the circumvallate papillae to the junction with the base of the epiglottis (the vallecula) and includes the pharyngoepiglottic and glossoepiglottic folds. The lateral wall of the oropharynx is comprised largely of the tonsil and tonsillar fossae. The posterior tonsillar pillar, the narrow lateral wall, and the posterior wall comprise the pharyngeal wall.

Hypopharynx — The hypopharynx extends from the plane of the hyoid bone, superiorly, to the plane of the lower border of the cricoid cartilage inferiorly. It is made up of three distinct regions: the pyriform sinus, the posterior surface of the larynx (the postcricoid area), and the lower posterior pharyngeal wall.

The division of the pharynx into three regions and the sites within each region are summarized in the following table:

REGION	SITE
Nasopharynx	- Posterior superior wall (vault) - Lateral wall
Oropharynx	- Faucial arch including soft palate. uvula, and anterior tonsillar pillar - Tonsillar fossa and tonsil - Base of tongue including glossoepiglottic and pharyngoepiglottic folds - Pharyngeal wall including lateral and posterior walls and posterior tonsillar pillar
Hypopharynx	- Pyriform sinus - Postcricoid area - Posterior hypopharyngeal wall

1.2 Nodal Stations: The main routes of drainage are into the **first** station nodes — jugulodigastric, jugulo-omohyoid, upper deep cervical, lower deep cervical, and submaxillary and submental lymph nodes. Some primary sites drain bilaterally. There are additional first station nodes that include retropharyngeal and parapharyngeal lymph nodes. **Second** station nodes include parotid nodes.

1.3 Metastatic Sites: Distant spread to lungs is common. Skeletal and other distant metastases occur less often. Mediastinal lymph node metastases are considered distant metastases.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The assessment of the pharynx is based primarily upon inspection by indirect mirror examination and direct endoscopy. Palpation of sites (when feasible) and neck nodes is essential. Neurologic evaluation of all cranial nerves is required. Additional studies include plain, tomographic, and contrast roentgenograms of the pharynx according to the site of interest. Examinations for distant metastases include chest film, blood chemistries, blood count, and other routine studies as indicated.

2.2 Surgical-Evaluative Staging: Confirmation of the extent of disease by biopsy of

suspected mucosal or submucosal spread, aspirations or open biopsy of suspicious nodes, and biopsy of suspected distant metastases is desirable, but not required.

2.3 Postsurgical Treatment-Pathologic Staging: Complete resection of primary sites and radical nodal dissections allow for the use of this designation. Specimens that are resected after radiation and/or chemotherapy need to be especially noted.

2.4 Retreatment Staging: Utilization of available procedures noted above is required, particularly confirmation by biopsy since previous treatment by surgery or irradiation leads to scarring and induration. A reevaluation for distant metastases is important as well as T and N classifications.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Tumor that cannot be assessed by rules as listed in 2.0

TO No evidence of primary tumor

Nasopharynx:

TIS Carcinoma in situ

T1 Tumor confined to one site of nasopharynx or no tumor visible (positive biopsy only)

T2 Tumor involving two sites (both posterosuperior and lateral walls)

T3 Extension of tumor into nasal cavity or oropharynx

T4 Tumor invasion of skull or cranial nerve involvement, or both

Oropharynx:

TIS Carcinoma in situ

T1 Tumor 2 cm or less in greatest diameter

T2 Tumor greater than 2 cm, but not greater than 4 cm in greatest diameter

T3 Tumor greater than 4 cm in greatest diameter

T4 Massive tumor greater than 4 cm in diameter with invasion of bone, soft tissues of neck, or root (deep musculature) of tongue

Hypopharynx:

TIS Carcinoma in situ

T1 Tumor confined to the site of origin

T2 Extension of tumor to adjacent region or site without fixation of hemilarynx

T3 Extension of tumor to adjacent region or site with fixation of hemilarynx

T4 Massive tumor invading bone or soft tissues of neck

3.2 Nodal Involvement (N)

Cervical Node Classification — The following regional node classification is applicable to all malignant head and neck tumors. In clinical evaluation, the actual size of the nodal mass should be measured and allowance should be made for intervening soft tissues. It is recognized that most masses over 3 cm in diameter are not single nodes, but are confluent nodes or tumor in soft tissues in the neck. There are three stages of clinically positive nodes: N1, N2, and N3. The use of subgroups a, b, and c is not required, but is recommended. Midline nodes are considered as homolateral nodes.

NX Nodes cannot be assessed

NO No clinically positive node

N1 Single clinically positive homolateral node less than 3 cm in diameter

N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter

N2a Single clinically positive homolateral node 3 to 6 cm in diameter

N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter

N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)

N3a Clinically positive homolateral node(s), none over 6 cm in diameter

N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)

N3c Contralateral clinically positive node(s) only

3.3 Distant Metastasis (M)

MX Not assessed

MO No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

Stage I T1 NO MO

Stage II T2 NO MO

Stage III T3 NO MO
T1 or T2 or T3, N1, MO

Stage IV T4, NO or N1, MO
Any T, N2 or N3, MO
Any T, Any N, M1

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is squamous cell carcinoma; pathologic diagnosis is required to utilize this classification. Tumor grading is recommended utilizing Broders' classification. Other tumors of glandular epithelium, odontogenic apparatus origin, lymphoid tissue, soft tissue, and bone and cartilage origin require special consideration and are not to be included. Reference to the WHO nomenclature is recommended.

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

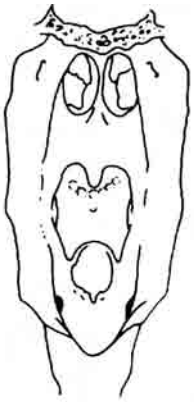
DATA FORM FOR CANCER STAGING

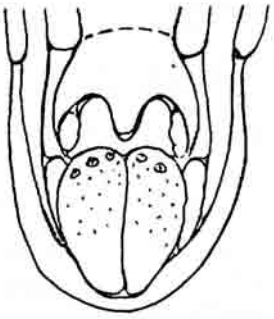
Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM ___ sTNM ___ pTNM ___ rTNM ___ aTNM ___
Date of Classification _____



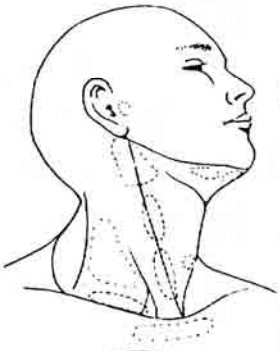


SITE-SPECIFIC INFORMATION — PHARYNX

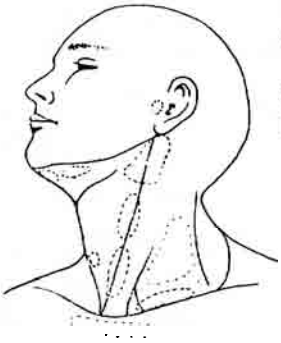
Status Before Treatment Anywhere — Primary Tumor

Location of Tumor	Siteoforigin (check one)	Site(s) also involved	Anatomic extent
Nasopharynx			
Posterosuperior wall	_____	_____	T1 _____
Lateral wall	_____	_____	T2 _____
			T3 _____
			T4 _____
Oropharynx			
Faucial arch	_____	_____	T1 _____
Tonsillar fossa, tonsil	_____	_____	T2 _____
Base of tongue	_____	_____	T3 _____
Pharyngeal wall	_____	_____	T4 _____
Hypopharynx			
Pyriform fossa	_____	_____	T1 _____
Postcricoid area	_____	_____	T2 _____
Posterior wall	_____	_____	T3 _____
			T4 _____

Characteristics of Tumor (check one)
Superficial _____
Exophytic _____
Moderate infiltration _____
Deep infiltration _____



Regional Lymph Nodes (check one only; diagram)
N0 _____ N3a _____
N1 _____ N3b _____
N2a _____ N3c _____
N2b _____
If bilateral nodes present, stage each side separately.
Right _____ Left _____



Distant Metastasis
MX _____ M0 _____ M1 _____ Specify _____
Sites: Lung _____ Bone _____ Liver _____ Other _____

Classification
T _____ N _____ M _____

Stage _____

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic: sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

TX	Tumor that cannot be assessed by rules
TO	No evidence of primary tumor

Nasopharynx

TIS	Carcinoma in situ
T1	Tumor confined to one site of nasopharynx or no tumor visible (positive biopsy only)
T2	Tumor involving two sites (both posterosuperior and lateral walls)
T3	Extension of tumor into nasal cavity or oropharynx
T4	Tumor invasion of skull or cranial nerve involvement, or both

Oropharynx

TIS	Carcinoma in situ
T1	Tumor 2 cm or less in greatest diameter
T2	Tumor greater than 2 cm, but not greater than 4 cm in greatest diameter
T3	Tumor greater than 4 cm in greatest diameter
T4	Massive tumor greater than 4 cm in diameter with invasion of bone, soft tissues of neck, or root (deep musculature) of tongue

Hypopharynx

TIS	Carcinoma in situ
T1	Tumor confined to the site of origin
T2	Extension of tumor to adjacent region or site without fixation of hemilarynx
T3	Extension of tumor to adjacent region or site with fixation of hemilarynx
T4	Massive tumor invading bone or soft tissues of neck

Nodal Involvement (N)

NX	Nodes cannot be assessed
NO	No clinically positive node
N1	Single clinically positive homolateral node less than 3 cm in diameter
N2	Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter
N2a	Single clinically positive homolateral node, 3 to 6 cm in diameter
N2b	Multiple clinically positive homolateral nodes, none over 6 cm in diameter
N3	Massive homolateral node(s), bilateral nodes, or contralateral node(s)
N3a	Clinically positive homolateral node(s), none over 6 cm in diameter
N3b	Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)
N3c	Contralateral clinically positive node(s) only

Distant Metastasis (M)

MX	Not assessed
MO	No (known) distant metastasis
M1	Distant metastasis present
	Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

HISTOPATHOLOGY

Predominant cancer is either a squamous cell carcinoma or undifferentiated transitional cell carcinoma

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2. 3-4

STAGE GROUPING

Stage I	T1 NO MO		
Stage II	T2 NO MO		
Stage III	T3 NO MO	T1 or T2 or T3, N1, MO	
Stage IV	T4, NO or N1, MO	Any T, N2 or N3, MO	Any T, Any N, M1

Residual Tumor (R)

R0	No residual tumor
R1	Microscopic residual tumor
R2	Macroscopic residual tumor
	Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
HO Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

LARYNX

1.0 ANATOMY

1.1 Primary Site: The following anatomic definition of larynx allows classification of carcinomas arising in the encompassed mucous membranes, but excludes cancers arising on the lateral or posterior pharyngeal wall, pyriform fossa, postcricoid area, and the vallecula or base of tongue.

The anterior limit of the larynx is composed of the anterior or lingual surface of the suprahyoid epiglottis, the thyrohyoid membrane, the anterior commissure, and the anterior wall of the subglottic region which is composed of the thyroid cartilage, the cricothyroid membrane, and the anterior arch of the cricoid cartilage.

The posterior and lateral limits include the aryepiglottic folds, the arytenoid region, the interarytenoid space, and the posterior surface of the subglottic space represented by the mucous membrane covering the cricoid cartilage.

The superolateral limits are composed of the tip and the lateral borders of the epiglottis.

The inferior limits are made up of the plane passing through the inferior edge of the cricoid cartilage.

For purposes of this clinical-stage classification, the larynx is divided into three regions: supraglottis, glottis, and subglottis. The supraglottis is composed of the epiglottis (both its lingual and laryngeal aspects), aryepiglottic folds, arytenoids, and ventricular bands (false cords). The inferior boundary of the supraglottis is a horizontal plane passing through the apex of the ventricle. The glottis is composed of the true vocal cords, including the anterior and posterior commissures. The lower boundary is the horizontal plane 1 cm below the apex of the ventricle. The subglottis is the region extending from the lower boundary of the glottis to the lower margin of the cricoid cartilage.

The division of the larynx is summarized in this table:

REGION	SITE
Supraglottis	- Ventricular bands (false cords) - Arytenoids - Epiglottis (both lingual and laryngeal aspects) Suprahyoid epiglottis Infrahyoid epiglottis Aryepiglottic folds
Glottis	- True vocal cords including anterior and posterior commissures
Subglottis	- Subglottis

1.2 Nodal Stations: The first station nodes include jugulodigastric, jugulo-omohyoid, paratracheal, and deep cervical nodes.

1.3 Metastatic Sites: Distant spread to lungs is common. Skeletal and other distant metastases occur less often. Mediastinal lymph node metastases are considered distant metastases.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The assessment of the larynx is accomplished primarily by inspection utilizing indirect mirror examination and direct laryngoscopy. Additional studies include plain films of soft tissue, tomograms, contrast roentgenograms (e.g., laryngograms), and barium studies of the pharynx according to suspected extension and spread. Nodal stations are examined by careful palpation. Examinations for distant metastases include chest film, blood chemistries, blood count, and other routine studies as indicated.

2.2 Surgical-Evaluative Staging: Confirmation of the extent of disease by biopsy of suspected mucosal or submucosal spread, aspirations or open biopsy of suspicious nodes, and biopsy of suspected distant metastases is desirable, but not required.

2.3 Postsurgical Treatment-Pathologic Staging: Complete resection of primary sites

and radical nodal dissections allow for the use of this designation. Specimens that are resected after radiation and/or chemotherapy need to be especially noted.

2.4 Retreatment Staging: Utilization of available procedures noted above is required, particularly confirmation by biopsy since previous treatment by surgery or irradiation leads to scarring and induration. A reevaluation for distant metastases is important as well as T and N classifications.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Tumor that cannot be assessed by rules as listed in 2.0

TO No evidence of primary tumor

Supraglottis:

TIS Carcinoma in situ

T1 Tumor confined to region of origin with normal mobility

T2 Tumor involves adjacent supraglottic site(s) or glottis without fixation

T3 Tumor limited to larynx with fixation and/or extension to involve postcricoid area, medial wall of pyriform sinus, or pre-epiglottic space

T4 Massive tumor extending beyond the larynx to involve oropharynx, soft tissues of neck, or destruction of thyroid cartilage

Glottis:

TIS Carcinoma in situ

T1 Tumor confined to vocal cord(s) with normal mobility (includes involvement of anterior or posterior commissures)

T2 Supraglottic and/or subglottic extension of tumor with normal or impaired cord mobility

T3 Tumor confined to the larynx with cord fixation

T4 Massive tumor with thyroid cartilage destruction and/or extension beyond the confines of the larynx

Subglottis:

TIS Carcinoma in situ

T1 Tumor confined to the subglottic region

T2 Tumor extension to vocal cords with normal or impaired cord mobility

T3 Tumor confined to larynx with cord fixation

T4 Massive tumor with cartilage destruction or extension beyond the confines of the larynx. or both

3.2 Nodal Involvement (N)

Cervical Node Classification — The following regional node classification is applicable to all malignant head and neck tumors. In clinical evaluation, the actual size of the nodal mass should be measured and allowance should be made for intervening soft tissues. It is recognized that most masses over 3 cm in diameter are not single nodes, but are confluent nodes or tumor in soft tissues of the neck. There are three stages of clinically positive nodes: N1, N2, and N3. The use of subgroups a, b, and c Is not required, but is recommended. Midline nodes are considered as homolateral nodes.

NX Nodes cannot be assessed

NO No clinically positive node

N1 Single clinically positive homolateral node less than 3 cm in diameter

N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter

N2a Single clinically positive homolateral node, 3 to 6 cm in diameter

N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter

N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)

N3a Clinically positive homolateral node(s), none over 6 cm in diameter

N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)

N3c Contralateral clinically positive node(s) only

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

Stage I T1 N0 M0

Stage II T2 N0 M0

Stage III T3 N0 M0
T1 or T2 or T3 N1 M0

Stage IV T4, N0 or N1, M0
Any T, N2 or N3, M0
Any T, Any N, M1

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is squamous cell carcinoma; pathologic diagnosis is required to utilize this classification. Tumor grading is recommended utilizing Broders' classification. Other tumors of glandular epithelium, odontogenic apparatus origin, lymphoid tissue, soft tissue, and bone and cartilage origin require special consideration and are not to be included. Reference to the WHO nomenclature is recommended.

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

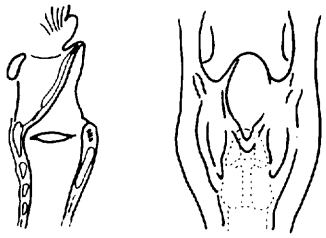
Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

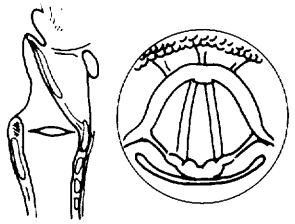
Anatomic Site of Cancer _____
Histologic Cell Type _____
Grade _____
Time of Classification*
Date of Classification _____
cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____

SITE-SPECIFIC INFORMATION — LARYNX

Status Before Treatment Anywhere

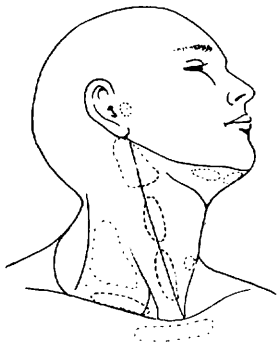


Location of Tumor	Site of origin (check one)	Site(s) also involved
Supraglottis		
Ventricular band	_____	_____
Arytenoid	_____	_____
Suprahyoid epiglottis	_____	_____
Infrahyoid epiglottis	_____	_____
Aryepiglottic fold	_____	_____
Glottis		
Vocal cords (incl. commissures)	_____	_____
Subglottis	_____	_____



Characteristics of Tumor

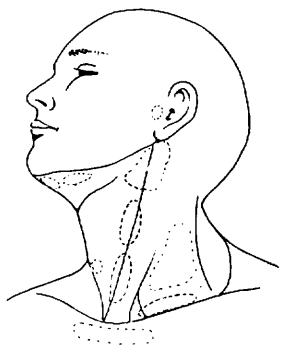
Superficial	_____
Exophytic	_____
Moderate infiltration	_____
Deep infiltration	_____
Impaired cord mobility	_____
Cord fixation	_____
Cartilage destruction	_____
Tumor confined to larynx	_____
Tumor extension to:	
Base of tongue	_____
Pyriform sinus	_____
Postcricoid region	_____
Pre-epiglottic space	_____
Trachea	_____
Soft tissue or skin of neck	_____



Regional Lymph Nodes (check one only)

N0 _____ N3a _____
N1 _____ N3b _____
N2a _____ N3c _____
N2b _____

If bilateral nodes present, stage each side separately.
Right _____ Left _____



Distant Metastasis

MX _____ M0 _____ M1 _____ Specify _____
Sites: Lung _____ Bone _____ Liver _____ Other _____

Classification

T _____ N _____ M _____

Stage _____

Residual Tumor

R _____

Host — Performance Status (H)

H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

TX	Tumor that cannot be assessed by rules
T0	No evidence of primary tumor

Supraglottis

TIS	Carcinoma in situ
T1	Tumor confined to region of origin with normal mobility
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T3	Tumor limited to larynx with fixation and/or extension to involve postcricoid area, medial wall of pyriform sinus, or pre-epiglottic space
T4	Massive tumor extending beyond the larynx to involve oropharynx, soft tissues of neck, or destruction of thyroid cartilage

Glottis

TIS	Carcinoma in situ
T1	Tumor confined to vocal cord(s) with normal mobility (including involvement of anterior or posterior commissures)
T2	Supraglottic and/or subglottic extension of tumor with normal or impaired cord mobility
T3	Tumor confined to the larynx with cord fixation
T4	Massive tumor with thyroid cartilage destruction and/or extension beyond the confines of the larynx

Subglottis

TIS	Carcinoma in situ
T1	Tumor confined to the subglottic region
T2	Tumor extension to vocal cords with normal or impaired cord mobility
T3	Tumor confined to larynx with cord fixation
T4	Massive tumor with cartilage destruction or extension beyond the confines of the larynx, or both

Nodal Involvement (N)

NX	Nodes cannot be assessed
N0	No clinically positive node
N1	Single clinically positive homolateral node less than 3 cm in diameter
N2	Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter
N2a	Single clinically positive homolateral node, 3 to 6 cm in diameter
N2b	Multiple clinically positive homolateral nodes, none over 6 cm in diameter
N3	Massive homolateral node(s), bilateral nodes, or contralateral node(s)
N3a	Clinically positive homolateral node(s), none over 6 cm in diameter
N3b	Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)
N3c	Contralateral clinically positive node(s) only

Distant Metastasis (M)

MX	Not assessed
M0	No (known) distant metastasis
M1	Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

HISTOPATHOLOGY

Predominant cancer is squamous cell carcinoma of undifferentiated carcinoma — also adenocarcinoma and others

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I	T1 N0 M0
Stage II	T2 N0 M0
Stage III	T3 N0 M0
	T1 or T2 or T3, N1, M0
Stage IV	T4, N0 or N1, M0
	Any T, N2 or N3, M0
	Any T, Any N, M1

Residual Tumor (R)

R0	No residual tumor
R1	Microscopic residual tumor
R2	Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

PARANASAL SINUSES

1.0 ANATOMY

1.1 Primary Site: Cancer of the maxillary sinus is the most common of the paranasal sinus cancers; it is the only site to which the following classification applies. The ethmoid sinuses and nasal cavity may ultimately be similarly defined with further study. Tumors of the sphenoid and frontal sinuses are so rare as to not warrant staging.

Ohngren's line, a theoretic plane joining the medial canthus of the eye with the angle of the mandible, may be used to divide the maxillary antrum into the anteroinferior portion (the infrastructure) and the superoposterior portion (the suprastructure).

1.2 Nodal Stations: The major lymphatic drainage of the maxillary antrum is via the lateral and inferior collecting trunks to first station submaxillary, parotid, and jugulodigastric nodes and via superoposterior trunk to retropharyngeal and deep cervical nodes.

1.3 Metastatic Sites: Distant spread to lungs is most common; occasionally there is spread to bone and remote lymph nodes.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The assessment of primary maxillary antrum tumors is based upon inspection and palpation, including examination of the orbit, nasal and oral cavities, and nasopharynx and neurologic evaluation of the cranial nerves. Radiographic studies include plain films and tomograms for evaluation of bone destruction. Neck nodes are assessed by palpation. Examinations for distant metastases include chest film, blood chemistries, blood count, and other routine studies as indicated.

2.2 Surgical-Evaluative Staging: Confirmation of the extent of disease by biopsy of suspected mucosal or submucosal spread, aspirations or open biopsy of suspicious nodes, and biopsy of suspected distant metastases is desirable, but not required.

2.3 Postsurgical Treatment-Pathologic Staging: Complete resection of primary sites and radical nodal dissections allow for the use of this designation. Specimens that are resected after radiation and/or chemotherapy need to be especially noted.

2.4 Retreatment Staging: Utilization of available procedures noted above is required, particularly confirmation by biopsy since previous treatment by surgery or irradiation leads to scarring and induration. A reevaluation for distant metastases is important as well as T and N classifications.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Tumor that cannot be assessed by rules as listed in 2.0

T0 No evidence of primary tumor

T1 Tumor confined to the antral mucosa of the infrastructure with no bone erosion or destruction

T2 Tumor confined to the suprastructure mucosa without bone destruction, or to the infrastructure with destruction of medial or inferior bony walls only

T3 More extensive tumor invading skin of cheek, orbit, anterior ethmoid sinuses, or pterygoid muscle

T4 Massive tumor with invasion of cribriform plate, posterior ethmoids, sphenoid, nasopharynx, pterygoid plates, or base of skull

3.2 Nodal Involvement (N)

Cervical Node Classification — The following regional node classification is applicable to all malignant head and neck tumors. In clinical evaluation, the actual size of the nodal mass should be measured and allowance should be made for intervening soft tissues. It is recognized that most masses over 3 cm in diameter are not single nodes but are confluent nodes or tumor in soft tissues

of the neck. There are three stages of clinically positive nodes: N1, N2, and N3. The use of subgroups a, b, and c is not required, but is recommended. Midline nodes are considered as homolateral nodes.

NX Nodes cannot be assessed

N0 No clinically positive node

N1 Single clinically positive homolateral node less than 3 cm in diameter

N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter

N2a Single clinically positive homolateral node, 3 to 6 cm in diameter

N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter

N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)

N3a Clinically positive homolateral node(s), none over 6 cm in diameter

N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is N3b: right, N2a; left, N1)

N3c Contralateral clinically positive node(s) only

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

Stage I T1 N0 M0

Stage II T2 N0 M0

Stage III T3 N0 M0
T1 or T2 or T3, N1, M0

Stage IV T4, N0 or N1, M0
Any T, N2 or N3, M0
Any T, Any N, M1

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is squamous cell carcinoma; pathologic diagnosis is required to utilize this classification. Tumor grading is recommended utilizing Broders' classification. Other tumors of glandular epithelium, odontogenic apparatus origin, lymphoid tissue, soft tissue, and bone and cartilage origin require special consideration and are not to be included. Reference to the WHO nomenclature is recommended.

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

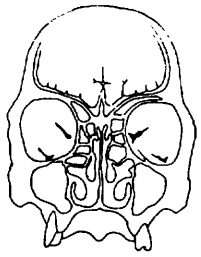
Institutional Identification
Hospital or Clinic _____
Address _____

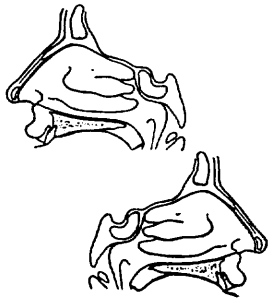
ONCOLOGY RECORD

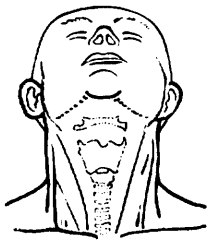
Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION — PARANASAL SINUSES

Status Before Treatment Anywhere







Location of Tumor	Site of origin (check one)	Site(s) also involved
Antrum		
Infrastructure	_____	_____
Suprastructure	_____	_____
Both	_____	_____
Nasal cavity		
Septum	_____	_____
Roof	_____	_____
Lateral wall	_____	_____
Floor	_____	_____
Ethmoid		
Anterior	_____	_____
Posterior	_____	_____
Sphenoid	_____	_____
Frontal	_____	_____

Characteristics of Tumor

Radiographic destruction of bone	_____
Invasion of adjacent areas	_____
Skin	_____
Palate	_____
Nasopharynx	_____
Cribriform plate	_____
Orbit	_____
Base of skull	_____
Pterygoid muscles	_____
Pterygoid bone	_____

Regional Lymph Nodes (check one only)

N0 _____ N3a _____
N1 _____ N3b _____
N2a _____ N3c _____
N2b _____

If bilateral nodes present, stage each side separately.
Right _____ Left _____

Distant Metastasis

MX _____ M0 _____ M1 _____ Specify _____
Sites: Lung _____ Bone _____ Liver _____ Other _____

Classification

T _____ N _____ M _____

Stage _____

Residual Tumor

R _____

Host — Performance Status (H)

H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- TX — Tumor that cannot be assessed by rules
- T0 — No evidence of primary tumor
- T1 — Tumor confined to the antral mucosa of the infrastructure with no bone erosion or destruction
- T2 — Tumor confined to the suprastructure mucosa without bone destruction, or to the infrastructure with destruction of medial or inferior bony walls only
- T3 — More extensive tumor invading skin of cheek, orbit, anterior ethmoid sinuses, or pterygoid muscle
- T4 — Massive tumor with invasion of cribriform plate, posterior ethmoids, sphenoid, nasopharynx, pterygoid plates, or base of skull

Nodal Involvement (N)

- NX — Nodes cannot be assessed
- N0 — No clinically positive node
- N1 — Single clinically positive homolateral node less than 3 cm in diameter
- N2 — Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter
  - N2a — Single clinically positive homolateral node, 3 to 6 cm in diameter
  - N2b — Multiple clinically positive homolateral nodes, none over 6 cm in diameter
- N3 — Massive homolateral node(s), bilateral nodes, or contralateral node(s)
  - N3a — Clinically positive homolateral node(s), none over 6 cm in diameter
  - N3b — Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)
  - N3c — Contralateral clinically positive node(s) only

Distant Metastasis (M)

- MX — Not assessed
- M0 — No (known) distant metastasis
- M1 — Distant metastasis present
  Specify _____
  Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

HISTOPATHOLOGY

Predominant cancer is squamous cell or undifferentiated carcinoma; also adenocarcinoma and others

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I	T1 N0 M0
Stage II	T2 N0 M0
Stage III	T3 N0 M0
	T1 or T2 or T3, N1, M0
Stage IV	T4, N0 or N1, M0
	Any T, N2 or N3, M0
	Any T, Any N, M1

Residual Tumor (R)

- R0 — No residual tumor
- R1 — Microscopic residual tumor
- R2 — Macroscopic residual tumor
  Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE SALIVARY GLANDS

Presently a retrospective study is under way in which 900 cases of malignant salivary gland tumor are being evaluated at various institutions in this country. After this evaluation, the material will be analyzed and a classification and staging system will be developed. The classification and staging system will be clinical most likely. However, tumors may be staged as surgical-evaluative and postsurgical-pathologic treatment. However, until this material is available, the following suggested classification of tumors of salivery gland origin will be used. No stage grouping at present is recommended.

In this proposed classification system for tumors of the salivary gland, the histologic classification used is a modification of the WHO classification of salivary gland tumors. The salivary glands included are the parotid, submandibular, and sublingual.

1.0 ANATOMY

1.1 Primary Site: The salivary glands include the parotid, submandibular, and sublingual glands.

1.2 Nodal Stations: The first station nodes are immediately adjacent to the salivary glands and include parotid, submaxillary, and submental lymph nodes. The first station also includes the jugulodigastric and jugulo-omohyoid lymph nodes as well as the other deep cervical nodes.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The assessment of primary tumor includes inspection and palpation and neurologic evaluation of the seventh cranial or other nerves. Radiologic studies may include films of the mandible and possibly sialograms.

2.2 Surgical-Evaluative Staging: This should be based on all clinical data as well as that obtained on surgical exploration of the salivary gland and the nodal areas, but not the pathologic data obtained on the resected specimen if a definitive resection of the cancer is carried out.

2.3 Postsurgical Treatment-Pathologic Staging: The surgical pathology report and all other available data should be used to assign a pathologic classification to those patients who have a resection of the cancer.

2.4 Retreatment Staging: After a cancer has once been treated definitively with a disease-free interval but recurs, the recurrence can be reclassified using all available information; the patient should again be staged utilizing procedures noted for clinical-diagnostic and surgical-evaluative classifications.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Tumor that cannot be assessed by rules as listed in 2.0

T0 No evidence of primary tumor

T1 Tumor 0 to 2 cm in diameter, solitary, freely mobile, facial nerve intact*
(*applicable to parotid tumors only)

T2 Tumor 2 to 4 cm in diameter, solitary, freely mobile or reduced mobility or skin fixation, and facial nerve intact*
(*applicable to parotid tumors only)

T3 Tumor 4 to 6 cm in diameter, or multiple nodes, skin ulceration, deep fixation, or facial nerve dysfunction*
(*applicable to parotid tumors only)

T4 Tumor >6 cm in diameter and/or involving mandible and adjacent bones

3.2 Nodal Involvement (N)

Cervical Node Classification — The following regional node classification is applicable to all malignant head and neck tumors. In clinical evaluation, the actual size of the nodal mass should be measured and allowance should be made for intervening soft tissues. It is recognized that most masses over 3 cm in diameter are not single nodes, but are

confluent nodes or tumor in soft tissues of the neck. There are three stages of clinically positive nodes: N1, N2, and N3. The use of subgroups a, b, and c is not required, but is recommended. Midline nodes are considered as homolateral nodes.

NX Nodes cannot be assessed

N0 No clinically positive node

N1 Single clinically positive homolateral node less than 3 cm in diameter

N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter

N2a Single clinically positive homolateral node, 3 to 6 cm in diameter

N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter

N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)

N3a Clinically positive homolateral node(s), none over 6 cm in diameter

N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is N3b: right, N2a; left, N1)

N3c Contralateral clinically positive node(s) only

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping is recommended, but tumor extent should be noted using TNM categories.

6.0 HISTOPATHOLOGY

6.1 The histologic classification recommended is a modification of the WHO classification of salivary gland tumors. The major malignant varieties include:
Acinic cell carcinoma
Adenoid cystic carcinoma (cylindroma)
Adenocarcinoma
Epidermoid carcinoma
Carcinoma in pleomorphic adenoma (malignant mixed tumor)
Mucoepidermoid:
(a) well-differentiated
(b) poorly differentiated
Other

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

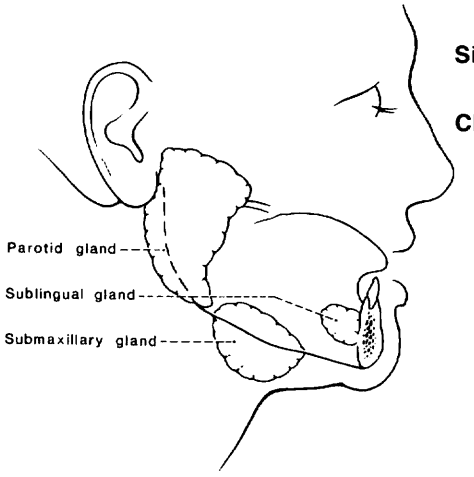
Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____

Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION — SALIVARY GLANDS



Location of Tumor
- Parotid _____
- Submaxillary _____
- Sublingual _____
- Side
  - Right _____
  - Left _____
  - Bilateral _____

Size of Tumor
- Largest diameter _____ cm

Characteristics of Tumor
- Mobile _____
- Limited mobility _____
- Fixed _____
- Hard _____
- Soft _____
- Cystic _____
- Adjacent tissues involved No _____ Yes _____
- Nerve involvement
  - None _____
  - Facial _____
  - Hypoglossal _____
  - Lingual _____
  - Vagus _____
  - Other _____
  - Partial paralysis _____
  - Complete paralysis _____

Regional Lymph Nodes (check one only)

NX _____ N3a _____
N0 _____ N3b _____
N1 _____ N3c _____
N2a _____
N2b _____

If bilateral nodes present, stage each separately.
Right _____ Left _____

Distant Metastasis

MX _____ M0 _____ M1 _____ Specify _____
Sites: Lung _____ Bone _____ Liver _____ Other _____

Classification

T _____ N _____ M _____

Stage

No stage grouping recommended

Residual Tumor

R _____

Host — Performace Status (H)

H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

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- T2 Tumor 2 to 4 cm in diameter, solitary, freely mobile or reduced mobility or skin fixation, and facial nerve intact*
  (*applicable to parotid tumors only)
- T3 Tumor 4 to 6 cm in diamater, or multiple nodes, skin ulceration, deep fixation, or facial nerve dysfunction*
  (*applicable to parotid tumors only)
- T4 Tumor >6 cm in diameter and/or involving mandible and adjacent bones

Nodal Involvement (N)

- NX Nodes cannot be assessed
- N0 No clinically positive node
- N1 Single clinically positive homolateral node less than 3 cm in diameter
- N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter
  - N2a Single clinically positive homolateral node, 3 to 6 cm in diameter
  - N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter
- N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)
  - N3a Clinically positive homolateral node(s), none over 6 cm in diameter
  - N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)
  - N3c Contralateral positive node(s) only

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present
  Specify _____
  Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

HISTOPATHOLOGY

Mucoepidermoid, adenoidcystic, squamous cell, acinic cell, undifferentiated

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

No stage grouping is recommended at present

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor
  Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE THYROID

Thyroid cancer is now being evaluated by the review of over 1,000 protocols with the goal of developing a staging system for cancer at this anatomic site. There is currently no satisfactory staging system for these tumors. Even without a staging system, collection of data describing extent of disease is still desirable so a temporary classification using TNM symbols is suggested together with a data form for cancer staging. The classification will undoubtedly be modified and refined after completion of the protocol evaluation. The UICC also has described rather similar TNM categories but states "no stage grouping is at present recommended." Earlier (1968) the AJC had recommended staging of thyroid cancer but histologic types were not separated nor was the follow-up period sufficient to identify the various biologic types of tumor. As a result, the recommendations were not accepted, necessitating the current reconsideration.

1.0 ANATOMY

1.1 Primary Site: The thyroid gland ordinarily is composed of a right and a left lobe lying adjacent and lateral to the upper trachea and esophagus. An isthmus connects the two lobes and in some cases a pyramidal lobe is present extending upward anterior to the thyroid cartilage.

1.2 Nodal Stations: Lymphatic drainage from the thyroid gland is in several directions: to the tracheoesophageal nodes bilaterally, to upper anterior mediastinal nodes, to the delphian node overlying the thyroid cartilage, to nodes of the jugular chain bilaterally, and toward the base of the skull to retropharyngeal nodes.

1.3 Metastatic Sites: Distant spread occurs by contiguous, lymphatic, or hematogenous routes, for example to lungs and bones, although many other sites may be involved. Involvement of mediastinal lymph nodes is considered as distant spread.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: This should be based on the extent of thyroid cancer as determined by history, physical examination, and such laboratory tests that may contribute to the diagnosis, that is, isotope scan, ultrasound, etc.

2.2 Surgical-Evaluative Staging: This should be based on all clinical data as well as that obtained on surgical exploration of the thyroid gland and the nodal areas, but not the pathologic data obtained on the resected specimen if a definitive resection of the cancer is carried out.

2.3 Postsurgical Treatment-Pathologic Staging: The surgical pathology report and all other available data should be used to assign a pathologic classification to those patients who have a resection of the cancer.

2.4 Retreatment Staging: After a cancer has once been treated definitively with a disease-free interval but recurs, the recurrence can be reclassified using all available information; the patient should again be staged utilizing procedures noted for clinical and surgical-evaluative classifications.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Tumor that cannot be assessed by rules

T0 No available information on primary tumor

T1 Mobile tumor

T1a Mobile tumor 4 cm or less in greatest diameter

T1b Mobile tumor over 4 cm in greatest diameter

T2 Fixed tumor, any size, with or without neurologic involvement

T2a Lateral position

T2b Midline position

T3 Massive fixation of tumor, any size, with or without neurologic involvement; fistula

3.2 Nodal Involvement (N)

NX Nodes cannot be assessed

N0 No palpable nodes

N1 Palpable mobile node or nodes

N1a Homolateral only

N1b Contralateral only

N1c Bilateral and/or midline

N2 Any palpable fixed node

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping for thyroid cancer is recommended at this time

6.0 HISTOPATHOLOGY

6.1 The WHO classification of thyroid cancer should be adopted using at least the four major types.

Papillary (with or without follicular foci)
Follicular (note extent of invasion of tumor capsule)
Medullary
Undifferentiated (anaplastic)
Unclassified

6.2 TUMOR GRADE (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

Eventually each major type may need to be staged separately because of the great variations in biologic behavior.

In addition to classification the following characteristics of the primary tumor should be noted: size, multicentricity, blood vessel invasion, and invasion through thyroid capsule (equivalent to clinical fixation).

7.0 REFERENCES

1. Cady B, Sedgwick CE, Meissner WA, et al: Changing clinical, pathologic, treatment and survival patterns in differentiated thyroid carcinoma. Ann Surg 183:541-553, 1976
2. Franssila KO: Prognosis in thyroid carcinoma. Cancer 36:1138-1146, 1975
3. Halnan KE: Influence of age and sex on incidence and prognosis of thyroid cancer: three hundred forty-four cases followed for ten years. Cancer 19:1534-1536, 1966
4. Heitz P, Moser H, Staub J: Thyroid cancer: a study of 573 thyroid tumors and 161 autopsy cases observed over a thirty-year period. Cancer 37:2329-2337, 1976

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6. Russell MA, Gilbert EF, Jaeschke WF: Prognostic features of thyroid cancer: a long-term follow up of 68 cases. Cancer 36:553-559, 1975
7. Woolner LB, Beahrs OH, Black BM, et al: Thyroid carcinoma: general considerations and follow-up data on 1181 cases. **In** Thyroid Neoplasia, Proceedings of the 2nd Imperial Cancer Research Fund Symposium. London, Academic Press, 1968, pp 51-99

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

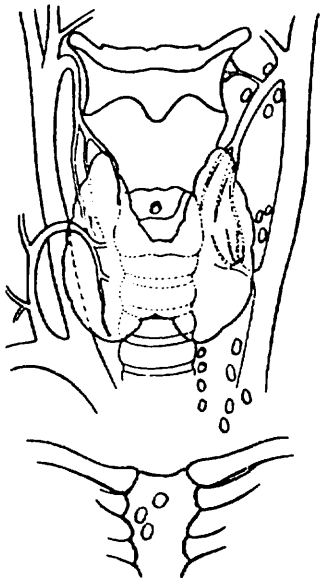
Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION — THYROID

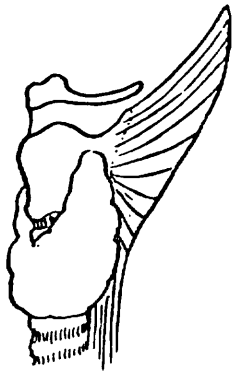
History



History of previous irradiation to head and neck area
Yes _____ No _____
Other endocrine disease present
Yes _____ No _____
Family history of thyroid cancer
Yes _____ No _____
Family history of endocrine tumors
Yes _____ No _____

Primary Tumor

Location:
Right _____ Left _____ Midline _____
Size:
Largest diameter _____ cm.
Characteristics:
Single _____ Multiple _____ Bilateral _____
Fixation (extension through thyroid capsule)
Yes _____ Massive _____ No _____
Neurologic involvement
Yes _____ No _____
Blood vessel invasion
Yes _____ No _____
Radioactive scan done
Yes _____ (Type) _____ No _____
Cold _____ Hot _____ Neither _____



Regional Lymph Nodes

NX _____
N0 _____
N1a _____
N1b _____
N1c _____
N2 _____

Classification

T _____ N _____ M _____

Stage

No stage grouping recommended

Residual Tumor

(R) _____

Host — Performance Status (H)

H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

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- T2 Fixed tumor, any size, with or without neurologic involvement
  - T2a Lateral position
  - T2b Midline position
- T3 Massive fixation of tumor, any size, with or without neurologic involvement; fistula

Nodal Involvement (N)

- NX Nodes cannot be assessed
- N0 No palpable nodes
- N1 Palpable mobile node or nodes
  - N1a Homolateral only
  - N1b Contralateral only
  - N1c Bilateral and/or midline
- N2 Any palpable fixed node

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present

  Specify _____

  Specify sites according to the following notations:

Pulmonary	PUL	Bone Marrow	MAR
Osseous	OSS	Pleura	PLE
Hepatic	HEP	Skin	SKI
Brain	BRA	Eye	EYE
Lymph Nodes	LYM	Other	OTH

HISTOPATHOLOGY

Papillary, follicular, medullary, undifferentiated, unclassified

Eventually each major type may need to be staged separately because of the great variations in biologic behavior.

In addition to classification the following characteristics of the primary tumor should be noted: size, multicentricity, blood vessel invasion, and invasion through thyroid capsule (equivalent to clinical fixation).

STAGE GROUPING

No stage grouping for thyroid cancer is recommended at this time

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

  Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE LUNG

1.0 ANATOMY

1.1 Primary Site: The mucosa lining the bronchus is the usual site of origin of cancer of the lung. The trachea, which lies in the anterior mediastinum, divides into a right and a left main bronchus that extend into the right and left lungs, respectively, and then divide into lobar bronchi for the upper, middle, and lower lobes on the right and the upper and lower lobes on the left. The lungs are encased in membranes called visceral pleura and the chest cavity is lined by a similar membrane called parietal pleura. The potential space between these two membranes is the pleural space.

1.2 Nodal Stations: The first station lymph nodes are the intrapulmonary, peribronchial, and hilar lymph nodes which are contained within the visceral pleural reflections. Second station lymph nodes are those in the mediastinum and may be paraesophageal, subcarinal, paratracheal, aortic, and pretracheal or retrotracheal. Involvement of scalene and more distant nodes is considered distant metastasis.

1.3 Metastatic Sites: Lung cancer may metastasize to any distant site, the more common being scalene, supraclavicular, and other cervical lymph nodes, liver, brain, bones, adrenals, kidney, and contralateral lung, including contralateral hilar lymph nodes.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: This should be based on the anatomic extent of the disease that can be detected by examination before thoracotomy or the implementation of any treatment. Such an examination may include a medical history, physical examination, routine and special roentgenograms, endoscopic examinations including bronchoscopy, esophagoscopy, mediastinoscopy, mediastinotomy, thoracentesis, or thoracoscopy, and any other examinations, including those used to demonstrate the presence of extrathoracic metastasis.

2.2 Surgical-Evaluative Staging: This should be based on all of the data obtained for the clinical-diagnostic classification and on information obtained at the time of exploratory thoracotomy, including biopsy but not including that information obtained by complete examination of a therapeutically resected specimen.

2.3 Postsurgical Treatment-Pathologic Staging: The surgical pathology report, and all other available data, should be used to assign a postsurgical treatment classification to those patients who have a resection.

2.4 Retreatment Staging: In the course of follow-up examinations, a patient may manifest evidence of progressive disease indicating treatment failure. Before initiating further treatment, the extent of tumor should be carefully reassessed, using all available information, and the patient should again be staged under the retreatment classification.

2.5 Autopsy Staging: In case of death of a lung cancer patient, the extent of the cancer, if any, found at autopsy may be recorded by the TNM system and an autopsy stage may be reported.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Tumor proven by the presence of malignant cells in bronchopulmonary secretions but not visualized roentgenographically or bronchoscopically, or any tumor that cannot be assessed

T0 No evidence of primary tumor

TIS Carcinoma in situ

T1 A tumor that is 3.0 cm or less in greatest diameter, surrounded by lung or visceral pleura, and without evidence of invasion proximal to a lobar bronchus at bronchoscopy

T2 A tumor more than 3.0 cm in greatest diameter, or a tumor of any size that either invades the visceral pleura or has associated atelectasis or obstructive pneumonitis extend-

ing to the hilar region. At bronchoscopy, the proximal extent of demonstrable tumor must be within a lobar bronchus or at least 2.0 cm distal to the carina. Any associated atelectasis or obstructive pneumonitis must involve less than an entire lung, and there must be no pleural effusion

T3 A tumor of any size with direct extension into an adjacent structure such as the parietal pleura or chest wall, the diaphragm, or the mediastinum and its contents; or a tumor demonstrable bronchoscopically to involve a main bronchus less than 2.0 cm distal to the carina; or any tumor associated with atelectasis or obstructive pneumonitis of an entire lung or pleural effusion

3.2 Nodal Involvement (N)

N0 No demonstrable metastasis to regional lymph nodes

N1 Metastasis to lymph nodes in the peribronchial or the ipsilateral hilar region, or both, including direct extension

N2 Metastasis to lymph nodes in the mediastinum

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify_____

5.0 STAGE GROUPING

Occult Carcinoma

TX N0 M0
An occult carcinoma with bronchopulmonary secretions containing malignant cells but without other evidence of the primary tumor or evidence of metastasis to the regional lymph nodes or distant metastasis

Stage I

TIS N0 M0
Carcinoma in situ

T1 N0 M0
T1 N1 M0
T2 N0 M0
A tumor that can be classified T1 without any metastasis or with metastasis to the lymph nodes in the peribronchial and/or ipsilateral hilar region only, or a tumor that can be classified T2 without any metastasis to nodes or distant metastasis

Note: TX N1 M0 and T0 N1 M0 are also theoretically possible, but such a clinical diagnosis would be difficult if not impossible to make. If such a diagnosis is made, it would be included in stage I

Stage II

T2 N1 M0
A tumor classified as T2 with metastasis to the lymph nodes in the peribronchial and/or ipsilateral hilar region only

Stage III

T3 with any N or M
N2 with any T or M
M1 with any T or N
Any tumor more extensive than T2, or any tumor with metastasis to the lymph nodes in the mediastinum, or any tumor with distant metastasis

Note: Staging grouping is significant for all cell types listed in 6.0 HISTOPATHOLOGY except undiffer-

entiated small cell (oat cell) carcinoma in which there is no significant relation between stage and survival rates. Nevertheless, the anatomic extent of small cell cancers may be recorded by the TNM system for future reference. This system has not been applied to the rarer lung tumors such as carcinoids, cylindromas, mucoepidermoids, etc.

6.0 HISTOPATHOLOGY

6.1 There are four major cell types of lung cancer:

1. Squamous cell (epidermoid) carcinoma
2. Adenocarcinoma including alveolar cell or terminal bronchiolar carcinoma
3. Undifferentiated large cell carcinoma
4. Undifferentiated small cell (oat cell) carcinoma

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

7.0 PERFORMANCE STATUS OF HOST (H)

7.1 Several systems for recording a patient's activity and symptoms are in use and are more or less equivalent as follows:

AJC		ECOG/ Zubrod scale	Karnofsky scale (%)
H0	Normal activity	0	90-100
H1	Symptomatic but ambulatory — cares for self	1	70-80
H2	Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3	Ambulatory less than 50% of time — nursing care needed	3	30-40
H4	Bedridden — may need hospitalization	4	10-20

8.0 REFERENCES

1. Mountain CF, Carr DT, Anderson WAD: A system for the clinical staging of lung cancer. Am J Roentgenol 120:130-138, 1974

2. Carr DT, Mountain CF: The staging of lung cancer. Semin Oncol 1:229-234, 1974

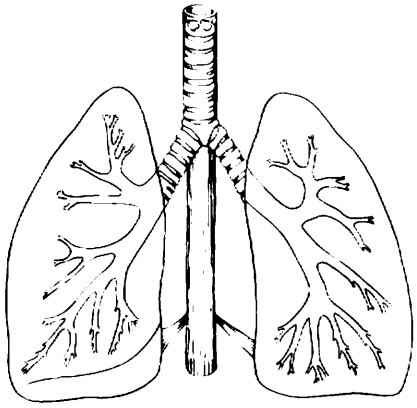
DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age ____ Sex ____ Race ____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification * cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____



Show primary tumor indicating size in cm. (greatest diameter) and measurability:
EV = evaluable
ME = measurable
NE = nonevaluable

SITE-SPECIFIC INFORMATION — LUNG
Directions: Encircle the T, N, and M rating that is most accurate for the patient's cancer. Encircle the value for each rating and add to obtain the total value. Consult the table at the bottom of the form to determine the stage.

Primary Tumor (T)	Value
TX	0
T0	0
TIS	1
T1	1
T2	2
T3	4
Regional Lymph Nodes (N)	
N0	0
N1	1
N2	4
Distant Metastasis (M)	
M0	0
M1	4

Total Value _____

Total value	Stage
0	Occult carcinoma
1 or 2	I
3	II
4 or more	III

Classification
T ____ N ____ M____

Stage _____

Residual Tumor (R) _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- TX Tumor proven by the presence of malignant cells in bronchopulmonary secretions but not visualized roentgenographically or bronchoscopically, or any tumor that cannot be assessed
- T0 No evidence of primary tumor
- TIS Carcinoma in situ
- T1 Tumor 3.0 cm or less in greatest diameter, surrounded by lung or visceral pleura, and without evidence of invasion proximal to a lobar bronchus at bronchoscopy
- T2 Tumor more than 3.0 cm in greatest diameter, or a tumor of any size that either invades the visceral pleura or has associated atelectasis or obstructive pneumonitis extending to the hilar region. At bronchoscopy, the proximal extent of demonstrable tumor must be within a lobar bronchus or at least 2.0 cm distal to the carina. Any associated atelectasis or obstructive pneumonitis must involve less than an entire lung and there must be no pleural effusion
- T3 Tumor of any size with direct extension into an adjacent structure such as the parietal pleura or the chest wall, the diaphragm, or the mediastinum and its contents; or a tumor demonstrable bronchoscopically to involve a main bronchus less than 2.0 cm distal to the carina; or any tumor associated with atelectasis or obstructive pneumonitis of an entire lung or pleural effusion

Nodal Involvement (N)

- N0 No demonstrable metastasis to regional lymph nodes
- N1 Metastasis to lymph nodes in the peribronchial or the ipsilateral hilar region, or both, including direct extension
- N2 Metastasis to lymph nodes in the mediastinum

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present
  Specify _____
  Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

HISTOPATHOLOGY

Squamous cell carcinoma, adenocarcinoma, undifferentiated large cell, undifferentiated small cell (oat cell cancer)

GRADE

Well-differentiated, moderately well-differentiated, poorly to very differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Occult stage	TX N0 M0	Occult carcinoma with bronchopulmonary secretions containing malignant cells but without other evidence of the primary tumor or evidence of metastasis to the regional lymph nodes or distant metastasis
Stage I	TIS N0 M0	Carcinoma in situ
	T1 N0 M0 T1 N1 M0 T2 N0 M0	Tumor that can be classified T1 without any metastasis or with metastasis to the lymph nodes in the peribronchial and/or ipsilateral hilar region only or a tumor that can be classified T2 without any metastasis to nodes or distant metastasis *NOTE: TX N1 M0 and T0 N1 M0 are also theoretically possible, but such a clinical diagnosis would be difficult if not impossible to make. If such a diagnosis is made, it should be included under stage I*
Stage II	T2 N1 M0	Tumor classified as T2 with metastasis to the lymph nodes in the peribronchial and/or ipsilateral hilar region only
Stage III	T3 with any N or M N2 with any T or M M1 with any T or N	Any tumor more extensive than T2, or any tumor with metastasis to the lymph nodes in the mediastinum, or any tumor with distant metastasis

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor
  Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod Scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE ESOPHAGUS

1.0 ANATOMY

1.1 Primary Site: For purposes of classification, staging, and reporting of cancer of the esophagus, the esophagus is considered as consisting of three principal regions. These regions are to be classified and reported separately. The **cervical esophagus** extends from the pharyngeal-esophageal junction (the cricopharyngeal sphincter) down to the level of the thoracic inlet, about 18 cm from the upper incisor teeth. The **upper and midthoracic esophagus** extends from the thoracic inlet to a point 10 cm above the esophagogastric junction, which is usually at the level of the lower border of the eighth thoracic vertebra and about 31 cm from the upper incisor teeth. The **lower thoracic esophagus** extends from a point 10 cm above the esophagogastric junction to the cardiac orifice of the stomach, which is about 40 cm from the upper incisor teeth.

1.2 Nodal Stations: The regional lymph nodes for the cervical esophagus are the cervical or supraclavicular nodes, or both. For the thoracic esophagus, the regional nodes are the adjacent mediastinal lymph nodes. Involvement of more distant nodes is considered distant metastasis.

1.3 Metastatic Sites: The liver, lungs, and adrenals are the commonest sites of distant metastases in other organs. Remote metastasis from carcinoma of the esophagus, while ultimately fatal, often carries a better intermediate prognosis than when the primary lesion has extended outside the esophagus, a condition that is rapidly fatal.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: This classification is based on the anatomic extent of cancer that can be detected by examination before any treatment. Such an examination may include a medical history, physical examination, routine and special roentgenograms, endoscopic examinations including mediastinoscopy, mediastinotomy, thoracentesis, or thoracoscopy, and other special examinations including those used to demonstrate the presence of distant metastasis.

2.2 Surgical-Evaluative Staging: Patients on whom evaluative procedures are performed, such as exploratory thoracotomy (including biopsy), are included in this classification. The surgical-evaluative classification should be based on all data obtained for the clinical classification and information derived from exploratory surgery, including biopsy of mediastinal and abdominal nodes but not including information obtained by gross and histologic examination of therapeutically resected specimens.

2.3 Postsurgical Treatment-Pathologic Staging: Esophageal cancer patients having similar therapeutic resections may be classified in a postsurgical treatment classification. This classification should be based on all data described in the clinical-diagnostic and surgical-evaluative classifications, as well as on that information derived from complete histologic examination of resected specimens.

2.4 Retreatment Staging: In the course of follow-up examinations, a patient may manifest evidence of progressive disease indicating treatment failure. Before initiating further treatment, the extent of tumor should be carefully reassessed, using all available information, and the patient should again be staged under the retreatment classification.

2.5 Autopsy Staging: In case of death of an esophageal cancer patient, the extent of the cancer, if any is found at autopsy, may be recorded by the TNM system and an autopsy stage may be reported.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T) (for all three segments of the esophagus)

T0 No demonstrable tumor in the esophagus

TIS Carcinoma in situ

T1 A tumor that involves 5 cm or less of esophageal length, that produces no obstruction*, and that has no circumferential involvement and no extraesophageal spread†

T2 A tumor that involves more than 5 cm of esophageal length without extraesophageal spread† or a tumor of any size which produces obstruction* or that involves the entire circumference but without extraesophageal spread

T3 Any tumor with evidence of extraesophageal spread†

*Roentgenographic evidence of significant impediment to the passage of liquid contrast material past the tumor or endoscopic evidence of esophageal obstruction.

†Extension of cancer outside the esophagus is seen by clinical, roentgenographic, or endoscopic evidence of:

1. Recurrent laryngeal, phrenic, or sympathetic nerve involvement
2. Fistula formation
3. Involvement of the tracheal or bronchial tree
4. Vena cava or azygos vein obstruction
5. Malignant effusion: mediastinal widening itself is not evidence of extraesophageal spread.

3.2 Nodal Involvement (N)

Cervical esophagus: The regional lymph nodes in the cervical esophagus are the cervical and supraclavicular nodes

N0 No clinically palpable nodes

N1 Movable, unilateral, palpable nodes

N2 Movable, bilateral, palpable nodes

N3 Fixed nodes

Thoracic esophagus:
NX (clinical evaluation)
Regional lymph nodes for the upper, midthoracic, and lower thoracic esophagus that are not ordinarily accessible for clinical evaluation

N0 (surgical evaluation)
No positive nodes

N1 (surgical evaluation)
Positive nodes

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis*

M1 Distant metastasis present
Specify _____

*In the cervical esophagus, any lymph node involvement other than that of cervical or supraclavicular lymph nodes is considered distant metastasis. For the thoracic esophagus any cervical, supraclavicular, scalene, or abdominal lymph nodes are considered distant metastasis.

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

The various TNM classifications can be gathered together to represent three major groups of patients: (1) those patients with a fairly good prognosis when dealt with by present-day therapeutic methods, (2) those whose course is fulminating and rapidly fatal, and (3) those whose course lies between, including those who have little or no chance of cure but who may often live for varying periods.

Stage I

TIS N0 M0
Carcinoma in situ

T1 N0 M0
T1 NX M0
Tumor in any region of the esophagus that involves ≤ 5 cm of esophageal length, produces no obstruction, has no extraesophageal spread, does not involve the entire circumference, and shows no regional lymph node metastases or remote metastases

Stage II
A tumor of any size with no extraesophageal spread and with no distant metastasis

Cervical esophagus:

T1 N1 M0
T1 N2 M0
T2 N1 M0
T2 N2 M0
Any tumor with palpable, movable, regional nodes

T2 N0 M0
A tumor >5 cm in length with negative nodes

Thoracic esophagus:

T2 NX M0
Lymph nodes cannot be assessed (clinical-diagnostic evaluation)

T2 N0 M0
No lymph node involvement (postsurgical treatment-pathologic evaluation) >5 cm in length, or a tumor of any size with obstruction or circumferential involvement

Stage III

Any esophageal cancer at any level with:

Any T3	1. Distant metastases
Any N3	2. Extraesophageal spread
(cervical)	3. Fixed lymph node metastases
Any N1 (thoracic)	Any intrathoracic esophageal carcinoma including either upper and midthoracic region or
Any M1	lower thoracic region with any positive findings in regional lymph nodes

6.0 HISTOPATHOLOGY

6.1 Approximately 98% of esophageal cancers are squamous cell carcinomas and approximately 2% are adenocarcinomas. Rarely do various sarcomas and melanomas occur.

6.2 Tumor Grade (G)

G1	Well-differentiated
G2	Moderately well-differentiated
G3-G4	Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

7.0 PERFORMANCE STATUS OF HOST (H)

7.1 Several systems for recording a patient's activity and symptoms are in use and are more or less equivalent as follows:

AJC	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal Activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

8.0 REFERENCES

1. Moertel CG: Alimentary Tract Cancer. **In** Cancer Medicine. Edited by J. F. Holland and E. Frei III. Lea & Febiger, Philadelphia, 1973, pp 1519-1525

2. Appelqvist P: Carcinoma of the oesophagus and gastric cardia: a retrospective study based on statistical and clinical material from Finland. Acta Chir Scand [Suppl] 430:1-92 1972

DATA FORM FOR CANCER STAGING

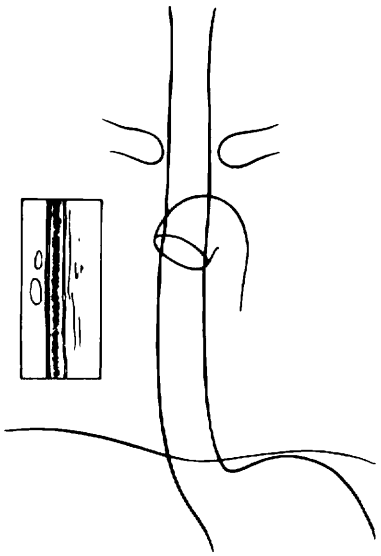
Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION — ESOPHAGUS



	Limits	
Distance from Incisors	Upper	Lower
Cervical < 18 cm	_____	_____
Upper thoracic 18-30 cm	_____	_____
Lower thoracic > 30 cm	_____	_____

Histology
SCE _____ Other _____
Length of tumor, _____ cm

	Yes	No
Encircles esophagus	_____	_____
Evidence of obstruction	_____	_____
Extraesophageal extension		
Nerve involvement	_____	_____
Tracheobronchial tree	_____	_____
Caval obstruction	_____	_____
Pleural effusion	_____	_____
Mediastinal widening (not necessarily evidence of extraesophageal spread)	_____	_____
Lymph Nodes		
Palpable	_____	_____
Bilateral	_____	_____
Fixed	_____	_____

Number _____
Size of largest node _____ cm^2

	Clinical	Surgical	Radiologic
Location			
Cervical	_____	_____	_____
Supraclavicular	_____	_____	_____
Intrathoracic	_____	_____	_____
Abdominal	_____	_____	_____
Metastasis			
Distant lymph nodes	_____	_____	_____
Lung	_____	_____	_____
Bone	_____	_____	_____
Liver	_____	_____	_____
Other	_____	_____	_____

Classification
T _____ N _____ M _____
Stage _____
Residual Tumor
(R) _____
Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, re-treatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T) (for all three segments of the esophagus)

- T0 No demonstrable tumor in the esophagus
- TIS Carcinoma in situ
- T1 A tumor ≤5 cm in esophageal length with no obstruction*, no circumferential involvement, and no extraesophageal spread†
- T2 A tumor >5 cm in esophageal length with no extraesophageal spread† or a tumor of any size which obstructs* or has circumferential involvement and with no extraesophageal spread
- T3 Any tumor with extraesophageal spread†

*Roentgenographic evidence of significant impediment to the passage of liquid contrast material past the tumor or endoscopic evidence of esophageal obstruction

†Extension of cancer outside the esophagus is seen by clinical, roentgenographic, or endoscopic evidence of:

1. Recurrent laryngeal, phrenic, or symphathetic nerve involvement
2. Fistula formation
3. Involvement of the tracheal or bronchial tree
4. Vena cava or azygos vein obstruction
5. Malignant effusion: mediastinal widening itself is not evidence of extraesophageal spread

Nodal Involvement (N)

Cervical esophagus: the regional lymph nodes in the cervical esophagus are the cervical and supraclavicular nodes

- N0 No clinically palpable nodes
- N1 Movable, unilateral, palpable nodes
- N2 Movable, bilateral, palpable nodes
- N3 Fixed nodes

Thoracic esophagus:

- NX (clinical evaluation) Regional lymph nodes for the upper, midthoracic, and lower thoracic esophagus that are not ordinarily accessible for clinical evaluation
- N0 (surgical evaluation) No positive nodes
- N1 (surgical evaluation) Positive nodes

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis*
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

*For the cervical esophagus, any lymph node involvement other than that of cervical or supraclavicular lymph nodes, is considered distant metastasis. For the thoracic esophagus, any cervical, supraclavicular, scalene, or abdominal lymph node is considered distant metastasis.

HISTOPATHOLOGY

Squamous cell carcinoma, adenocarcinoma. Rarely do sarcomas and melanomas occur

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I
- TIS N0 M0 Carcinoma in situ
- T1 N0 M0, T1 NX M0 Tumor in any region of the esophagus that involves ≤5 cm of esophageal length, produces no obstruction, has no extraesophageal spread, does not involve the entire circumference, and shows no regional lymph node metastases or remote metastases

Stage II A tumor of any size with no extraesophageal spread and with no distant metastases

Cervical esophagus:
- T1 N1 M0
- T1 N2 M0 Any tumor with palpable, movable, regional nodes
- T2 N1 M0
- T2 N2 M0

- T2 N0 M0 A tumor > 5 cm in length with negative nodes

Thoracic esophagus:
- T2 NX M0 Lymph nodes cannot be assessed (clinical-diagnostic evaluation)
- T2 N0 M0 No lymph node involvement (postsurgical treatment-pathologic evaluation) >5 cm in length, or a tumor of any size with obstruction or circumferential involvement

Stage III

Any T3, Any N3 (cervical), Any N1 (thoracic), Any M1

Any esophageal cancer at any level with:
1. Distant metastases
2. Extraesophageal spread
3. Fixed lymph nodes metastases

Any intrathoracic esophageal carcinoma including either upper and midthoracic region or lower thoracic region with any positive findings in regional lymph nodes

Residual Tumor (R)
- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE STOMACH

The stage classification for carcinoma of the stomach as an aid in selecting treatment is based on the clinical extent of the disease as demonstrated by clinical examination and by roentgenographic and endoscopic studies.* A staging classification for end-results reporting is based on the extent of disease at the time of surgical exploration of the abdomen, histopathologic study of the excised surgical specimen, or clinical examination (in advanced disease).

Only those cases that have histologically proven primary carcinoma or histologically proven metastasis with clinical evidence of a primary tumor in the stomach are to be included in this classification.

The prognosis of carcinoma of the stomach depends on the degree of penetration of the stomach wall by the primary lesion. Size or location of the primary tumor is of less significance. The histologic classification of carcinoma of the stomach is not helpful in assessing prognosis.

The clinical classification defines the extent of disease in terms of three components: (1) the primary tumor, designated by the letter T and expressed in terms of the degree of penetration by the cancer through the stomach wall; (2) the regional lymph nodes, designated by the letter N, which are the intra-abdominal subdiaphragmatic nodes; and (3) distant metastasis, designated by the letter M.

For clinical-diagnostic classification, the primary tumor will always be designated by the letter cT and for postsurgical treatment-pathologic classification, by the letters pT. The description of the primary lesion is similar for the clinical-diagnostic and postsurgical treatment-pathologic classifications.

*A conference was held in June 1975 between representatives of the AJC Task Force and the Japanese TNM Committee to consider staging of cancer of the stomach. General agreement was reached on most areas. Variances do exist in that the Japanese TNM members felt that the area of the stomach in which the tumor is located is a factor in staging. Also, it was their feeling that the capabilities of endoscopic diagnosis were refined to the point where the extent of the primary tumor could be determined clinically. At the present time neither of these factors are included in the AJC recommendations.

1.0 ANATOMY

1.1 Primary Site: The stomach may be divided into three regions: upper third, middle third, and lower third. In order to delimit these regions, the lesser and greater curves of the stomach are divided into three equidistant points that are then joined — the upper third being the cardiac area and fundus, the middle third the body, and the lower third the antrum.

1.2 Nodal Stations: The major lymphatic collecting trunks are parallel with the left gastric artery, the splenic artery, and the hepatic artery. The major first station nodes are the lesser curvature, left gastropancreatic, juxtacardiac, gastroduodenal, gastropyloric, suprapyloric, pancreatoduodenal, celiac, splenic, and hepatic lymph nodes. The second station nodes include the paraaortic nodes.

1.3 Metastatic Sites: Distant spread to liver, bone, supraclavicular lymph nodes, and lung are common, but widespread visceral involvement occurs.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The clinical assessment of the primary tumor includes medical history, physical examination, routine and special roentgenograms (e.g., fluoroscopy, barium studies), endoscopy, laparoscopy, echography, computerized tomography, and biopsy. As the newer techniques are improved and gain wider use, clinical staging can be more reliable.

2.2 Surgical-Evaluative Staging: Procedures such as exploratory laparotomy and palpation of the primary tumor site, regional lymph nodes, and liver, including biopsy, are used.

2.3 Postsurgical Treatment-Pathologic Staging: Partially and completely resected stomach specimens and regional nodes allow for the use of this staging designation.

2.4 Retreatment Staging: Available procedures, as noted above, should be utilized

to firmly establish histopathologic evidence of recurrence and its extent, including local recurrence, regional node involvement, and distant metastasis.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

The principal factor is the degree of penetration of the stomach wall by the carcinoma.

- TX Degree of penetration of stomach wall not determined
- T0 No evidence of primary tumor
- T1 Tumor limited to mucosa or mucosa and submucosa regardless of its extent (or location)
- T2 Tumor involves the mucosa, the submucosa (including the muscularis propria), and extends to or into the serosa but does not penetrate through the serosa
- T3 Tumor penetrates through the serosa without invading contiguous structures
- T4 Tumor penetrates through the serosa and invades contiguous structures

3.2 Nodal Involvement (N)

The regional lymph nodes are the intra-abdominal subdiaphragmatic nodes.

- NX Metastases to intra-abdominal lymph nodes not determined (i.e., laparotomy not done)
- N0 No metastases to regional lymph nodes
- N1 Involvement of perigastric lymph nodes within 3 cm of the primary tumor along the lesser or greater curvature
- N2 Involvement of the regional lymph nodes farther than 3 cm from the primary tumor, which are removed or removable at operation, including those located along the left gastric, splenic, celiac, and common hepatic arteries
- N3 Involvement of other intra-abdominal lymph nodes such as the para-aortic, hepatoduodenal, retropancreatic, and mesenteric nodes

3.3 Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present
  Specify _____

Specify sites according to the following notations:

Peritoneal - PER
Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
(above diaphragm or nonabdominal)
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

5.0 STAGE GROUPING

The TNM classification should be recorded for each patient.

A. Postsurgical Treatment-Pathologic Stage Grouping

Stage I

pT1, N0, M0
Tumor confined to the mucosa and submucosa pT1

No metastasis in regional lymph nodes N0

No distant metastasis M0

Stage II

pT2, N0, M0
Tumor involving the mucosa and the submucosa, including the muscularis propria, and extending to or to or into the serosa, but not penetrating through the serosa pT2

No metastasis in regional lymph nodes N0

No distant metastasis M0

pT3, N0, M0
Tumor penetrating through the serosa without invasion of contiguous structures pT3

No metastasis in regional lymph nodes N0

No distant metastasis M0

Stage III

pT4, N0, M0
Tumor penetrates through the serosa with invasion of contiguous structures pT4

No lymph nodes involved N0

No distant metastasis M0

or

pT1-3, N1, M0
pT1-3, N2, M0
pT1-3, N3, M0
pT4, N0-3, M0

Any involvement of the stomach wall as defined by pT1 to pT4 and including involvement of the intra-abdominal nodes **resected for cure.** No distant metastasis

Stage IV

pT4, N0-3, M0
pT1-3, N3, M0
Tumor involving the stomach wall with invasion of contiguous structures (pT4) and any regional nodal involvement not resectable for cure

or

M1 with any T and any N

Any carcinoma of the stomach with distant metastasis (M1), including those with TX or NX

B. Clinical Stage Grouping

At present, it is not feasible to establish a satisfactory clinical stage grouping according to the clinical descriptions of the primary tumor without reliable knowledge of regional node involvement. However, a proposed clinical stage grouping will provide a basis for the future, after development of improved diagnostic techniques.

5.1 SUMMARY: STAGE GROUPING OF CARCINOMA OF THE STOMACH

Stage	Clinical-Diagnostic Staging	Postsurgical Treatment-Pathologic Staging
I	cT1, N0, M0	pT1, N0, M0
II	cT1, N0, M0* cT3, N0, M0	pT2, N0, M0 pT3, N0, M0
III	cTX-3, N1-3†, M0	pT1-3, N1, M0 pT1-3, N2, M0 pT1-3, N3, M0 (resected for cure) pT4, N0-3, M0 (resected for cure)
IV	cT4, NX-3†, M0 (probably not resectable)	pT1-3, N3, M0 pT4, N0-3, M0 (not resectable)
	cTX-4, NX-3, M1	pT1-4 or pTX, or N0-3 or NX, M1

*Not applicable — at present there is no reliable clinical method of determining the extent of T2 lesions.

†Established by clinical criteria (e.g., echogram, computerized tomography).

6.0 HISTOPATHOLOGY

The predominant cancer is adenocarcinoma, most often poorly differentiated and infrequently well-differentiated.

6.1 Tumor Grade (G)

G1	Well-differentiated
G2	Moderately well-differentiated
G3-G4	Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

7.0 REFERENCE

1. Lim FE, Hartman AS, Tan EG, et al: Factors in the prognosis of gastric lymphoma. Cancer 39:1715-1720, 1977

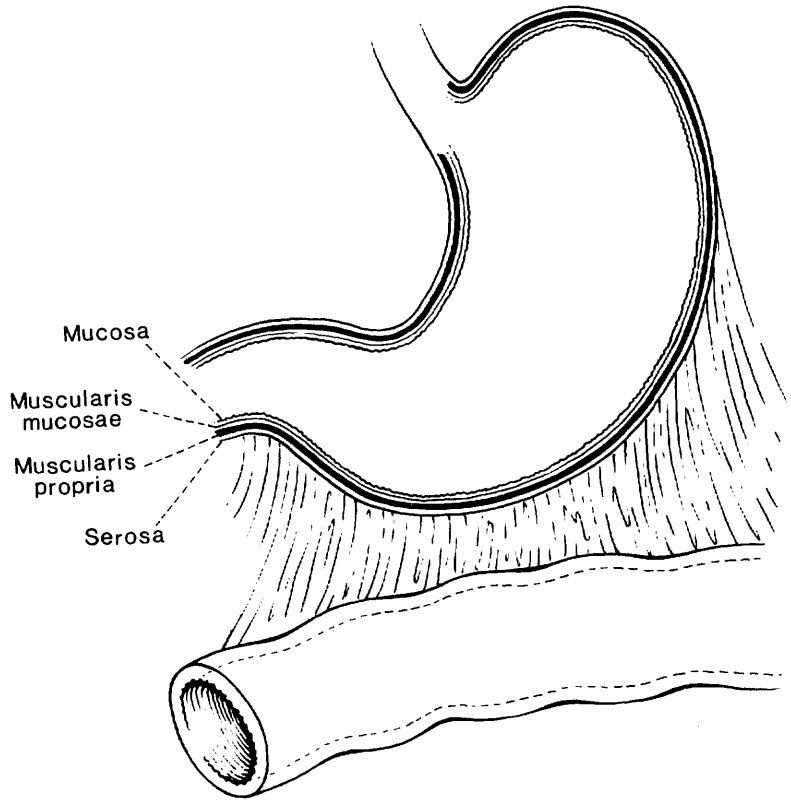
DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____



SITE-SPECIFIC INFORMATION — STOMACH

Primary Tumor
Site _____
Size _____
Depth of penetration _____
Layers involved _____
Method(s) of Determination
_____
_____

Nodes
Negative _____
Positive _____
Groups involved _____
_____

Metastasis
Negative _____ Positive _____
Sites _____
Methods of determination _____
_____

Classification
T _____ N _____ M _____
Stage _____
Residual Tumor
R _____
Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- TX Degree of penetration of stomach wall not determined
- T0 No evidence of primary tumor
- T1 Tumor limited to mucosa and submucosa regardless of its extent or location
- T2 Tumor involves the mucosa, the submucosa (including the muscularis propria), and extends to or into the serosa, but does not penetrate through the serosa
- T3 Tumor penetrates through the serosa without invading contiguous structures
- T4 Tumor penetrates through the serosa and invades the contiguous structures

Nodal Involvement (N)

- NX Metastases to intra-abdominal lymph nodes not determined (e.g., laparotomy not done)
- N0 No metastases to regional lymph nodes
- N1 Involvement of perigastric lymph nodes within 3 cm of the primary tumor along the lesser or greater curvature
- N2 Involvement of the regional lymph nodes, more than 3 cm from the primary tumor, which are removable at operation, including those located along the left gastric, splenic, celiac, and common hepatic arteries
- N3 Involvement of other intra-abdominal lymph nodes which are not removable to operation, such as the para-aortic, hepatoduodenal, retropancreatic, and mesenteric nodes

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present
  Specify _____
  Specify sites according to the following notations:

Peritoneal - PER	Bone Marrow - MAR
Pulmonary - PUL	Pleura - PLE
Osseous - OSS	Skin - SKI
Hepatic - HEP	Eye - EYE
Brain - BRA	Other - OTH
Lymph Nodes - LYM (above diaphragm or nonabdominal)	

HISTOPATHOLOGY

Predominant cancer is adenocarcinoma

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4.

STAGE GROUPING

Stage	Clinical-Diagnostic Staging	Postsurgical Treatment-Pathologic Staging
I	cT1, N0, M0	pT1, N0, M0
II	cT1, N0, M0*	pT2, N0, M0
	cT3, N0, M0	pT3, N0, M0
III	cTX-3, N1-3†, M0	pT1-3, N1, M0
		pT1-3, N2, M0
		pT1-3, N3, M0 (resected for cure)
IV	cT4, NX-3†, M0 (probably not resectable)	pT1-3, N3, M0
		pT4, N0-3, M0 (not resectable)
	cTX-4, NX-3, M1	pT1-4 or pTX, or N0-3 or NX, M1

*Not applicable — at present there is no reliable clinical method of determining the extent of T2 lesions.
†Established by clinical criteria (e.g., echogram, computerized tomography).

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor
  Specify _____

HOST (H) — Performance Status of Host		ECOG/ Zubrod scale	Karnofsky scale (%)
H0	Normal activity	0	90-100
H1	Symptomatic but ambulatory — cares for self	1	70-80
H2	Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3	Ambulatory less than 50% of time — nursing care needed	3	30-40
H4	Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE COLON AND RECTUM

In retrospective studies, inadequacies of the clinical data prohibited the development of meaningful clinical and surgical-evaluative classifications (sTNM) for either site individually. Generally, however, the data were sufficiently reliable and consistent when based on postsurgical treatment information to permit development of a staging system for those cases in which histopathologic examination of therapeutically resected specimens was done (pTNM). In both sites, analysis of the postsurgical treatment data suggested that prognosis was related to the depth of penetration of the tumor, regional lymph node involvement, presence or absence of distant metastases, and complications, such as the presence of fistula. A comparison of survival data for the colon with that of the rectum, based on penetration (pT), lymph node status (N), and distant metastases (M), showed such a similarity as to suggest the practicality of developing from the retrospective data one set of pTNM categories for postsurgical treatment evaluation and one set of stage grouping definitions. However, in any analysis of postsurgical treatment evaluation and stage groupings, the two sites should be kept separate.

1.0 ANATOMY

1.1 Primary Site: The large intestine (or colon) extends from the terminal ileum to the anal canal, although for simplicity it may be divided into three subdivisions exclusive of the rectum: right, middle, and left. Still more simply, the large intestine may be divided into the intraperitoneal colon and the rectum (distal 10 cm). All intraperitoneal colonic lesions are treated similarly. The rectal lesions are handled quite differently; some have a somewhat worse prognosis. However, the conventional, more minute subdivisions will be described briefly inasmuch as they may be of relevance in prospective studies concerned with carcinogenesis, classification, staging, and reporting of cancer of the colorectum.

The junction of the ileum and cecum is marked by the ileocecal valve, which is an anteroposterior slit formed by the partial invagination of the distal end of the ileum into the cecum.

The cecum is a large pouch that constitutes the proximal segment of the large intestine, measures about 6 by 9 cm, and is invested completely by the peritoneum. The vermiform appendix arises from the medial and posterior aspect of the cecum below the ileocecal junction. The appendix, therefore, may lie in any axis of a circle, the center of the circle being represented by the cecal attachment. The ascending colon is 15-20 cm long and is ordinarily retroperitoneal.

Lying at the undersurface of the right lobe of the liver and close to the duodenum and the right kidney, the hepatic flexure presents a difficult problem of differential diagnosis, and cancer at this site may invade these organs relatively early.

The transverse colon lies in a more anterior position than do other portions of the colon, so tumors here should be more readily palpable. It is supported by the transverse mesocolon, which in turn is attached to the pancreas. Anteriorly, its serosa is contiguous with the gastrocolic ligament, which is attached to the stomach.

The splenic flexure lies at a higher level and is more fixed than the hepatic flexure; it is intimately related to the spleen, the tail of the pancreas, and the left kidney. The descending colon, 10 to 15 cm long, is only partially invested by peritoneum, the posterior portion being in a retroperitoneal position.

The sigmoid loop extends from the medial border on the left psoas major muscle to the beginning of the rectum. It is suspended by its mesocolon (the sigmoid mesocolon), which is variable in length. When the mesocolon is excessively long, the resulting "redundant" sigmoid may come to lie in the right lower quadrant of the abdomen.

The rectum, about 12 cm long, extends from a point opposite the third sacral vertebra down to the apex of the prostate in the male and to the apex of the perineal body in the female, that is, to a point 4 cm anterior to the tip of the coccyx. (Arbitrarily, it may be defined as the distal 10 cm of the large intestine, as measured by preoperative sigmoidos-

copy from the anal verge.) From the anal mucocutaneous junction, it extends approximately 10 to 12 cm. The rectosigmoid area is considered as being 10 to 15 cm from the anal mucocutaneous junction. In this retrospective study, all rectosigmoid cases have been grouped with those of the rectum. The rectum has no epiploic appendages, no haustrations, and no taeniae. It is covered by peritoneum in front and on both sides in its upper third and on the anterior wall only in its middle third; there is no peritoneal covering in the lower third. In the lower rectum, the mucosa is thrown into longitudinal folds known as the rectal columns or the columns of Morgani. Between them, just above the white line of Hilton, are the anal pits or sinuses.

About 4 cm long, the anal canal courses downward and backward from the apex of the prostate or the perineal body. The anocutaneous line, or white line of Hilton, at the base of the rectal columns marks the site of the original anal membrane that separated the entodermal gut from the ectodermal proctoderm.

1.2 Nodal Stations: Whenever possible, the status of the **principal lymph nodes** at the base of the mesocolon should be recorded, **namely those proximal to the origins of the ileocolic, right colic, middle colic, and inferior mesenteric arteries.** As will be noted in the definitions under N and for stage, **involvement of the principal (para-aortic) lymph nodes,** in contrast to involvement of intervening nodes, **constitutes distant metastasis.** Intervening, or regional, nodes are: **intermediate** (along the course of the major vessels supplying the colon), **paracolic** (following the vascular arcades of Drummond's marginal artery), and **epicolic** (in close proximity to the colon, being found along the mesocolic border of the colon and often in the epiploic appendages).

Although the flow of lymph usually traverses each group of nodes from the epiploic to the principal nodes, occasionally it flows directly to the intermediate or even to the principal nodes, bypassing those that intervene. (Increasing use of the "no-touch" isolation technique in resecting colonic lesions has been thought by some to minimize the degree to which lymph node involvement, N, can be assessed as a component of the surgical-evaluative classification. However, nodes can be evaluated after the vascular supply has been ligated, even with the "no-touch" technique.)

Listed below are the regional lymph nodes for each colorectal segment:

Segment	Regional Lymph Nodes
Cecum	Anterior cecal; posterior cecal; ileocolic
Ascending colon	Ileocolic; right colic; middle colic
Hepatic flexure	Right colic; middle colic
Transverse colon	Middle colic
Splenic flexure, Descending colon, Sigmoid colon	Left colic; inferior mesenteric
Rectosigmoid	Perirectal; left colic; sigmoid mesenteric; inferior mesenteric
Rectum	Perirectal; left colic; sigmoid mesenteric; inferior mesenteric; internal iliac (hypogastric); lateral sacral; common iliac; sacral promontory (Gerota)

Note: Lymph nodes between origins of the inferior and superior mesenteric arteries are nonresectable, for example, superior mesenteric lymph nodes. Therefore, although regional in the classic anatomic sense, they are designated "distant" for purposes of clinical stage classification. (Colonic resections are distal to the superior mesenteric artery and its contiguous nodes.) Similarly, lymph flow from the lower rectum may be to regional lymph nodes (i.e., internal iliac [hypogastric], common iliac, lateral sacral, or sacral promontory), which are not resected at the time of an abdominoperineal resection but may be resected as a separate procedure.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: Clinical assessment includes medical history, physical examination, routine and special roentgenograms (including barium

enema and fluoroscopy), sigmoidoscopy, colonoscopy (with biopsy of lesions above the level of the sigmoid colon), fiberoptics (with biopsy when possible), cytologic examination of colon washings, laboratory examinations (e.g., occult blood determination in the stool), chorionic embryonic antigen (CEA) assay, and special examinations used to demonstrate the presence of extracolonic metastasis (e.g., chest films, blood counts, liver chemistries).

2.2 Surgical-Evaluative Staging: This should include all the data that would be obtained for clinical classification, as well as the information obtained at the time of exploratory laparotomy, including biopsy, but not including information obtained by complete histopathologic examination of a therapeutically resected specimen.

2.3 Postsurgical Treatment-Pathologic Staging: This classification describes the known extent of the colorectal carcinoma after complete examination of the resected specimen. Important determinants of survival in the pTNM classification are the depth of tumor penetration, involvement of regional lymph nodes, and presence of distant metastasis. Other factors associated with survival are local intravasal invasion (venous or lymphatic), grade, and presence or absence of fistula.

3.0 TNM CLASSIFICATION

The definitions of TNM categories for carcinoma of the colon and rectum follow. Each case must be assigned the highest category of T, N, and M that describes the full extent of disease in that case.

3.1 Primary Tumor (T)

TX Depth of penetration not specified

T0 No clinically demonstrable tumor

TIS Carcinoma in situ (no penetration of lamina propria)

T1 Clinically benign lesion or lesion confined to the mucosa or submucosa

T2 Involvement of muscular wall or serosa, no extension beyond

T3 Involvement of all layers of colon or rectum with extension to immediately adjacent structures or organs or both, with no fistula present

T4 Fistula present along with any of the above degrees of tumor penetration

T5 Tumor has spread by direct extension beyond the immediately adjacent organs or tissues

3.2 Nodal Involvement (N)

NX Nodes not assessed or involvement not recorded

N0 Nodes not believed to be involved

N1 Regional nodes involved (distal to inferior mesenteric artery)

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present (including extra-abdominal nodes; intra-abdominal nodes proximal to mesocolon and inferior mesenteric artery [see N1]; peritoneal implants, liver, lungs, and bones)
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Add "+" to the abbreviated notation to indicate that the pathology (p) is proven.

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

Stage 0

TIS N0 M0
Carcinoma in situ as demonstrated by histologic examination of tissue (biopsy or other)

Stage I

Stage IA
T0,1 N0 M0
T0,1 NX M0
Tumor confined to mucosa or submucosa with no demonstrable metastasis to regional lymph nodes and no evidence of distant metastasis

Stage IB
T2 N0 M0
T2 NX M0
Tumor involves muscularis but has not extended beyond serosa with no demonstrable metastasis to regional lymph nodes and no evidence of distant metastasis

Stage II

T3-5 N0 M0
T3-5 NX M0
A tumor that has extended beyond the bowel wall or serosa with no demonstrable metastasis to regional lymph nodes and no evidence of distant metastasis

Stage III

Any T N1 M0
Any degree of penetration of bowel or rectal wall by tumor with metastasis to regional lymph nodes but no evidence of distant metastasis

Stage IV

Any T Any N M1
Any degree of penetration of bowel or rectal wall by tumor with or without metastasis to regional lymph nodes and with evidence of distant metastasis

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is adenocarcinoma; pathologic diagnosis is required to utilize this classification. Tumor grading is recommended. Reference to WHO nomenclature is advised.

6.2 Other determinants of probable importance to be evaluated in prospective studies of postsurgical treatment assessment are tumor margin circumscription, histopathologic differentiation (e.g., nuclear grade, growth pattern, and mucin production), and host-cellular reaction (lymphocyte and plasma cell infiltration in and about the tumor as well as in contiguous tissues). It is essential that in each case the specific histologic type and the presence or absence of intravasal permeation (lymphatic, venous, or both) be routinely recorded.

6.3 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

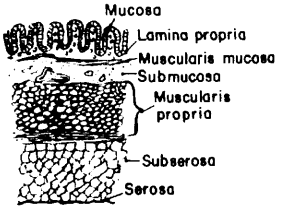
Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

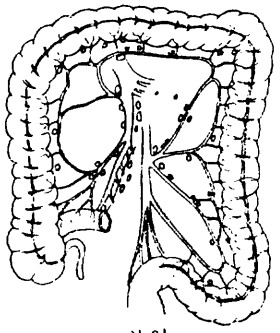
Institutional Identification
Hospital or Clinic _____
Address _____

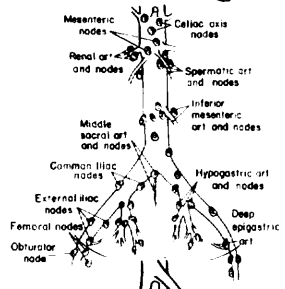
ONCOLOGY RECORD

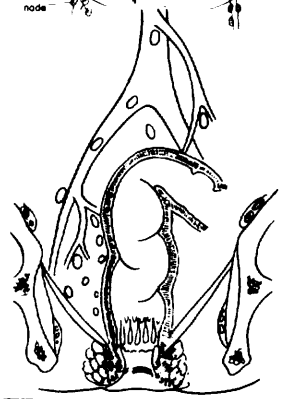
Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____

Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____









SITE-SPECIFIC INFORMATION — COLORECTAL NEOPLASMS

History
Symptoms _____
Duration _____

Physical Examination
Rectal _____ Colonoscopy (fiberoptics) _____
Abdominal palpation _____ Peritoneoscopy _____
Proctosigmoidoscopy _____

Roentgenographic Studies
Type _____ Findings _____
Site or Level _____

Size _____ cm

Gross Characteristics _____

Depth of Penetration of Bowel Wall _____

Blood Vessel Invasion _____

Adjacent Tissues Involved Adjacent _____ Distant _____

Complications Fistula _____ Other _____

Other Neoplasms _____

Laboratory Studies
Hb _____ Cytology (colon washings) _____
CEA (washings) _____ ng Cytology (other) _____
CEA (serum) _____ ng Other _____

Nodal Involvement
Cannot assess _____
None _____
Regional _____ Specify _____
Distant _____ Number _____ Proved _____

Metastasis
None _____ Yes _____ Specify _____
Proved _____

Classification
T _____ N _____ M _____

Stage _____

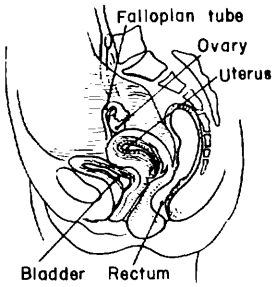
Residual Tumor
R _____

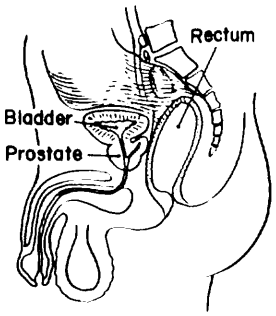
Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky ___

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy

DEFINITIONS

TNM CLASSIFICATION





Primary Tumor (T)

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- T0 No clinically demonstrable tumor
- TIS Carcinoma in situ
- T1 Clinically benign lesion or lesion confined to the mucosa or submucosa
- T2 Involvement of muscular wall or serosa, no exteneion beyond
- T3 Involvement of all layers of colon or rectum with extension to immediately adjacent structures or organs or both, with no fistula present
- T4 Fistula present along with any of the above degrees of tumor penetration
- T5 Tumor has spread by direct extension beyond the immediately adjacent organs or tissues

Nodal Involvement (N)

- NX Nodes not assessed or involvement not recorded
- N0 Nodes not believed to be involved
- N1 Regional nodes involved (distal to inferior mesenteric artery)

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Hepatic - HEP	Pleura - PLE
Other - OTH		
Brain - BRA		

HISTOPATHOLOGY

The predominant cancer is adenocarcinoma

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage 0

TIS N0 M0
Carcinoma in situ as demonstrated by histologic examination of tissue (biopsy or other)

Stage I

Stage IA
T0,1 N0 M0
T0,1 NX M0
Tumor confined to mucosa or submucosa with no demonstrable metastasis to regional lymph nodes and no evidence of distant metastasis
Stage IB
T2 N0 M0
T2 NX M0
Tumor involves muscularis but has not extended beyond serosa with no demonstrable metastasis to regional lymph nodes and no evidence of distant metastasis

Stage II

T3-5 N0 M0
T3-5 NX M0
A tumor that has extended beyond the bowel wall or serosa with no demonstrable metastasis to regional lymph nodes and no evidence of distant metastasis

Stage III

Any T N1 M0
Any degree of penetration of bowel or rectal wall by tumor with metastasis to regional lymph nodes but no evidence of distant metastasis

Stage IV

Any T Any N M1
Any degree of penetration of bowel or rectal wall by tumor with or without metastasis to regional lymph nodes and with evidence of distant metastasis

Residual Tumor (R)

R0 No residual tumor
R1 Microscopic residual tumor
R2 Macroscopic residual tumor
Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE PANCREAS

Collecting objective data to classify and stage cancer of the exocrine pancreas is still in progress. A protocol exists and can be obtained from the AJC.* The following classification is recommended to be field tested prospectively and evaluated for future refinement.

1.0 ANATOMY

1.1 Primary Site: The pancreas is a long lobulated structure which lies transversely in the posterior abdomen located retroperitoneally in the concavity of the duodenum on its right end and touching the spleen on its left end. The shape of the pancreas may be compared to the letter "J" placed sideways. It is divisible into a head with an uncinate process, a neck, a body, and a tail.

1.2 Nodal Stations: There is a rich lymphatic network surrounding the pancreas with a left splenic and superior and inferior right side truncal drainage. The first station nodes include celiac, splenic, suprapancreatic, left gastropancreatic, hepatic artery, inferior pancreatic, juxta-aorta, anterior pancreatic duodenal, and posterior pancreatic duodenal. Juxtaregional nodes include the inferior portion of the para-aortic nodal drainage and mediastinal and mesenteric nodes.

1.3 Metastatic Sites: Distant spread occurs mainly to liver and lungs, with a lesser degree of involvement of bones and brain and other anatomic sites.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The pancreas is an inaccessible site to physical examination, and laboratory and radiographic procedures are available but are largely diagnostic and investigative. They include hypotonic duodenography, retroperitoneal pneumotomography, computerized axial tomography, pharmacodynamic angiography, ultrasonic examination with aspiration biopsy of the pancreas, radioisotopic pancreatic scans, and endoscopic retrograde cholangiopancreatography. Routine procedures for metastases such as chest film, SMA-12, chorionic embryonic antigen (CEA) assay, and liver scans are recommended.

2.2 Surgical-Evaluative Staging: Laparotomy and surgical exploration of the pancreas is a more accurate means of assessing the true anatomic extent of the tumor. Biopsies of the periphery of the tumor and associated nodes fit into this category.

2.3 Postsurgical Treatment-Pathologic Staging: Complete resection of pancreas and its tumor and associated nodes with pathologic analysis is assigned to the pathologic classification.

2.4 Retreatment Staging: Biopsy is essential to establish recurrence of the disease, and complete workup of metastatic disease in other compartments is recommended.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Minimum requirements cannot be met

T1 Tumor limited to pancreas, greatest diameter 0 to 2 cm

T2 Tumor limited to pancreas, greatest diameter 2 to 6 cm

T3 Tumor greater than 6 cm in greatest diameter

T4 Tumor invading extrapancreatic contiguous structures by direct extension

3.2 Nodal Involvement (N)

NX Minimum requirements cannot be met

N0 No metastatic nodes

N1 One regional group involved at laparotomy

*The American Joint Committee Office, 55 East Erie Street, Chicago, IL 60611

N2 Two or more regional groups involved at laparotomy

N3 Clinical evidence of regional node involvement (no laparotomy)

N4 Involvement of juxtaregional nodes

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Add "+" to the abbreviated notation to indicate that the pathology is proven.

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor
R1 Microscopic residual tumor
R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

There is no stage grouping recommended at this time.

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is adenocarcinoma

Adenocarcinoma

Papillary carcinoma

Pseudomucinous cystadenocarcinoma

Islet cell carcinoma

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

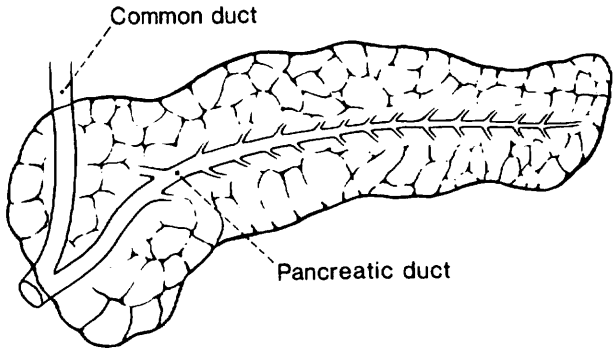
Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____

Time of Classification* cTNM ___ sTNM ___ pTNM ___ rTNM ___ aTNM ___
Date of Classification _____

SITE-SPECIFIC INFORMATION — PANCREAS



History **Duration**
Pain _____
Jaundice _____
Weight loss _____
Other _____

Primary tumor
Location in Pancreas
Head ☐
Body ☐
Tail ☐

Size (largest diameter) _____

Characteristics of Tumor
Single or multiple _____
Mobile _____
Fixed _____
Hard _____
Soft _____
Cystic _____

Nodes Involved Yes _____ No _____
Specify _____

Regional Extension
To adjacent organs Yes _____ No _____
Specify _____
To other tissues Yes _____ No _____
Specify _____

Distant Spread Yes _____ No _____
Specify _____

Classification
T _____ N _____ M _____

Stage
No stage grouping recommended

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

TX	Minimum requirements cannot be met
T1	Limited to pancreas, less than 2.0 cm in diameter
T2	Limited to pancreas, 2 to 6 cm in diameter
T3	Over 6 cm in diameter
T4	Extrapancreatic direct extension to contiguous structures

Nodal Involvement (N)

NX	Minimum requirements cannot be met
N0	No metastatic nodes
N1	One regional group involved at laparotomy
N2	Two or more regional groups involved at laparotomy
N3	Clinical evidence of regional node involvement (no laparotomy)
N4	Involvement of juxtaregional nodes

Distant Metastasis (M)

MX	Not assessed
M0	No (known) distant metastasis
M1	Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

HISTOPATHOLOGY

Adenocarcinoma, papillary carcinoma, pseudomucinous cystadenocarcinoma, and islet cell carcinoma

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

No stage grouping is recommended at present

Residual Tumor (R)

R0	No residual tumor
R1	Microscopic residual tumor
R2	Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host		ECOG/ Zubrod scale	Karnofsky scale (%)
H0	Normal activity	0	90-100
H1	Symptomatic but ambulatory — cares for self	1	70-80
H2	Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3	Ambulatory less than 50% of time — nursing care needed	3	30-40
H4	Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER AT GYNECOLOGIC SITES
CERVIX UTERI, CORPUS UTERI, OVARY, VAGINA, and VULVA

In 1976 the AJC adopted the classification of the International Federation of Gynecology and Obstetrics (FIGO), which is the format used in the "Annual Report on the Results of Treatment in Carcinoma of the Uterus, Vagina and Ovary." Published every 3 years, this report has utilized the FIGO classification with periodic modifications since 1937. Numerous institutions throughout the world contribute their statistics for inclusion in this voluntary collaborative presentation of data.

Since 1966 the TNM Committee of the International Union Against Cancer (UICC) has promulgated its recommendations for the classification of gynecologic tumors. From time to time, often in concert with representatives of FIGO, these recommendations also have been modified. The most recent revision in 1976 has brought the TNM and FIGO definitions into full conformity with each other. At this time, therefore, all systems are substantially in full agreement both as to categories and details.

Anatomy and Classification by Sites of Malignant Tumors of the Female Pelvis

CERVIX UTERI

1.0 ANATOMY

1.1 Primary Site: The cervix is the lower third of the uterus. It is roughly cylindrical in shape, projects through the upper, anterior vaginal wall and communicates with the vagina through an orifice called the external os. Cancer of the cervix may originate on the vaginal surface or in the canal.

1.2 Nodal Stations: The cervix is drained by preureteral, postureteral, and uterosacral routes into the following first station nodes: parametrial, hypogastric (obturator), external iliac, presacral, and common iliac. Para-aortic nodes are second station and juxtaregional.

1.3 Metastatic Sites: The most common sites of distant spread include the lungs and skeleton.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: Careful clinical examination should be performed in all cases, preferably by an experienced examiner and with anesthesia. The clinical staging must not be changed because of subsequent findings. When there is doubt as to which stage a particular cancer should be allocated, the earlier stage is mandatory. The following examinations are permitted: palpation, inspection, colposcopy, endocervical curettage, hysteroscopy, cystoscopy, proctoscopy, intravenous urography, and x-ray examination of the lungs and skeleton. Suspected bladder or rectal involvement should be confirmed by biopsy and histologic evidence. Optional examinations include: lymphangiography, arteriography, venography, laparoscopy, and others. Because these are not yet generally available and because also the interpretation of results is variable, the findings of optional studies should not be the basis for changing the clinical staging.

2.2 Surgical-Evaluative Staging: Surgical evaluation is applicable only after laparotomy and examination of tumor and nodes. Conization or amputation of the cervix is regarded as a clinical examination. Invasive cancers so identified are to be included in the reports (see 4.0).

2.3 Postsurgical Treatment-Pathologic Staging: In cases treated by surgical procedures, the pathologist's findings in the removed tissues can be the basis for extremely accurate statements on the extent of disease. These findings should not be allowed to change the clinical staging but should be recorded in the manner described for the pathologic staging of disease. The pTNM nomenclature is appropriate for this purpose. Infrequently, it happens that hysterectomy is carried out in the presence of unsuspected extensive invasive cervical carcinoma. Such cases cannot be clinically staged or included in therapeutic statistics, but it is desirable that they be reported separately. Only if the rules for clinical staging are strictly observed will it be possible to present comparable re-

sults between clinics and by differing modes of therapy.

2.4 Retreatment Staging: Complete examination using the procedures cited in 2.1, including a search for distant metastases, is recommended in cases known or suspected to have recurrence. Biopsy and histologic confirmation are particularly desirable when induration and fibrosis from previously treated disease are present.

3.0 STAGING CLASSIFICATION

FIGO Nomenclature

Stage 0
Carcinoma in situ, intraepithelial carcinoma

Stage I
The carcinoma is strictly confined to the cervix (extension to the corpus should be disregarded)

Stage IA Microinvasive carcinoma (early stromal invasion)

Stage IB All other cases of stage I; occult cancer should be marked "occ"

Stage II
The carcinoma extends beyond the cervix but has not extended to the pelvic wall. The carcinoma involves the vagina, but not as far as the lower third

Stage IIA No obvious parametrial involvement

Stage IIB Obvious parametrial involvement

Stage III
The carcinoma has extended to the pelvic wall. On rectal examination, there is no cancer-free space between the tumor and the pelvic wall. The tumor involves the lower third of the vagina. All cases with a hydronephrosis or nonfunctioning kidney are included, unless they are known to be due to other cause

Stage IIIA No extension to the pelvic wall

Stage IIIB Extension to the pelvic wall and/or hydronephrosis or nonfunctioning kidney

Stage IV
The carcinoma has extended beyond the true pelvis or has clinically involved the mucosa of the bladder or rectum. A bullous edema as such does not permit a case to be allotted to stage IV

Stage IVA Spread of the growth to adjacent organs

Stage IVB Spread to distant organs

Notes About the Staging. — Stage IA (microinvasive carcinoma) represents those cases of epithelial abnormalities in which histologic evidence of early stromal invasion is unambiguous. The diagnosis is based upon microscopic examination of tissue removed by biopsy, conization, portio amputation, or removal of the uterus. Cases of early stromal invasion should thus be allotted to stage IA.

The remainder of stage I cases should be allotted to stage IB. As a rule these cases can be diagnosed by routine clinical examination.

Occult cancer is a histologically invasive cancer that cannot be diagnosed by routine clinical examination. As a rule it is diagnosed on the basis of a cone, the amputated portio, or on the removed uterus. Such cancers should be included in stage IB and should be marked "stage IB, occ."

Stage I cases can thus be indicated in the following ways:

Stage IA Carcinoma in situ with early stromal invasion diagnosed on tissue removed by biopsy, conization, portio amputation, or on the removed uterus

Stage IB Clinically invasive carcinoma confined to the cervix

Stage IB, occ
Histologically invasive carcinoma of the cervix which could not be detected at routine clinical examination but which was diagnosed on the basis of a large biopsy specimen, a cone, the amputated portio, or the removed uterus

As a rule, it is impossible to estimate clinically whether a cancer of the cervix has extended to the corpus or not. Extension to the corpus should therefore be disregarded.

A patient with a growth fixed to the pelvic wall by a short and indurated but not nodular parametrium should be allotted to stage IIb. It is impossible, at clinical examination, to decide whether a smooth and indurated parametrium is truly cancerous or only inflammatory. Therefore, the case should be placed in stage III only if the parametrium is nodular to the pelvic wall or if the growth itself extends to the pelvic wall.

The presence of hydronephrosis or nonfunctioning kidney due to stenosis of the ureter by cancer permits a case to be allotted to stage III even if, according to the other findings, the case should be allotted to stage I or stage II.

The presence of bullous edema, as such, should not permit a case to be allotted to stage IV. Ridges and furrows into the bladder wall should be interpreted as signs of submucous involvement of the bladder if they remain fixed to the growth at palposcopy (i.e., examination from the vagina or the rectum during cystoscopy). Finding malignant cells in cytologic washings from the urinary bladder requires further examination and a biopsy from the wall of the bladder.

TNM NOMENCLATURE

3.1 Primary Tumor (T)

TIS Carcinoma in situ
See Stage 0

T1, 1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b
See corresponding FIGO stages

3.2 Nodal Involvement (N)

NX Not possible to assess the regional nodes

N0 No involvement of regional nodes

N1 Evidence of regional node involvement

N4 Involvement of lumbo-aortic nodes

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify_____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify_____

5.0 STAGE GROUPING (Correlation of AJC, TNM, and FIGO Nomenclatures)

Stage 0	TIS
Stage IA	T1a NX M0
IB	T1b NX M0
Stage IIA	T2a NX M0
IIB	T2b NX M0
Stage IIIA	T3a NX M0
IIIB	T3b NX M0
Stage IVA	T4a NX-0-1M0
IVB	T4b NX-0-1M0
	Any M1

6.0 HISTOPATHOLOGY

Cases should be classified as carcinoma of the cervix if the primary growth is in the cervix. All histologic types must be included. Grading by any of several methods is encouraged but is not a basis for modifying the stage groupings. When surgery is the primary treatment, the histologic findings permit the case to have pathologic staging

as described in 2.3. In this the pTNM nomenclature is to be used. It is desirable that all tumors be microscopically verified but cases that clinically are likely to be cancer without such confirmation should be included with special attention to descriptive detail. The number should be kept to a minimum.

7.0 DATA FORM FOR CANCER STAGING

The data collecting form that follows has been designed for use by institutions in summarizing the described information on individual cases. One should be on file in the registry for each accession. An additional checklist is recommended whenever a patient arrives at a new point for staging such as postsurgical, pathologic, etc.

The checklist includes the relevant items of information desirable at all gynecologic sites but only those need be used which apply in a given case. However, as complete a record as possible is necessary for accuracy in staging and analysis of results.

The diagrams are most helpful to those who review cases subsequently. Individuals are urged to mark in contrasting color (red) the location of tumor and satellites on the relevant diagrams at the time of initiation of the form.

CORPUS UTERI

1.0 ANATOMY

1.1 Primary Site: The upper two-thirds of the uterus above the level of the internal cervical os is called the corpus. The fallopian tubes enter at the upper lateral corners of a pear-shaped body. That portion of the muscular organ which is above a line joining the tubo-uterine orifices is often referred to as the fundus.

1.2 Nodal Stations: The major lymphatic trunks are the utero-ovarian (infundibulo-pelvic), parametrial, and presacral, which drain into the hypogastric, external iliac, common iliac, presacral, and para-aortic nodes.

1.3 Metastatic Sites: The vagina and lung are the common metastatic sites.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: Careful clinical examination should be performed, preferably by an experienced examiner and with anesthesia, before any definitive therapy. The clinical staging must not be changed because of subsequent findings. When there is doubt as to which stage a particular cancer should be allocated, the earlier stage is mandatory. The following examinations are permitted: palpation, inspection, colposcopy, endocervical curettage, hysteroscopy, cystoscopy, proctoscopy, intravenous urography, and x-ray examination of lungs and skeleton. Optional examinations include lymphangiography, arteriography, venography, and laparoscopy. Sounding and determination of the depth of the uterine cavity is an important step. Fractional curettage is essential with separation of endometrial and endocervical curettings. Careful inspection and palpation of the vagina should be carried out to assess the entire length of the vaginal tube from the apex to the urethra.

2.2 Surgical-Evaluative Staging: Biopsy proof is advised for suspected vaginal, bladder, or rectal invasion. Laparotomy is needed for evaluation and examination of pelvic and para-aortic lymph nodes.

2.3 Postsurgical Treatment-Pathologic Staging: Hysterectomy with or without pelvic node dissection provides the basis for surgical-pathologic staging and should not be substituted for clinical staging.

2.4 Retreatment Staging: Utilization of available procedures noted above is required, particularly since induration and necrosis can occur after irradiation; scarring and nodularity to a vaginal cuff can occur after surgery. A reevaluation for distant metastases, as well as T and N compartments, is recommended.

3.0 STAGING CLASSIFICATION
FIGO Nomenclature

Stage 0
Carcinoma in situ. Histologic findings are suspicious of malignancy; cases of stage 0

should not be included in any therapeutic statistics

Stage I
The carcinoma is confined to the corpus

Stage IA The length of the uterine cavity is 8 cm or less

Stage IB The length of the uterine cavity is more than 8 cm

It is desirable that the stage I cases be subgrouped with regard to the histologic type of the adenocarcinoma as follows:

G1 Highly differentiated adenomatous carcinoma

G2 Moderately differentiated adenomatous carcinoma with partly solid areas

G3 Predominantly solid or entirely undifferentiated carcinoma

Stage II
The carcinoma has involved the corpus and the cervix but has not extended outside the uterus

Stage III
The carcinoma has extended outside the uterus but not outside the true pelvis

Stage IV
The carcinoma has extended outside the true pelvis or has obviously involved the mucosa of the bladder or rectum. A bullous edema as such does not permit a case to be allotted to stage IV

Stage IVA Spread of the growth to adjacent organs

Stage IVB Spread to distant organs

Notes About the Staging. — Studies of large series of cases of endometrial carcinoma limited to the corpus have shown that the prognosis is related to some extent to the size of the uterus. However, an enlargement of the uterus may be caused by fibroids, adenomyosis, and other disorders. Therefore, the size of the uterus cannot serve as a basis for subgrouping stage I cases. The length and the width of the uterine cavity are related to the prognosis. The great majority of cases of corpus cancer belong to stage I. A subdivision of these cases is desirable. Therefore, the Cancer Committee recommends a subdivision of stage I cases with regard to the length of the sound used and to the histologic examination of the curettings.

Extension of the carcinoma to the endocervix is confirmed by fractional curettage, hysterography, or hysteroscopy. Scraping the cervix should be the first step of the curettage and the specimens from the cervix should be examined separately. Occasionally, it may be difficult to decide whether the endocervix is involved by the cancer. In such cases, the simultaneous presence of normal cervical glands and cancer in the same section will give the final diagnosis.

Extension of the carcinoma outside the uterus should refer a case to stage III or stage IV. The presence of metastases in the vagina or in the ovary permits allottment of a case to stage III.

TNM NOMENCLATURE

3.1 Primary Tumor (T)

TIS Carcinoma in situ

T1, 1a, 1b, 2, 3, 4a, 4b
See corresponding FIGO stages

3.2 Nodal Involvement (N)

NX Not possible to assess the regional nodes

N0 No involvement of regional nodes

N1 Evidence of regional node involvement

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING (Correlation of AJC, TNM, and FIGO Nomenclatures)

Stage 0	TIS
Stage 1A	T1a NX M0
1B	T1b NX M0
Stage II	T2 NX M0
Stage III	T3 NX M0
	T1-3 N1 M0
Stage IVA	T4a NX-1 M0
IVB	T4b NX-1 M0
	Any M1

6.0 HISTOPATHOLOGY

It is desirable that stage I cases be subgrouped according to the degree of differentiation described on microscopic examination. The predominant lesion is adenocarcinoma, but all histologic types should be reported. However, choriocarcinomas, sarcomas, mixed mesodermal tumors, and carcinosarcomas should be presented separately.

7.0 DATA FORM FOR CANCER STAGING

The form presented is suitable for tumors at all gynecologic sites. One should be filled out on each new case entered into the registry.

OVARY

1.0 ANATOMY

1.1 Primary Site: Ovaries are a pair of solid bodies, flattened ovoids 2.0 to 4.0 cm in diameter, that are connected by a peritoneal fold to the broad ligament and by the infundibulo-pelvic ligament to the lateral wall of the pelvis.

1.2 Nodal Stations: The lymphatic drainage occurs by the utero-ovarian and round ligament trunks and an external iliac accessory route into the following regional nodes: external iliac, common iliac, hypogastric, lateral sacral, and paraaortic nodes, and, rarely, to inguinal nodes.

1.3 Metastatic Sites: The peritoneum including the omentum and pelvic and abdominal viscera are common sites for seeding. Diaphragmatic involvement and liver metastases are common. Pulmonary and pleural involvements are frequently seen.

2.0 RULES FOR CLASSIFICATION

It is desirable to have a clinical stage grouping of ovarian tumors similar to those already existing for other malignant tumors in the female pelvis. Sometimes it is impossible to come to a final diagnosis by inspection or palpation or by any of the other methods recommended for clinical staging of carcinoma of the uterus and vagina. Therefore, the Cancer Committee of FIGO has recommended that the clinical staging of primary carcinoma of the ovary should be based on clinical examination, that is, curettage and roentgen examination of the lungs and skeleton, as well as on findings by laparoscopy or laparotomy.

2.1 Clinical-Diagnostic Staging: Although clinical studies similar to those for other sites may be used, the establishment of a diagnosis most often requires a

laparotomy, which is most widely accepted in surgical-pathologic staging. Clinical studies, if carcinoma of the ovary is diagnosed, include routine radiography of chest and abdomen, liver studies, and hemograms.

2.2 Surgical-Evaluative Staging: Laparotomy and biopsy of all suspected sites of involvement provide the basis for this type of staging; this staging is often identical to postsurgical staging. The role of laparoscopy needs to be better defined. Histologic and cytologic data are required.

2.3 Postsurgical Treatment-Pathologic Staging: This should include laparotomy, resection of ovarian masses, as well as hysterectomy. Biopsies of all suspicious sites, such as the omentum, mesentery, liver, diaphragm, and pelvic and paraaortic nodes, are required.

2.4 Retreatment Staging: Second-look laparotomies and laparoscopy are being evaluated due to the limitation of routine pelvic and abdominal examinations in detecting early recurrence. Other optional and investigative procedures include ultrasound and computerized axial tomography. All suspected recurrences need biopsy confirmation.

3.0 STAGING CLASSIFICATION
FIGO Nomenclature

Staging is based on findings at clinical examination and surgical exploration. The final histologic findings (and cytologic when available) after surgery are to be considered in the staging.

Stage I
Growth limited to the ovaries

Stage IA Growth limited to one ovary; no ascites

IAi No tumor on the external surface; capsule intact

IAii Tumor present on the external surface, or capsule (s) ruptured, or both

Stage IB Growth limited to both ovaries; no ascites

IBi No tumor on the external surface; capsule intact

IBii Tumor present on the external surface, or capsule(s) ruptured, or both

Stage IC Tumor either stage IA or IB, but with ascites* present or with positive peritoneal washings

Stage II
Growth involving one or both ovaries with pelvic extension

Stage IIA Extension and/or metastases to the uterus and/or tubes

Stage IIB Extension to other pelvic tissues

Stage IIC Tumor either stage IIA or stage IIB, but with ascites* present or with positive peritoneal washings

Stage III
Growth involving one or both ovaries with intraperitoneal metastases outside the pelvis, or positive retroperitoneal nodes, or both. Tumor limited to the true pelvis with histologically proven malignant extension to small bowel or omentum

Stage IV
Growth involving one or both ovaries with distant metastases. If pleural effusion is present there must be positive cytology to allot a case to stage IV. Parenchymal liver metastasis equals stage IV

Special Category
Unexplored cases that are thought to be ovarian carcinoma

TNM NOMENCLATURE

3.1 Primary Tumor (T)

TIai, Iaii, Ibi, Ibii, 1c, 2a, 2b, 2c, 3, 4
See corresponding FIGO stages

3.2 Nodal Involvement (N)

NX Not possible to assess regional nodes

*Ascites is peritoneal effusion that, in the opinion of the surgeon, is pathologic, or clearly exceeds normal amounts, or both

N0 No involvement of regional nodes

N1 Evidence of regional node involvement

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING (Correlation of AJC, TNM, and FIGO Nomenclatures)

Stage IAi	T1ai	N0	M0
IAii	T1aii	N0	M0
IB1	T1bi	N0	M0
IBii	T1bii	N0	M0
IC	T1c	N0	M0
Stage IIA	T2a	N0	M0
IIB	T2b	N0	M0
IIC	T2c	N0	M0
Stage III	T3	N0-1	M0
	T1-2	N1	M0
Stage IV	T4	N0-1	M0
	Any M1		

6.0 HISTOPATHOLOGY

The task force of the AJC endorses the histologic typing of ovarian tumors as presented in the WHO publication no. 9, 1973, and recommends that all ovarian epithelial tumors be subdivided according to a simplified version of this. The types recommended at the present time are as follows: serous tumors, mucinous tumors, endometrioid tumors, clear cell (mesonephroid) tumors, undifferentiated tumors, and unclassified tumors.

A) Serous cystomas

1) Serous benign cystadenomas
2) Serous cystadenomas with proliferating activity of the epithelial cells and nuclear abnormalities, but with no infiltrative destructive growth (low potential malignancy)
3) Serous cystadenocarcinomas

B) Mucinous cystomas

1) Mucinous benign cystadenomas
2) Mucinous cystadenomas with proliferating activity of the epithelial cells and nuclear abnormalities, but with no infiltrative destructive growth (low potential malignancy)
3) Mucinous cystadenocarcinomas

C) Endometrioid tumors (similar to adenocarcinomas in the endometrium)

1) Endometrioid benign cysts
2) Endometrioid tumors with proliferating activity of the epithelial cells and nuclear abnormalities, but with no infiltrative destructive growth (low potential malignancy)
3) Endometrioid adenocarcinomas

D) Clear cell (mesonephroid) tumors

1) Benign clear cell tumors
2) Clear cell tumors with proliferating activity of the epithelial cells and nuclear abnormalities, but with no infiltrative destructive growth (low potential malignancy)
3) Clear cell cystadenocarcinomas

E) Unclassified tumors that cannot be allotted to one of the groups A through D

F) No histology

G) Other malignant tumors
Malignant tumors other than those of the common epithelial types are not to be included with the categories listed above. However, the more common ones such as granulosa cell tumor, immature teratoma, dysgerminoma, and endodermal sinus tumor may be collected and reported separately by institutions so desiring, particularly those with a pediatric population among their patients.

In some cases of inoperable widespread malignant tumor, it may be impossible for the gynecologist and for the pathologist to decide the origin of the growth. In order to evaluate the results obtained in the treatment of carcinoma of the ovary, it is, however, necessary that all patients are reported on, as well as those who are thought to have a malignant ovarian tumor. If clinical examination cannot exclude the possibility that the lesion is a primary ovarian carcinoma, a case should be reported in the group "special category" and will belong to either histologic group E or F. Cases where exploratory surgery has shown that obvious ovarian malignant tumor is present, but where no biopsy has been taken, should be classified as ovarian carcinoma, "no histology."

7.0 DATA FORM FOR CANCER STAGING

The form presented is applicable to tumors of all gynecologic sites. One should be filled out on each new case as it is entered into the registry. The diagrams are particularly useful in ovarian cancer.

VAGINA

The rules for classification are similar to those for the cervix uteri and should be referred to accordingly.

1.0 STAGING CLASSIFICATION
FIGO Nomenclature

Stage 0
Carcinoma in situ; intraepithelial carcinoma

Stage I
The carcinoma is limited to the vaginal wall

Stage II
The carcinoma has involved the subvaginal tissue but has not extended to the pelvic wall

Stage III
The carcinoma has extended to the pelvic wall

Stage IV
The carcinoma has extended beyond the true pelvis or has involved the mucosa of the bladder or rectum. Bullous edema as such does not permit a case to be allotted to stage IV

Stage IVA Spread of the growth to adjacent organs

Stage IVB Spread to distant organs

TNM Nomenclature

1.1 Primary Tumor (T)

TIS Carcinoma in situ

T1, T2, T3, T4a, T4b
See corresponding FIGO stages

1.2 Nodal Involvement (N)

NX Not possible to assess the regional nodes

N0 No involvement of regional nodes

N1 Evidence of regional node involvement

1.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

VULVA

The rules for classification are similar to those at the other gynecologic sites. Tumors present in the vulva as secondary growths from either a genital or extragenital site should be exluded. Malignant melanoma should be separately reported. The femoral, inguinal, external iliac, and hypogastric nodes are the sites of regional spread.

1.0 STAGING CLASSIFICATION
FIGO Nomenclature

Stage 0
Carcinoma in situ

Stage I
Tumor confined to vulva — 2 cm or less in diameter. Nodes are not palpable or are palpable in either groin, not enlarged, mobile (not clinically suspicious of neoplasm)

Stage II
Tumor confined to the vulva — more than 2 cm in diameter. Nodes are not palpable or are palpable in either groin, not enlarged, mobile (not clinically suspicious of neoplasm)

Stage III
Tumor of any size with (1) adjacent spread to the urethra and any or all of the vagina, the perineum, and the anus, and/or (2) nodes palpable in either or both groins (enlarged, firm, and mobile, not fixed but clinically suspicious of neoplasm)

Stage IV
Tumor of any size (1) infiltrating the bladder mucosa or the rectal mucosa or both, including the upper part of the urethral mucosa, and/or (2) fixed to the bone or other distant metastases. Fixed or ulcerated nodes in either or both groins

TNM Nomenclature

1.1 Primary Tumor (T)

TIS, T1, T2, T3, T4
See corresponding FIGO stages

1.2 Nodal Involvement (N)

NX Not possible to assess the regional nodes

N0 No involvement of regional nodes

N1 Evidence of regional node involvement

N3 Fixed or ulcerated nodes

N4 Juxtaregional node involvement

1.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

DATA FORM FOR CANCER STAGING

Use of the form is recommended in every new case entered into the registry regardless of site.

DATA FORM FOR CANCER STAGING

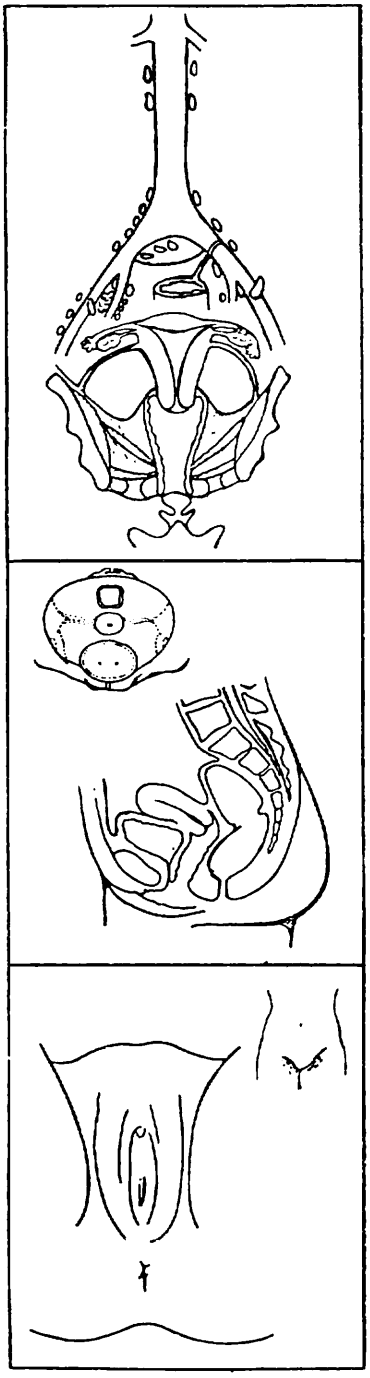
Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____
Histologic Cell Type _____
Grade _____

Time of Classification*
Date of Classification _____
cTNM ___ sTNM ___ pTNM ___ rTNM ___ aTNM ___



SITE-SPECIFIC INFORMATION—
CERVIX UTERI, CORPUS UTERI, OVARY, VAGINA, AND VULVA

Anatomic Site _____
FIGO Stage _____
TNM _____
Histology _____
Grade 1 ☐ 2 ☐ 3 ☐
Depth of Invasion _____
Lymphatic No ☐ Yes ☐
Blood Vessel No ☐ Yes ☐
Nodal No ☐ Yes ☐
Metastases No ☐ Yes ☐ Specify _____

Uterine Sound < 8 cm ☐ > 8 cm ☐
Cyst Ruptured No ☐ Yes ☐ Specify _____
Ascites No ☐ Yes ☐ Cytology _____
Pleural Effusion No ☐ Yes ☐ Cytology _____

Treatment Planned Surgery ☐ Radiotherapy ☐
Chemotherapy ☐ Hormone ☐ Immunotherapy ☐
Treatment Given Surgery ☐ Radiotherapy ☐
Chemotherapy ☐ Hormone ☐ Immunotherapy ☐
Reason for Change _____

Relevant Surgery _____
Residual disease No ☐ Micro ☐ Macro ☐
Relevant Radiotherapy
Transvag ☐ 75-140 kV ☐ 200-300 kV ☐
External ☐ 1-6 meV ☐ 18-35 meV ☐
Tumor dose _____
Time _____
Intracavitary ☐ Interstitial ☐ Isotope ☐
Relevant Medical Treatment _____

Complications _____

Special Comment _____

An abbreviated classification is printed on the back of this sheet for guidance in completing the form. For details and explanations consult the manual.

For the use of registry secretaries. This space is available for follow-up information

Status at: 6 mo _____ 4 yr _____
1 yr _____ 5 yr _____
2 yr _____ ≥ 5 yr _____
3 yr _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, post-surgical treatment-pathologic: rTNM, retreatment; aTNM, autopsy.

CERVIX UTERI

Stage 0	(TIS)	Carcinoma in situ
Stage I	(T1)	Carcinoma confined to cervix
IA	(T1a)	Microinvasive carcinoma
IB	(T1b)	All other cases of stage I
Stage II	(T2)	Ca extends beyond cervix but not to pelvic wall or lower vagina
IIA	(T2a)	No obvious parametrial involvement
IIb	(T2b)	Obvious parametrial involvement
Stage III	(T3)	Ca to pelvic wall or lower vagina, or ureteral obstruction
IIIA	(T3a)	No extension of pelvic wall
IIIB	(T3b)	Extension to one or both pelvic walls, or ureteral obstruction
Stage IV	(T4)	Carcinoma beyond true pelvis or invading bladder or rectum
IVA	(T4a)	Spread to adjacent organs
IVB	(T4b)	Spread to distant organs

CORPUS UTERI

Stage 0	(TIS)	Carcinoma in situ
Stage I	(T1)	Carcinoma confined to the corpus
IA	(T1a)	Uterine cavity 8 cm or less in length
IB	(T1b)	Uterine cavity greater than 8 cm in length
		Stage 1 should be subgrouped by histology as follows:
		G1-highly differentiated, G2-moderately differentiated, G3-undifferentiated
Stage II	(T2)	Extension to cervix only
Stage III	(T3)	Extension outside the uterus but confined to true pelvis
Stage IV	(T4)	Extension beyond true pelvis or invading bladder or rectum

OVARY

Stage I	(T1)	Growth limited to ovaries
IA	(T1a)	Limited to one ovary no ascites
	(IAi)	Capsule intact
	(IAii)	Capsule ruptured, or tumor on external surface, or both
IB	(T1b)	Limited to both ovaries; no ascites
	(IBi)	Capsule intact
	(IBii)	Capsule ruptured, or tumor on external surface, or both
IC	(T1c)	Either IA or IB with ascites
Stage II	(T2)	Growth involving one or both ovaries with pelvic extension only
IIA	(T2a)	Extension to uterus and/or tubes only
IIB	(T2b)	Extension to other pelvic tissues
IIC	(T2c)	Either IIA or IIB with ascites
Stage III	(T3)	Spread outside pelvis or to retroperitoneal nodes or both
Stage IV	(T4)	Spread to distant sites (pleural effusion must be confirmed histologically)
		Ovarian tumors should be catalogued histologically as serous, mucinous, endometrioid, clear cell (mesonephroid), and undifferentiated. A grade of low potential malignancy should be separately recorded from the invasive lesions.

VAGINA

Stage 0	(TIS)	Carcinoma in situ
Stage I	(T1)	Carcinoma limited to vaginal wall
Stage II	(T2)	Ca involves subvaginal tissues but does not extend to pelvic wall
Stage III	(T3)	Carcinoma extends to pelvic wall
Stage IV	(T4)	Extension beyond true pelvis or invading bladder or rectum
IVA	(T4a)	Spread to adjacent organs
IVB	(T4b)	Spread to distant organs

VULVA

Stage 0	(TIS)	Carcinoma in situ
Stage I	(T1)	Tumor 2 cm or less, confined to vulva
Stage II	(T2)	Tumor greater than 2 cm, confined to vulva
Stage III	(T3)	Tumor of any size extending to urethra, vagina, or anus
	or (T1-2, N1-2, M0)	Nodes obviously involved but mobile
Stage IV	(T4)	Tumor invading bladder or rectum or bone or any N3 (fixed nodes); or any M1 (distant metastasis)

Uniform TNM Classification

Nodes

- NX Not possible to assess regional nodes
- N0 No evidence of regional node involvement
- N1 Evidence of regional node involvement
- N3 Fixed or ulcerated regional nodes
- N4 Juxtaregional node involvement

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

Specify _____

STAGING OF CANCER OF THE BREAST

The staging system applies to in situ carcinoma and to infiltrating cancer of the breast. Histologic verification is mandatory and the cell type must be recorded. Unconfirmed cases must be reported separately.

Staging of breast cancer was jointly recommended by the UICC and AJC in 1972 for a trial period of 1973 to 1977. There have been only minor changes in the TNM definitions for clinical-diagnostic staging. Added in this manual are definitions for postsurgical treatment-pathologic classifications which differ slightly from the former.

The stage grouping has been altered from that recommended in 1972 based on detailed studies carried out by the breast task force. However, the stage grouping previously recommended is also included in this chapter.

1.0 ANATOMY

1.1 Primary Site: The mammary gland consists of glandular tissue within a dense fibroareolar stroma situated on the anterior chest wall. Deep to the breast is the fascia overlying the pectoralis major, which in turn covers the ribs and intercostal muscles of the first six intercostal spaces.

1.2 Nodal Stations: The breast lymphatics drain via three major routes: axillary, transpectoral, and internal mammary trunks into numerous surrounding first station nodes such as axillary (low, middle), axillary apex, and infraclavicular (referred to as levels I, II, and III, respectively) and internal mammary, interpectoral, and subclavicular. Subclavicular nodes are juxtaregional on the homolateral side. Disease involvement in all other nodes — cervical, contralateral supraclavicular, and internal mammary — is equivalent to distant metastases.

1.3 Metastatic Sites: All distant visceral sites are potential sites of metastatic disease. The four major sites are bone, lung, brain, and liver, but this widely metastasizing disease has been found in virtually all remote sites.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The following are required: physical examination, including careful inspection of skin and palpation of mammary glands and regional nodes; determination of the degree of fixation with and without flexing pectoral muscles; routine laboratory studies and hemograms; and chest films and isotopic scans, particularly of the osseous system. Mammography and thermography are optional staging procedures.

2.2 Surgical-Evaluative Staging: Needle biopsy or excisional biopsy of nodes with a sampling of axillary, internal mammary, or supraclavicular nodes needs to be noted separately and is not considered part of a clinical staging system. Suspected skin involvement should be confirmed by biopsy.

2.3 Postsurgical Treatment-Pathologic Staging: Evaluation of the breast in its entirety and/or the axillary contents with careful pathologic evaluation of all nodes is commonly done. This should never be substituted for clinical evaluation.

2.4 Retreatment Staging: All recurrences in the chest wall and in regional sites require biopsy proof and full workup for remote metastases by means of laboratory, roentgenographic, and radioisotopic studies. Accessible remote metastases initially require pathologic confirmation.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

Clinical-Diagnostic Classification

TX Tumor cannot be assessed

T0 No evidence of primary tumor

TIS Paget's disease of the nipple with no demonstrable tumor.

Note: Paget's disease with a demonstrable tumor is classified according to size of the tumor.

T1* Tumor 2 cm or less in greatest dimension
- T1a No fixation to underlying pectoral fascia or muscle
- T1b Fixation to underlying pectoral fascia and/or muscle

T2* Tumor more than 2 cm but not more than 5 cm in its greatest dimension
- T2a No fixation to underlying pectoral fascia and/or muscle
- T2b Fixation to underlying pectoral fascia and/or muscle

T3* Tumor more than 5 cm in its greatest dimension
- T3a No fixation to underlying pectoral fascia and/or muscle
- T3b Fixation to underlying pectoral fascia and/or muscle

T4 Tumor of any size with direct extension to chest wall or skin

Note: Chest wall includes ribs, intercostal muscles, and serratus anterior muscle, but not pectoral muscle

- T4a Fixation to chest wall
- T4b Edema (including peau d'orange), ulceration of the skin of the breast, or satellite skin nodules confined to the same breast
- T4c Both of above
- T4d Inflammatory carcinoma

Postsurgical Treatment-Pathologic Classification

TX Tumor cannot be assessed

T0 No evidence of primary tumor

TIS Preinvasive carcinoma (carcinoma in situ), noninfiltrating intraductal carcinoma, or Paget's disease of nipple

T1a and b are the same as clinical-diagnostic classification

T1a
T1b
- i: Tumor < 0.5 cm†
- ii: Tumor 0.5-0.9 cm
- iii: Tumor 1.0-1.9 cm

T2a and b are the same as clinical-diagnostic classification

T3a and b are the same as clinical-diagnostic classification

T4a and b are the same as clinical-diagnostic classification

T4d Inflammatory carcinoma

3.2 Nodal Involvement (N)

Clinical-Diagnostic Classification

NX Regional lymph nodes cannot be assessed clinically

N0 No palpable homolateral axillary nodes

N1 Movable homolateral axillary nodes
- N1a Nodes not considered to contain growth
- N1b Nodes considered to contain growth

N2 Homolateral axillary nodes containing growth and fixed to one another or to other structures

N3 Homolateral supraclavicular or infraclavicular nodes containing growth or edema of the arm.††

Note: Edema of the arm may be caused by lymphatic obstruction and lymph nodes may not then be palpable.

Postsurgical Treatment-Pathologic Classification

NX Regional lymph nodes cannot be assessed clinically

N0 No metastatic homolateral axillary nodes

*Dimpling of the skin, nipple retraction, or any other skin changes except those in T4b may occur in T1, T2, or T3 without the classification.

†Exact measurement desirable but not required.

††Homolateral internal mammary nodes considered to contain growth are included in N3 for surgical-evaluative classification and postsurgical treatment-pathologic classification.

N1 Movable homolateral axillary metastatic nodes not fixed to one another or other structures
N1a Lymph nodes with only histologic metastatic growth
N1b Gross metastatic carcinoma in lymph nodes

i: Micrometastasis smaller than 0.2 cm
ii: Metastasis (larger than 0.2 cm) in 1 to 3 lymph nodes
iii: Metastasis to 4 or more lymph nodes
iv: Extension of metastasis beyond the lymph node capsule
v: Any positive node greater than 2 cm in diameter

N2 Homolateral axillary nodes containing metastatic tumor and fixed to one another or to other structures

N3 Homolateral supraclavicular or infraclavicular nodes containing tumor or edema of the arm.††

Note: Edema of the arm may be caused by lymphatic obstruction and lymph nodes may not then be palpable.

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

††Homolateral internal mammary nodes considered to contain growth are included in N3 for surgical-evaluative classification and postsurgical treatment-pathologic classification.

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 HISTOPATHOLOGY*

5.1 Noninfiltrating
Paget's disease with intraductal carcinoma
In situ ductal (intraductal) carcinoma
In situ lobular carcinoma
Infiltrating
Paget's disease with infiltrating carcinoma
Ductal carcinoma
Infiltrating, not otherwise specified
Adenoid cystic
Comedo
Medullary
Mucinous (colloid)
Papillary
Other, specify _____
Lobular carcinoma, infiltrating
Other Neoplasms
Cystosarcoma phylloides, malignant
Sarcoma, specify type _____

5.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

*Inflammatory carcinoma is a clinicopathologic entity characterized by diffuse brawny induration of the skin of the breast with an erysipeloid edge, usually without an underlying palpable mass. Histologically infiltrating mammary carcinoma diffusely permeates dermal lymph lymphatics. (Inflamed cancers that are clinically similar to the above due to inflammation, infection, or necrosis but lack microscopic dermal lymphatic permeation are **not** classified as inflammatory carcinoma.)

6.0 STAGE GROUPING

Stage I			
	T1a	N0 or N1a	
	T1b	N0 or N1a	M0
Stage II			
	T0	N1b	
	T2a	N0 or N1a or N1b	
	T2b	N0 or N1a or N1b	M0
Stage III			
	Any T3	N1 or N2	M0
Stage IV			
	T4	Any N	Any M
	Any T	N3	Any M
	Any T	Any N	M1

The definitions for clinical-diagnostic classification of TNM remain the same as those recommended by the UICC and AJC in 1972 for a trial period of 1973 to1977 except that T4d has been added to identify inflammatory carcinoma which, when present, should always be recorded.

In addition, definitions for postsurgical treatment-pathologic classification are included in this manual and are essentially the same as those for clinical-diagnostic except the opportunity does exist to indicate accurately the measurement of the tumor or nodes from the pathologic specimen.

The stage grouping recommended in this manual does vary from that recommended for the trial period. The present recommendations are primarily for postsurgical treatment-pathologic staging and are based on detailed studies carried out by the AJC Breast Task Force.

If breast cancer is to be staged in the clinical-diagnostic time frame, then that recommended by the UICC and AJC in 1972 may be used but this should be so recorded in any reporting. The 1972 clinical-diagnostic stage grouping is as follows:

STAGE GROUPING

Stage I	T1a	N0 or N1a	
	T1b	N0 or N1a	M0
Stage II	T0	N1b	
	T1a	N1b	
	T1b	N1b	
	T2a	N0 or N1a	M0
	T2b	N0 or N1a	
	T2a	N1b	
	T2b	N1b	
Stage III	Any T3	Any N	
	Any T4	Any N	M0
	Any T	N2	
	Any T	N3	
Stage IV	Any T	Any N	M1

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age ___ Sex ___ Race ___

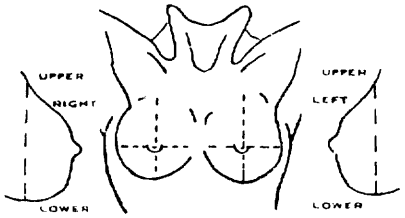
Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____

Time of Classification* cTNM ___ sTNM ___ pTNM ___ rTNM ___ aTNM ___
Date of Classification _____

SITE-SPECIFIC INFORMATION — BREAST



General
Marital status: S _____ M _____ Div/sep _____ Wid _____
Religion: P _____ C _____ H _____ Other _____

Symptoms
Breast: L _____ R _____ Mass: Yes _____ No _____
Increase in size: Yes _____ No _____ S1 _____ X _____
2X _____ >3X _____
Pain: Yes _____ No _____ In mass _____ In breast _____
Premenstrual _____: R _____ L _____
Nipple discharge: Yes _____ No _____ Clear _____
Bloody _____ Brown _____ Other _____
Frequency: 1X _____ 2-5X _____ >5X _____

Other symptoms _____
Detected by: Self _____ Physician _____ Other _____
X-ray _____ Thermog _____
Duration of symptoms from onset to admission (mo): < 1 _____ 1-3 _____ 4-6 _____ 7-12 _____

Menstrual History
Age of menarche: < 12 yr _____ 13-16 yr _____ > 16 yr _____ never _____
Periods: Reg _____ Irreg _____
Date Imp: Mo _____ Yr 19_____
Menopause: No _____ Natural _____ Surgical _____ X-ray _____

Parity: Gr _____ Para _____ Ab _____ Age at 1st full term delivery _____ yr

Hormones: No _____ Yes _____ Birth control pill _____ Estrogen _____ Fertility pill _____
Other _____ Duration used: < 2 mo _____ 1 yr _____ 1-5 yr _____
> 5 yr _____ Last used: < 2 mo _____ 1 yr _____ 1-5 yr _____ > 5 yr _____

Family History of Breast Cancer
Maternal: None _____ grdmthr _____ mthr _____ aunt _____ sib _____ dtr _____
Paternal: None _____ grdmthr _____ mthr _____ aunt _____

Other Cancer
Personal: Yes _____ No _____ Site _____
Family: Yes _____ No _____ Site _____ Relative _____

Previous Breast Biopsy
No _____ Yes _____ R-date _____ L-date _____

Primary Tumor
Size _____ cm Multiple _____
Skin changes: Fixation _____ None _____ Degree (circle) 1, 2, 3, 4
Mammography: Neg _____ Pos _____ Equivocal _____
Nodes: Ipsilateral—Neg _____ Pos _____
Contralateral — Neg _____ Pos _____

Distant Metastasis
MX _____ M0 _____ M1 _____ Specify _____
Sites: Lung _____ Bone _____ Liver _____ Other _____

Classification
T _____ N _____ M _____

Stage _____

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

Clinical Tumor Size: _____ _____ _____ Measured on: Patient _____ X-ray _____
Pathologic Final Tumor Size: _____ _____ _____ Measured on: Gross _____ Micro only _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

TNM CLASSIFICATION

Primary Tumor (T)

Clinical-Diagnostic Classification

TX		Tumor cannot be assessed
T0		No evidence of primary tumor
TIS		Paget's disease of the nipple with no demonstrable tumor
		Note: Paget's disease with a demonstrable tumor is classified according to size of the tumor
T1*		Tumor 2 cm or less in greatest dimension
	T1a	No fixation to underlying pectoral fascia or muscle
	T1b	Fixation to underlying pectoral fascia and/or muscle
T2*		Tumor more than 2 cm but not more than 5 cm in its greatest dimension
	T2a	No fixation to underlying pectoral fascia and/or muscle
	T2b	Fixation to underlying pectoral fascia and/or muscle
T3*		Tumor more than 5 cm in its greatest dimension
	T3a	No fixation to underlying pectoral fascia and/or muscle
	T3b	Fixation to underlying pectoral fascia and/or muscle
T4		Tumor of any size with direct extension to chest wall or skin
		Note: Chest wall includes ribs, intercostal muscles, and serratus anterior muscle, but not pectoral muscle
	T4a	Fixation to chest wall
	T4b	Edema (including peau d'orange), ulceration of the skin of the breast, or satellite skin nodules confined to the same breast
	T4c	Both of above
	T4d	Inflammatory carcinoma

Postsurgical Treatment-Pathologic Classification

TX		Tumor cannot be assessed
T0		No evidence of primary tumor
TIS		Preinvasive carcinoma (carcinoma in situ), noninfiltrating intraductal carcinoma, or Paget's disease of nipple
T1		
	T1a	Same as clinical-diagnostic classification
	T1b	i: tumor < 0.5 cm ii: tumor 0.5-0.9 cm iii: tumor 1.0-1.9 cm
T2		
	T2a T2b	Same as clinical-diagnostic classification
T3		
	T3a T3b	Same as clinical-diagnostic classification
T4		
	T4a T4b T4c T4d	Same as clinical-diagnostic classification

*Dimpling of the skin, nipple retraction, or any other skin changes except those in T4b may occur in T1, T2, or T3 without the classification.

Nodal Involvement (N)

Clinical-Diagnostic Classification

NX		Regional lymph nodes cannot be assessed clinically
N0		No palpable homolateral axillary nodes
N1		Movable homolateral axillary nodes
	N1a	Nodes not considered to contain growth
	N1b	Nodes considered to contain growth
N2		Homolateral axillary nodes considered to contain growth and fixed to one another or to other structures
N3		Homolateral supraclavicular or infraclavicular nodes considered to contain growth or edema of the arm*

Postsurgical Treatment-Pathologic Classification

NX		Regional lymph nodes cannot be assessed clinically
N0		No metastatic homolateral axillary nodes
N1		Movable homolateral axillary metastatic nodes not fixed to one another or other structures
	N1a	Lymph nodes with only histologic metastatic growth
	N1b	Gross metastatic carcinoma in lymph nodes i: micrometastasis smaller than 0.2 cm ii: metastasis (> 0.2 cm) in 1 to 3 lymph nodes iii: metastases to 4 or more lymph nodes iv: extension of metastasis beyond the lymph node capsule v: any positive node > 2 cm in diameter
N2		Homolateral axillary nodes containing metastatic tumor and fixed to one another or to other structures
N3		Homolateral supraclavicular or infraclavicular nodes containing tumor or edema of the arm*

*Edema of the arm may be caused by lymphatic obstruction and lymph nodes may not then be palpable.

M — DISTANT METASTASIS

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

HISTOPATHOLOGY*

Noninfiltrating:	Paget's disease with intraductal carcinoma
	In situ ductal (intraductal) carcinoma
	In situ lobular carcinoma
Infiltrating:	Paget's disease with infiltrating carcinoma
	Ductal carcinoma
	Lobular carcinoma
Other Neoplasms:	Cystosarcoma phylloides, malignant
	Sarcoma

*Inflammatory carcinoma is a clinicopathologic entity characterized by diffuse brawny induration of the skin of the breast with an erysipeloid edge, usually without an underlying palpable mass. Histologically infiltrating mammary carcinoma diffusely permeates dermal lymph lymphatics. (Inflamed cancers that are clinically similar to the above due to inflammation, infection, or necrosis but lack microscopic dermal lymphatic permeation are **not** classified as inflammatory carcinoma.)

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I	T1a	N0 or N1a	
	T1b	N0 or N1a	M0
Stage II	T0	N1b	
	T2a	N0 or N1a or N1b	
	T2b	N0 or N1a or N1b	M0
Stage III	Any T3	N1 or N2	M0
Stage IV	T4	Any N	Any M
	Any T	N3	Any M
	Any T	Any N	M1

Residual Tumor (R)

R0 No residual
R1 Microscopic residual tumor
R2 Macroscopic residual tumor
Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER AT GENITOURINARY SITES

Kidney, Bladder, Prostate, and Testes

The four sites that are included in this section, kidney, bladder, prostate, and testes, have their unique staging problems but can be classified according to the definitions of T, N, and M. The objective data that have accumulated do not provide a sufficient basis for the structuring of a staging schema. Minimal requirements for TNM categorization are described under RULES FOR CLASSIFICATION and include arteriography, lymphography, and laparotomy for deep-seated tumors; symbols are used consistent with staging procedures. These classifications require further field testing.

KIDNEY

1.0 ANATOMY

1.1 Primary Site: The kidney is encased by a fibrous capsule and is surrounded by perirenal fat. The kidney is composed of the cortex (glomeruli, convoluted tubules) and the medulla (pyramids of converging tubules, Henle's loops). Each papilla opens into the minor calices which in turn unite in the major calices, draining into the renal pelvis. At the hilus are the pelvis, ureter, and renal artery and vein. Gerota's fascia overlies the psoas and quadratus lumborum.

1.2 Nodal Stations: The major collecting lymphatic trunks are the anterior, middle, and posterior channels that drain into the para-aortic lymph nodes located above and below the renal artery (i.e., high suprarenal and infrarenal arteries). There is a lateral caval node in the right side and a hilar-located renal vein node on the left, more lateral to the para-aortic nodal chain. The lower para-aortic nodes complete the first station at the bifurcation of the aorta. Common iliac, pelvic, and mediastinal nodes are juxtaregional. Supraclavicular nodes are considered metastatic.

1.3 Metastases: Common metastatic sites include bone, liver, lung, and brain.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging:* Clinical examination, urography, arteriography, and venocavography are required for the assessment of the primary tumor. Additional studies may include lymphography. Evaluation for distant metastases should be done by routine laboratory biochemical studies, a hemogram, bone films, and isotopic studies.

*Computerized body scan and/or other modalities may subsequently be used to supply information concerning minimal requirements for staging.

2.2 Surgical-Evaluative Staging: Laparotomy, mediastinotomy, and biopsy can be utilized.

2.3 Postsurgical Treatment-Pathologic Staging: Resection of the primary tumor, kidney, Gerota's fascia, perinephric fat, and renal vein is required.

2.4 Retreatment Staging: Utilization of the above procedures when indicated and biopsy confirmation are desirable.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX	Minimum requirements cannot be met
T0	No evidence of primary tumor
T1	Small tumor, minimal renal and calyceal distortion or deformity. Circumscribed neovasculature surrounded by normal parenchyma
T2	Large tumor with deformity and/or enlargement of kidney and/or collecting system
T3	
T3a	Tumor involving perinephric tissues
T3b	Tumor involving renal vein
T3c	Tumor involving renal vein and infradiaphragmatic vena cava

Note: Under T3, tumor may extend into perinephric tissues, into renal vein, and into vena cava as shown on cavography. In these instances, the T classification may be shown as T3a, b, and c, or some appropriate combination, depending on extension–for example, T3a,b is tumor in perinephric fat and extending into renal vein.

T4

T4a Tumor invasion of neighboring structures (e.g., muscle, bowel)

T4b Tumor involving supradiaphragmatic vena cava

3.2 Nodal Involvement (N)
The regional lymph nodes are the paraaortic and paracaval nodes. The juxtaregional lymph nodes are the pelvic nodes and the mediastinal nodes.

NX Minimum requirements cannot be met

N0 No evidence of involvement of regional nodes

N1 Single, homolateral regional nodal involvement

N2 Involvement of multiple regional or contralateral or bilateral nodes

N3 Fixed regional nodes (assessable only at surgical exploration)

N4 Involvement of juxtaregional nodes

Note: If lymphography is source of staging, add "1" between "N" and designator number; if histologic proof is provided, "+" if positive and "−" if negative. Thus, N12+ indicates multiple positive nodes seen on lymphography and proved at operation by biopsy.

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Add "+" to the abbreviated notation to indicate that the pathology (p) is proved.

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping is recommended at this time.

6.0 HISTOPATHOLOGY

6.1 The predominant cancer is adenocarcinoma; subtypes are clear-cell and granular cell. A grading system as below is recommended when feasible. Reference to WHO nomenclature is advised.

6.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATE FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age ____ Sex ____ Race ____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

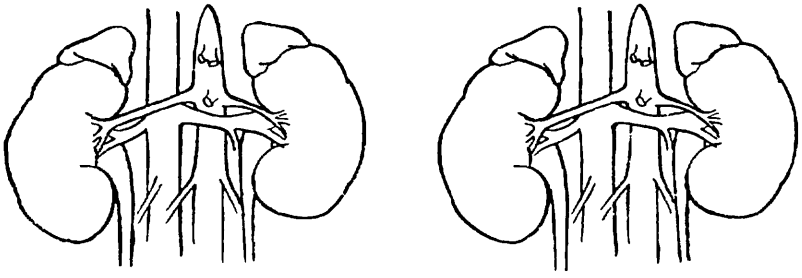
SITE-SPECIFIC INFORMATION — KIDNEY

		Dates	
	INA†	Antecedent	Current
Symptoms			
Hematuria			
Back pain			
Bone pain			
Fever			
Weight loss			
Other (specify) _____			
Nonmalignant Disease			
CV _____ GI _____ GU _____ Met/End _____ Resp _____			
Allergy _____ Describe: _____			
Other Malignant Disease (specify) _____			
Treatment			
Surgery			
Biopsy			
Nephrectomy			
Type if known _____			
Radiation therapy			
Site _____			
Dosage _____			
Chemotherapy			
Drugs _____			
Other (i.e., immunotherapy) _____			

Purpose of Treatment
Curative _____ Palliative _____ INA† _____

Classification
T _____ N _____ M _____

Stage
No stage grouping recommended



Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.
†Information not available.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- TX Minimum requirements cannot be met
- T0 No evidence of primary tumor
- T1 Small tumor, minimal renal and calyceal distortion or deformity. Circumscribed neovasculature surrounded by normal parenchyma
- T2 Large tumor with deformity and/or enlargement of kidney and/or collecting system
- T3a Tumor involving perinephric tissues
- T3b Tumor involving renal vein
- T3c Tumor involving renal vein and infradiaphragmatic vena cava

Note: Under T3, tumor may extend into perinephric tissues, into renal vein, and into vena cava as shown on cavography. In these instances, the T classification may be shown as T3a, b, and c, or some appropriate combination, depending on extension–for example, T3a,b is tumor in perinephric fat and extending into renal vein.

- T4a Tumor invasion of neighboring structures (e.g., muscle, bowel)
- T4b Tumor involving supradiaphragmatic vena cava

Nodal Involvement (N)

The regional lymph nodes are the para-aortic and paracaval nodes. The juxtaregional lymph nodes are the pelvic nodes and the mediastinal nodes.

- NX Minimum requirements cannot be met
- N0 No evidence of involvement of regional nodes
- N1 Single, homolateral regional nodal involvement
- N2 Involvement of multiple regional or contralateral or bilateral nodes
- N3 Fixed regional nodes (assessable only at surgical exploration)
- N4 Involvement of juxtaregional nodes

Note: If lymphography is source of staging, add "1" between "N" and designator number; if histologic proof is provided, "+" if positive, and "−" if negative. Thus, N12 indicates multiple positive nodes seen on lymphography and proved at operation by biopsy.

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

Note: Add "+" to the abbreviated notation to indicate that the pathology (p) is proved

HISTOPATHOLOGY

The predominant cancer is adenocarcinoma; subtypes are clear-cell and granular cell. A grading system as below is recommended when feasible. Reference to WHO nomenclature is advised.

STAGE GROUPING

No stage grouping is recommended at this time.

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

BLADDER

1.0 ANATOMY

1.1 Primary Site: The urinary bladder is a hollow viscus consisting of three layers: the mucosa and submucosa, the muscularis, and the serosa. In the male, it is in relationship to the rectum and seminal vesicles posteriorly, the prostate inferiorly, and the pubis and peritoneum anteriorly. In the female, the vagina is located posteriorly and the uterus superiorly. The bladder is extraperitoneal in location.

1.2 Nodal Stations: The regional lymph nodes are the pelvic nodes below the bifurcation of the common iliac arteries. The juxtaregional lymph nodes are the inguinal nodes, the common iliac, and para-aortic nodes.

1.3 Metastatic Sites: Distant spread to lung, bone, and liver is most common.

2.0 RULES FOR CLASSIFICATION*

2.1 Clinical-Diagnostic Staging: Primary tumor assessment includes bimanual examination under anesthesia before and after endoscopic surgery (biopsy or transurethral resection) and/or histologic verification of the presence or absence of tumor. Add "m" for multiple tumors. Intravenous urography is required, but voiding cystograms, pelvic arteriography, and pneumographic studies are optional and cannot be used alone for this classification. Lymphography is necessary for nodal evaluation. Evaluation for distant metastases requires chest films, biochemical and blood profiles, and isotopic studies as indicated.

2.2 Surgical-Evaluative Staging: Laparotomy or extraperitoneal surgical evaluation of primary tumor and lymph nodes with biopsy material other than endoscopic are required for this staging.

2.3 Postsurgical Treatment-Pathologic Staging: Total cystectomy and lymph node dissection are required to utilize this staging.

2.4 Retreatment Staging: Biopsy confirmation where feasible is desirable to determine persistence after irradiation or surgery. Other procedures as noted above may be utilized, particularly in distant visceral sites.

*Computerized body scan and/or other modalities may subsequently be used to supply information concerning minimal requirements for staging.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)
The suffix "m" should be added to the appropriate T category to indicate multiple lesions. Papilloma is classified as "G0."

TX	Minimum requirements cannot be met
T0	No evidence of primary tumor
TIS	Sessile carcinoma in situ
Ta	Papillary noninvasive carcinoma
T1	On bimanual examination a freely mobile mass may be felt; this should not be felt after complete transurethral resection of the lesion and/or there is papillary carcinoma without microscopic invasion beyond the lamina propria
T2	On bimanual examination there is induration of the bladder wall, which is mobile. There is no residual induration after complete transurethral resection of the lesion and/or there is microscopic invasion of superficial muscle of bladder
T3	On bimanual examination there is induration or a nodular mobile mass is palpable in the bladder wall which persists after transurethral resection
T3a	Microscopic invasion of deep muscle

T3b Invasion through the full thickness of bladder wall

T4 Tumor fixed or invading neighboring structures and/or there is microscopic evidence of invasion of the prostate and in the other circumstances listed below at least muscle invasion

T4a Tumor invading substance of prostate, uterus, or vagina

T4b Tumor fixed to the pelvic wall and/or infiltrating the abdominal wall

3.2 Nodal Involvement (N)
The regional lymph nodes are the pelvic nodes just below the bifurcation of the common iliac arteries. The juxtaregional lymph nodes are the inguinal nodes, the common iliac, and para-aortic nodes.

NX Minimum requirements cannot be met

N0 No involvement of regional lymph nodes

N1 Involvement of a single homolateral regional lymph node

N2 Involvement of contralateral, bilateral, or multiple regional lymph nodes

N3 There is a fixed mass on the pelvic wall with a free space between this and the tumor

N4 Involvement of juxtaregional lymph nodes

Note: Subsequent data regarding the histologic assessment of the regional lymph nodes may be added to the clinical "N" category thus: "N−" (minus) for nodes with no microscopic evidence of metastasis, or "N+" (plus) for those with microscopic evidence of metastasis, for example, N0+, etc.

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping is recommended at this time.

6.0 HISTOPATHOLOGY

The predominant cancer is a transitional cell cancer. Grading of the tumor is as follows.

6.1 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION — BLADDER

		Dates	
	INA†	Antecedent	Current
Symptoms			
Hematuria	_____	_____	_____
Frequency	_____	_____	_____
Dysuria	_____	_____	_____
Weight loss	_____	_____	_____
Pain	_____	_____	_____
Other (specify) _____	_____	_____	_____
Nonmalignant Disease			
GU ___ End/Met___ CV___ Resp___ Allergy___ GI___			
Other (specify) _____			
Clinical Extent			
Intravenous urogram	_____	_____	_____
Hydronephrosis	_____	_____	_____
Hydroureter	_____	_____	_____
Nonfunctioning kidney	_____	_____	_____
Not done ☐			
Cystoscopy			
Site (indicate on diagrams)			
No. of tumors: 1, 2, 3, 4, >4			
Size, cm (circle largest): 1, 2, 3, 4, >4			
Bimanual Examination	_____	_____	_____
Anesthesia	_____	_____	_____
Induration	_____	_____	_____
Mass	_____	_____	_____
Mobile	_____	_____	_____
Fixed to pelvic wall and/or invading abdominal wall	_____	_____	_____
Invading neighboring structures (specify) _____		_____	_____
Treatment			
None ☐			
Surgical	_____	_____	_____
Transurethral resection	_____	_____	_____
Transvesical (specify)	_____	_____	_____
Segmental resection	_____	_____	_____
Urinary diversion	_____	_____	_____
Cystectomy	_____	_____	_____
Radiotherapy			
Site _____			
External	_____	_____	_____
Interstitial	_____	_____	_____
Other (specify) _____	_____	_____	_____
Chemotherapy			
Topical	_____	_____	_____
Systemic	_____	_____	_____
Other (specify) _____			
Unknown ☐			

Purpose of Prior Treatment
Curative ☐ Palliative ☐ Unknown ☐

Classification
T _____ N _____ M _____

Stage
No stage grouping recommended

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy
†Information not available.

PATIENT NAME	INSTITUTION	PATIENT HOSP NO

DATE

MO ___/ DAY ___/ YR ___

OUTLINE AFFECTED AREAS AND INDICATE:

MALE

F = Flat (velvety) area suspicious of atypia or ca-in situ

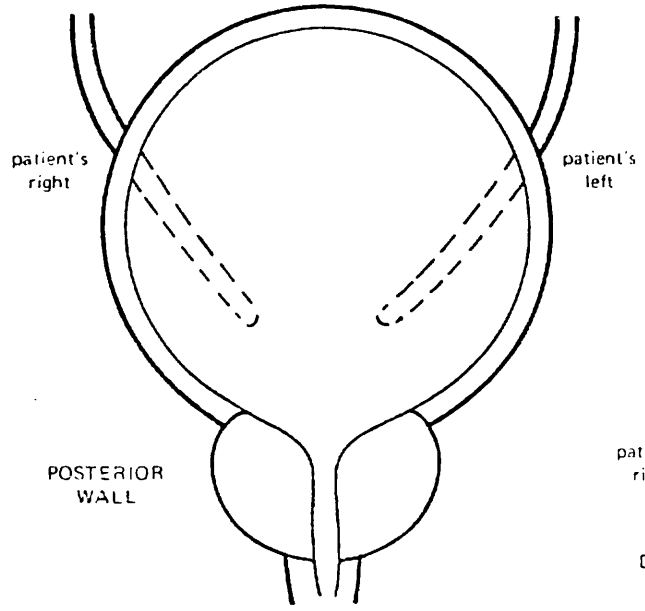
S = Sessile tumor

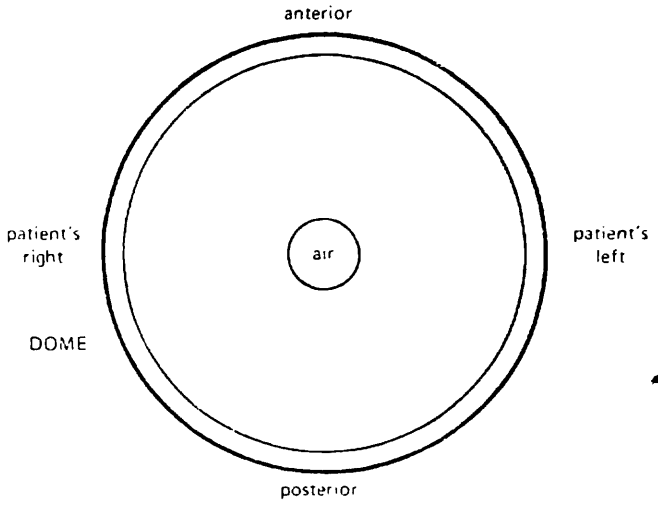
P = Papillary tumor

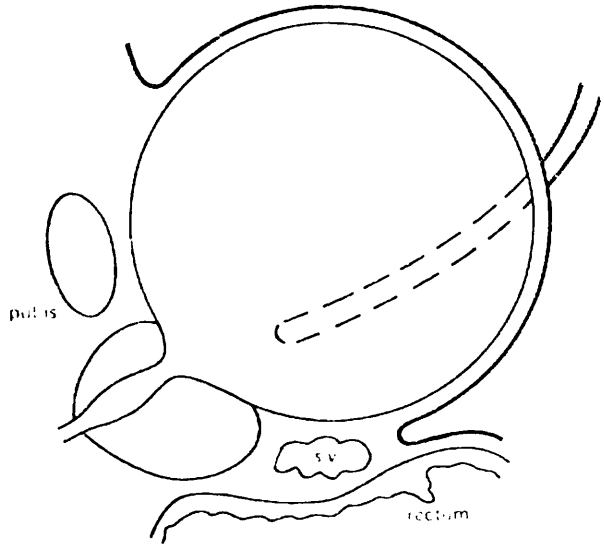
E = Bullous edema

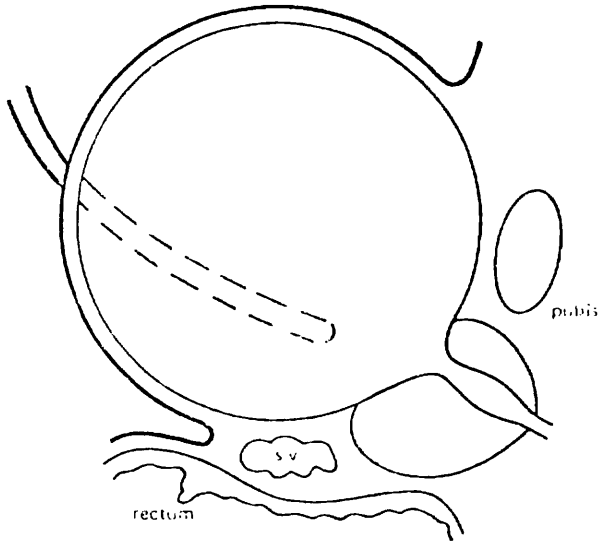
X = Biopsy site

= Resection/fulguration









PATIENT'S RIGHT WALL

PATIENT'S LEFT WALL

PATIENT NAME	INSTITUTION	PATIENT HOSP NO

DATE

____/____/____
MO DAY YR

FEMALE

OUTLINE AFFECTED AREAS AND INDICATE:

F = Flat (velvety) area suspicious of atypia or ca-in-situ

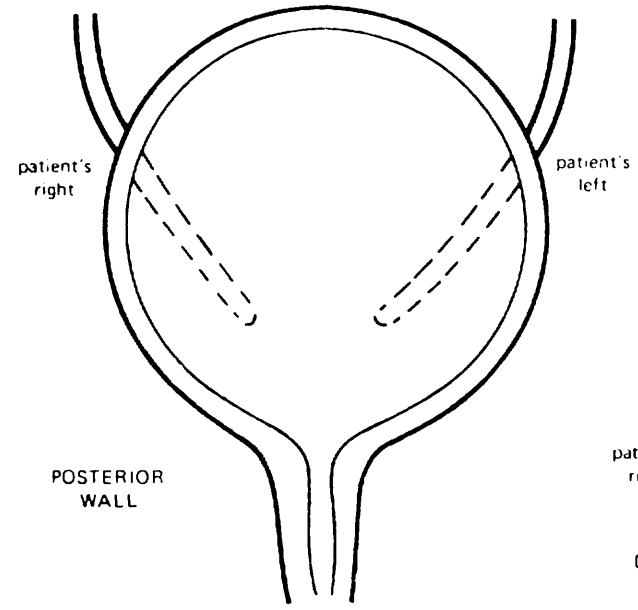
S = Sessile tumor

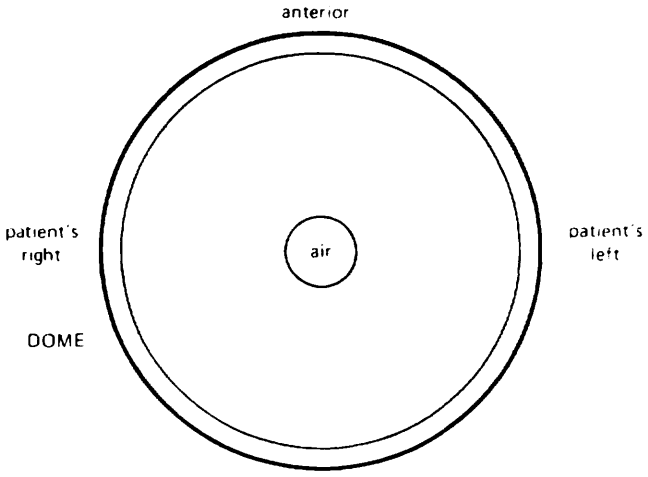
P = Papillary tumor

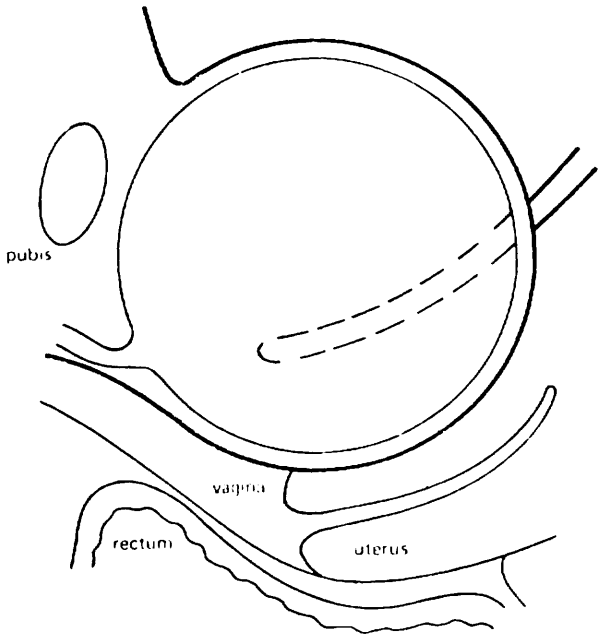
E = Bullous edema

X = Biopsy site

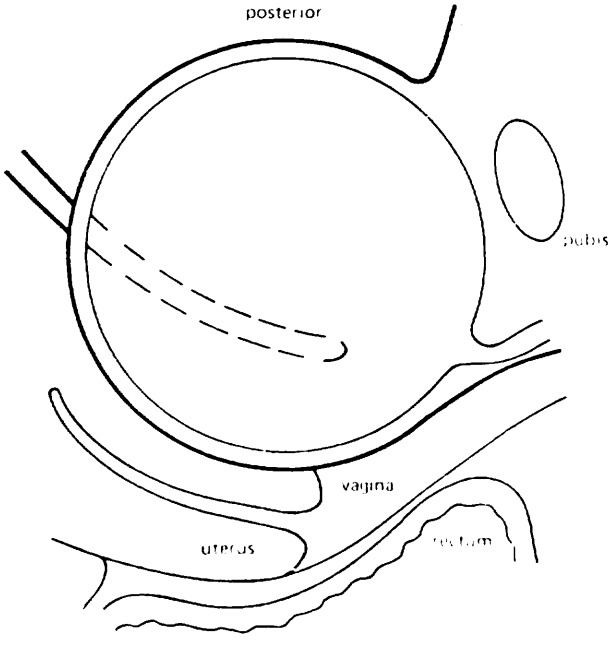
= Resection/fulguration







PATIENT'S RIGHT WALL



PATIENT'S LEFT WALL

PATIENT'S MEDICAL RECORD

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

The suffix "m" should be added to the appropriate T category to indicate multiple lesions. Papilloma is classified as "G0."

TX	Minimum requirements cannot be met
T0	No evidence of primary tumor
TIS	Sessile carcinoma in situ
Ta	Papillary noninvasive carcinoma
T1	On bimanual examination a freely mobile mass may be felt; this should not be felt after complete transurethral resection of the lesion and/or there is papillary carcinoma without microscopic invasion beyond the lamina propria
T2	On bimanual examination there is induration of the bladder wall, which is mobile. There is no residual induration after complete transurethral resection of the lesion and/or there is microscopic invasion of superficial muscle of bladder
T3	On bimanual examination there is induration or a nodular mobile mass is palpable in the bladder wall which persists after transurethral resection
T3a	Microscopic invasion of deep muscle
T3b	Invasion through the full thickness of bladder wall
T4	Tumor fixed or invading neighboring structures and/or there is microscopic evidence of invasion of the prostate and in the other circumstances listed below at least muscle invasion
T4a	Tumor invading substance of prostate, uterus, or vagina
T4b	Tumor fixed to the pelvic wall and/or infiltrating the abdominal wall

Nodal Involvement (N)

The regional lymph nodes are the pelvic nodes just below the bifurcation of the common iliac arteries. The juxtaregional lymph nodes are the inguinal nodes, the common iliac, and para-aortic nodes.

NX	Minimum requirements cannot be met
N0	No involvement of regional lymph nodes
N1	Involvement of a single homolateral regional lymph node
N2	Involvement of contralateral, bilateral, or multiple regional lymph nodes
N3	There is a fixed mass on the pelvic wall with a free space between this and the tumor
N4	Involvement of juxtaregional lymph nodes

Note: Subsequent data regarding the histologic assessment of the regional lymph nodes may be added to the N category thus: "N−" for nodes with no microscopic evidence of metastases, or "N+" for those with microscopic evidence of metastasis, for example, N0+, etc.

Distant Metastasis (M)

MX	Not assessed
M0	No (known) distant metastasis
M1	Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

Note: Add "+" to the abbreviated notation to indicate that the pathology (p) is proved.

HISTOPATHOLOGY

Predominant cancer is a transitional cell cancer.

STAGE GROUPING

No stage grouping is recommended at this time.

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

Residual Tumor (R)

R0	No residual tumor
R1	Microscopic residual tumor
R2	Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

PROSTATE

The present stage and grade classification of cancer of the prostate has had general acceptance for many years and fortunately is quite amenable for corresponding to this proposed classification of the TNM system. The latter system has been developed to provide more uniform and increased usage for end-results reporting.

1.0 ANATOMY

1.1 Primary Site: Adenocarcinoma of the prostate usually arises within the true gland and rarely seems to begin in the benign hyperplastic enlargement that occurs around the prostatic urethra in older men. Pathologically, this cancer tends to be multifocal in origin and is more commonly found in the peripheral posterior portion of the gland and therefore clinically is highly amenable to early detection by rectal examination.

There is general agreement that the incidence of both clinical and latent carcinoma increases progressively with age but clinically this cancer is rarely diagnosed in men under 40 years of age. Outlining the size of the malignant prostate on a diagram (even when drawn on a plain surface) is valuable as there also appears to be a correlation of the size to the extent of the malignancy. Screening subjects for unsuspected prostatic cancer by cytologic studies of prostatic fluid is reported of little value because ducts from the area often are deranged and interpretation is difficult. Any induration that does not clear with conservative management should be considered suspicious for malignant change; the area of induration is accessible to at least percutaneous perineal biopsy or, as some prefer, transrectal needle biopsy. Transurethral biopsy ordinarily provides diagnosis in advanced prostatic cancer but its value in excluding early lesions that arise at some distance from the urethra is open to question. Many urologists are now advocating prostatic biopsy before any type of surgery for clinically benign prostatic disease is undertaken.

The grade of the prostatic cancer is often more important for the prognosis than the extent of its growth. The histopathologic grading of these tumors is complex because there are cells and glandular and stomal elements to consider. Also these cancers frequently have more than one type of pathology in specimens examined. This TNM classification allows either an anaplasia or a pattern type of grading method to be used.

One of the reasons that cancer of the prostate is felt to have so reproducible an age curve for the male population for clinical carcinoma and a long latent period is that few lymphatic channels can be found within the gland.

The scientific basis for separating the T1, T2, and T3 lesions is that lymphatics are noticeable in the prostatic capsule and more so in the perivesicular spaces. Most primary lesions first invade the prostatic capsule and then take the path of least resistance along the ejaculatory ducts into the space between the seminal vesicles and the bladder. The growth of the tumor outside the prostate is usually along the perivesicle fascia rather than directly into the seminal vesicles. If the local lesion has invaded the seminal vesicle area extensively, then the probability that the regional nodes will be involved is at least 75%.

Clinically, however, induration palpable in the seminal vesicle region may prove histologically to be inflammation and not tumor extension. Early invasion of cancers from the prostate directly into the bladder wall, distally into the membranous urethra, or along the vas deferens beyond the seminal vesicles is rare. The rectum also is rarely involved until late because of the barrier of Denonvilliers' fascia, composed of obliterated layers of the peritoneal cavity that extend downward between the prostate gland and rectum.

Ureteral obstruction, however, is not an uncommon occurrence before metastatic spread of the disease. It can be caused by bladder outlet obstruction from the primary lesion, by extension of the tumor behind the bladder, or by constriction of involved regional nodes. Periodic urogram or renogram studies may detect its occurrence and appropriate treatment can be planned.

1.2 Nodal Stations: Regional or first station nodes are (1) obturator nodes found in the region of the fossa laterally below the symphysis pubis, (2) hypogastric nodes located at the bifurcation of the common iliac vessels adjacent to the course of the obturator nerve, (3) the external iliac nodes principally located along these vessels close to the inguinal ligament, and (4) the lateral sacral and pararectal nodes within the pelvis. Juxtaregional or second station nodes are the common iliac and the para-aortic and paracaval lymph nodes.
Note: Physical examination or lymphangiography rarely demonstrates the regional nodes that drain lymphatics from the prostate gland. Operative exploration, therefore, is being encouraged to better determine the extent of nodal involvement before radical surgery or curative doses of radiation therapy are implemented.

1.3 Metastatic Sites: Distant spread to bones via lymphatic or venous channels is the most common route. These metastases are usually first seen in the pelvis followed by lesions in the lumbothoracic spine, ribs, and heads of the femur and humerus. Bony lesions are usually blastic in nature but may be mixed or lytic in high-grade prostatic cancers. Later metastases tend to spread to the chest, sometimes to the liver, and occasionally to the brain. An elevated blood acid phosphatase determination, especially the prostatic portion, is classified usually as evidence of metastases, although the behavior of the cancer indicates a prognosis not as grave as if there was evidence of other distant metastases. Some urologists like to obtain bone marrow studies to further rule out metastatic disease before performing radical surgery. If juxtaregional nodes appear to be involved, then biopsy of the left scalene node is recommended before beginning irradiation and/or chemotherapy.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: Clinical examination, urography, biopsy or cytology, and endoscopy, if indicated, prior to definitive treatment, are required. Clinical examination, lymphangiography, and/or urography are desirable to detect nodal involvement. Clinical examination, chest x-ray, skeletal studies, and acid phosphatase determinations on two or more occasions will aid in establishing the presence of metastasis. If juxtaregional nodes appear involved, scalene node biopsy is recommended.

Note: Newer diagnostic modalities (e.g., computerized body isotope scans) may be subsequently used to provide the minimum required information.

2.2 Surgical-Evaluative Staging: Retroperitoneal exploration with biopsy of regional or first station nodes or juxtaregional or second station nodes, if appropriate, is necessary. This is being encouraged to better evaluate the extent of prostatic cancer as regional nodes are usually not detectable by physical examination or lymphangiography.

2.3 Postsurgical Treatment-Pathologic Staging: Pathologic material may be obtained for evaluation from (1) a radical prostatectomy, which usually means a prostatovesiculectomy that may be performed through a retropubic, perineal, or a transsacral approach, (2) a total cystectomy that includes a prostatovesiculectomy, particularly if the prostatic malignancy has invaded the bladder wall, (3) an anterior exenteration in which the only major structure left in the pelvis is the rectum, or (4) a regional lymph node dissection. The latter may be an extensive methodical attempt to remove all regional nodes or a limited dissection of those obviously overwhelmed by a tumor process.

2.4 Retreatment Staging: Histopathologic biopsy is required for confirmation of local recurrence following surgical or radiation treatment. A reevaluation for metastatic disease is highly desirable at this time for improved end-results reporting.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Minimum requirements cannot be met

T0 No tumor palpable; includes incidental findings of cancer in a biopsy or operative specimen. Assign all such cases a G, N, or M category

T1 Tumor intracapsular surrounded by normal gland

T2 Tumor confined to gland, deforming contour, and invading capsule, but lateral sulci and seminal vesicles are not involved

T3 Tumor extends beyond capsule with or without involvement of lateral sulci and/or seminal vesicles

T4 Tumor fixed or involving neighboring structures. Add suffix (m) after "T" to indicate multiple tumors. (e.g., T2m)

3.2 Nodal Involvement (N)

NX Minimum requirements cannot be met

N0 No involvement of regional lymph nodes

N1 Involvement of a single regional lymph node

N2 Involvement of multiple regional lymph nodes

N3 Free space between tumor and fixed pelvic wall mass

N4 Involvement of juxtaregional nodes

Note: If N category is determined by lymphangiography or isotope scans, insert "1" or "i" between "N" and appropriate number (e.g., N12 or Ni2). If nodes are histologically positive after surgery, add "+"; if negative, add "–."

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping is recommended at this time.

6.0 HISTOPATHOLOGY

Almost always adenocarcinoma, grades variable.

6.1 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION — PROSTATE

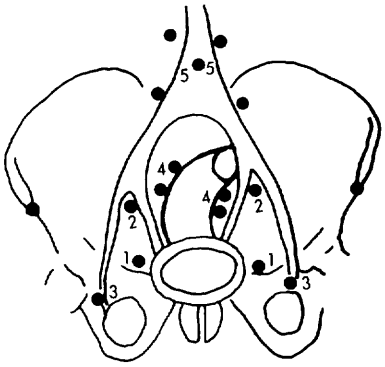
Diagnosis Here _____ Elsewhere (specify) _____ Date _____ Rectal Exam _____
Biopsy (specify) _____ Cytology (specify) _____
Radiologic (specify) _____ Prostatectomy (specify) _____
Biochemical (specify) _____ Other (specify) _____

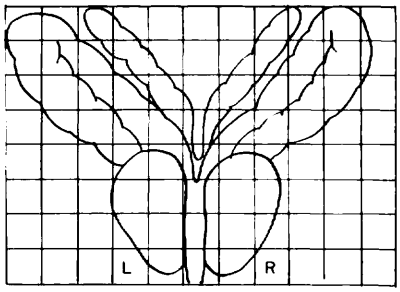
Significant Symptomatic Associated Nonmalignant Disease(s) CV ___ Resp. ___ GU ___ GI ___ Met/End ___ GNS ___
Mus/Skel ___ Allergy ___ Other (specify) _____

Other Malignant Disease Site _____ Extent (specify as to T ___ N ___ M ___ INA† ___)

Purpost of Treatment Curative ___ Palliative ___ INA† ___; Death Date _____ From Tumor ___ With tumor but from other causes ___ No tumor but from other causes ___ INA† ___; Autopsy date _____ INA ___

Host Physical State H ___ or % ___





Regional or first station nodes are: (1) obturator, (2) hypogastric, (3) external iliac, and (4) lateral sacral and pararectal.
Juxtaregional or second station nodes are common iliac and para-aortic.

Symptoms	INA†	Dates: Antecedent	Dates: Current
None	___		
Frequency	___		
Hematuria	___		
Nocturia	___		
Infection	___		
Pain from cancer	___		
(specify)			
Weight loss	___		
Gynecomastia: Yes ___ No ___	___		
Other _____	___		
Treatment			
None	___		
Hormone	___		
(specify)			
Surgery			
Orchiectomy	___		
Prostate	___		
TUR	___		
Enucleation	___		
Cryosurgery	___		
Radical	___		
(specify approach)			
Pelvic lymphadenectomy	___		
(specify type)			
Other surgery	___		
(specify type)			
Radiation (curative) amount			
External	___		
Interstitial	___		
Pelvis	___		
Juxtaregional nodes	___		
Radiation (palliative)	___		
Location/Amount			
Chemotherapy	___		
(specify)			
Analgesics	___		
(specify)			
Other	___		
(specify, e.g., immunotherapy)			

Classification
T _____ N _____ M _____

Stage
No stage grouping recommended

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.
†INA = Information not available.

TNM CLASSIFICATION

Primary Tumor (T)

TX Minimum requirements cannot be met

T0 No tumor palpable; includes incidental findings of cancer in a biopsy or operative specimen. Assign all such cases a G, N, or M category

T1 Tumor intracapsular surrounded by normal gland

T2 Tumor confined to gland, deforming contour, and invading capsule, but lateral sulci and seminal vesicles are not involved

T3 Tumor extends beyond capsule with or without involvement of lateral sulci and/or seminal vesicles

T4 Tumor fixed or involving neighboring structures. Add suffix (m) after "T" to indicate multiple tumors (e.g., T2m)

Nodal Involvement (N)

NX Minimum requirements cannot be met

N0 No involvement of regional lymph nodes

N1 Involvement of a single regional lymph node

N2 Involvement of multiple regional lymph nodes

N3 Free space between tumor and fixed pelvic wall mass

N4 Involvement of juxta-regional nodes

Note: If N category is determined by lymphangiography or isotope scans, insert "1" or "i" between "N" and appropriate number (e.g., N12 or Ni2). If nodes are histologically positive after surgery, add "+"; if negative, add "–."

Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

Note: Add "+" to the abbreviated notation to indicate that the pathology (p) is proved.

HISTOPATHOLOGY

Almost always adenocarcinoma, grades variable

STAGE GROUPING

No stage grouping is recommended at this time.

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

Residual Tumor (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

TESTIS

This classification is designed for cancers of the body of the testis principally arising from germ cells and has been developed to provide more uniform and increased usage for end-results reporting. Several classifications are currently being used based more on the histopathology than on the extent of these malignancies. The former appears to have much more importance in the prognosis than the latter whether the tumors develop from totipotential germ cells in a seminoma or in a nonseminoma direction. This proposed TNM classification, however, tends to follow the staging of these other classifications and includes documentation of the cell types and grade.

1.0 ANATOMY

1.1 Primary Site: The testes are composed of convoluted seminiferous tubules with a stroma containing functional endocrine interstitial cells. Both are encased in a dense barrier capsule, the tunica albuginea, with fibrous septa extending into and separating the testes into lobules. The tubules converge and exit at the mediastinum of the testis into the rete testis and efferent ducts, which join a single tubule. This tubule, the epididymis, is noticeably coiled outside the upper and lower pole of the testicle then joins a muscular conduit, the vas deferens, which accompanies the vessels and lymphatic channels of the spermatic cord. The testis is surrounded by a remnant of the peritoneal cavity, the tunica vaginalis, and hydroceles are associated with approximately 10% of testicular tumors.

Cancer from the germ cells of the testis usually develops during the years of greatest sexual activity. Many authorities feel that the undescended testis has a greater tendency to undergo carcinomatous change, even after an orchiopexy has been performed. The characteristics and the amount of the tumor may produce endocrine effects including gynecomastia and altered laboratory determinations.

The major route for local extension is through the lymphatic channels emerging from the mediastinum of the testis and coursing through the spermatic cord. Occasionally the epididymis will be invaded early and then the external iliac nodes may become involved. Involvement of the rete testis without evidence of further extension may well be a T1 lesion in behavior, but for the present it will continue to be classified as a T3 lesion along with the involvement of the epididymis. If there has been previous scrotal or inguinal surgery with invasion of the scrotal wall, though this is rare, then the lymphatic spread may be to inguinal nodes.

The histopathology of the individual testicular tumor, as noted above, appears to be more important than its extent. Much more information is needed relative to the prognosis of mixed lesions, which occur in at least 20% of these malignancies. "Burned out" primary lesions associated with abdominal masses are rare.

1.2 Nodal Stations: The spermatic lymphatic collecting ducts on the right side tend to follow the vascular components of the cord and drain into the paracaval lymph nodes in the area where the vein enters the vena cava and the artery arises from the aorta. The spermatic lymphatic collecting ducts on the left side also tend to follow the vascular components of the cord and drain into the para-aortic nodes in the region where the spermatic and the inferior mesenteric arteries arise off the aorta and also into the nodes of the renal hilum in the region where the spermatic vein joins the left renal vein. Spread of the tumor into contralateral regional or first station nodes of the area occurs in at least 20% of cases. When there has been previous inguinal or scrotal surgery, inguinal nodes also are considered as regional or first station nodes. Juxtaregional or second station nodes are those of the pelvis and mediastinal and supraclavicular regions. The distinction of juxtaregional nodal involvement from metastatic sites for testicular tumors is meaningful for end-results reporting of the effects of radiation therapy.

1.3 Metastatic Sites: Distant spread of testicular tumors is most common to the lung followed by metastases to the liver, viscera and bones.

2.1 Clinical-Diagnostic Staging:
Clinical examination and radical orchiectomy (which in this case is considered as a biopsy) are required to detect primary tumor. Clinical examination, lymphangiography, and/or urography are desirable to detect nodal involvement. Chest plate and biochemical tests, if available (e.g., human chorionic gonadotropin and, for nonseminomatous tumors, alpha-fetal protein), are desirable.
Note: New diagnostic modalities (e.g., computerized body isotope scans) may be subsequently used to provide the minimum required information.

2.2 Surgical-Evaluative Staging: Exploration with biopsy of regional or first station nodes or juxtaregional or second station nodes, if appropriate. (Note: Radical orchiectomy with carcinoma of the testis is considered as the primary tumor biopsy and is not used for surgical-evaluative assessment in this TNM classification.) Surgical exploration is becoming more widely utilized in cases of testicular tumors to determine if regional nodes are positive before proceeding with radical retroperitoneal node dissections or with irradiation of the mediastinum.

2.3 Postsurgical Treatment-Pathologic Staging: Pathologic material may be obtained for evaluation from (1) radical orchiectomy, (2) regional or juxtaregional node biopsies, and (3) retroperitoneal node dissections whether performed bilaterally or unilaterally.

2.4 Retreatment Staging: A histopathologic biopsy is required for confirmation of local recurrence following surgical or radiation treatment. Reevaluation for metastatic disease is highly desirable at the time of the positive biopsy.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TX Minimum requirements cannot be met (in the absence of orchiectomy, TX must be used)

T0 No evidence of primary tumor

T1 Limited to body of testis

T2 Extends beyond the tunica albuginea

T3 Involvement of the rete testis or epididymis

T4a Invasion of spermatic cord

T4b Invasion of scrotal wall

3.2 Nodal Involvement (N)

NX Minimum requirements cannot be met

N0 No evidence of involvement of regional lymph nodes

N1 Involvement of a single homolateral regional lymph node which, if inguinal, is mobile

N2 Involvement of contralateral or bilateral or multiple regional lymph nodes which, if inguinal, are mobile

N3 Palpable abdominal mass present or fixed inguinal lymph nodes

N4 Involvement of juxtaregional nodes

Note: If N category is determined by lymphography or isotope scans, insert "1" or "i" between "N" and appropriate number (e.g., N12 or Ni2). If nodes are histologically positive after surgery, add "+," if negative, add "−."

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping is currently recommended.

6.0 HISTOPATHOLOGY

Cell Types — These can be divided into seminomatous and nonseminomatous tumors. The latter can be divided into teratoma, teratocarcinoma, embryonal cell carcinoma, and choriocarcinoma. Mixtures of these types are to be denoted. Lymphomas are excluded. Reference to the WHO nomenclature and classification is recommended.

6.1 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

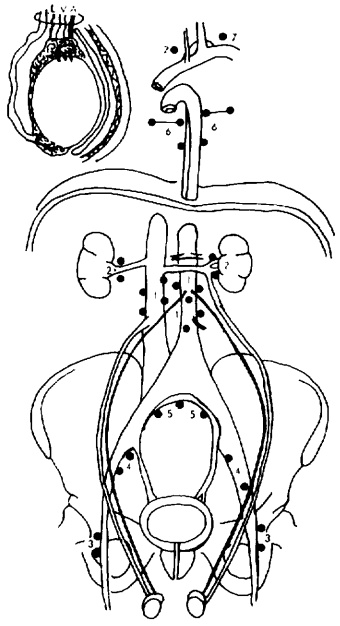
DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____
Diagnosis Here _____ Elsewhere (specify) _____ Date _____ INA† _____
Orchiectomy (specify) _____ Biopsy of testes _____ Node Biopsy (specify) _____ Scrotal _____ Inguinal/Cord _____ Biochemical (specify) _____ Other (specify) _____
Significant Symptomatic Associated Nonmalignant Disease(s) CV _____ Resp. _____ GU _____ GI _____ Met/End _____ GNS _____ Mus/Skel _____ Allergy _____ Other (specify) _____
Other Malignant Disease Site _____ Extent (specify as to T _____ N _____ M _____ INA† _____)
Purpose of Treatment Curative _____ Palliative _____ INA† _____; Death Date _____
From tumor _____ With tumor but from other causes _____ No tumor but from other causes _____ INA† _____; Autopsy date _____ INA† _____
Host Physical State H _____ or % _____



Regional or first station nodes are: (1) para-aortic and paracaval, (2) renal hilar, and (3) inguinal (after previous scrotal/inguinal surgery).

Juxtaregional or second station nodes are: (4) and (5) intrapelvic nodes, (6) mediastases, and (7) supraclavicular.

		Dates	
Symptoms	INA†	Antecedent	Current
Pain (specify)	_____	_____	_____
Weight loss	_____	_____	_____
Gynecomastia	_____	_____	_____
Testes ever undescended	_____	_____	_____
Surgical history	_____	_____	_____
Orchiopexy	_____	_____	_____
Inguinal	_____	_____	_____
Scrotal	_____	_____	_____
Other	_____	_____	_____
(specify) _____	_____	_____	_____
Treatment			
None	_____	_____	_____
Surgical (outline on diagram)			
Orchiectomy	_____	_____	_____
Lymphadenectomy	_____	_____	_____
Route (specify) _____	_____	_____	_____
Laterality (specify) _____	_____	_____	_____
Para-aortic (specify) _____	_____	_____	_____
Other (specify) _____	_____	_____	_____
Radiotherapy (curative)	_____	_____	_____
Site _____	_____	_____	_____
Amount _____	_____	_____	_____
Radiotherapy (palliative)	_____	_____	_____
Site _____	_____	_____	_____
Amount _____	_____	_____	_____
Chemotherapy	_____	_____	_____
(specify) _____	_____	_____	_____
Other (e.g., immunotherapy)	_____	_____	_____
(specify) _____	_____	_____	_____

Classification
T _____ N _____ M _____

Stage
No stage grouping recommended

Residual Tumor

R _____

Host — Performance Status (H)

H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

INA_T = Information not available.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

TX	Minimum requirements cannot be met (in the absence of orchiectomy, TX must be used)
T0	No evidence of primary tumor
T1	Limited to body of testis
T2	Extends beyond the tunica albuginea
T3	Involvement of the rete testis or epididymis
T4a	Invasion of spermatic cord
T4b	Invasion of scrotal wall

Nodal Involvement (N)

NX	Minimum requirements cannot be met
N0	No evidence of involvement of regional lymph nodes
N1	Involvement of a single homolateral regional lymph node which, if inguinal, is mobile
N2	Involvement of contralateral or bilateral or multiple regional lymph nodes which, if inguinal, are mobile
N3	Palpable abdominal mass present or fixed inguinal lymph nodes
N4	Involvement of juxtaregional nodes

Note: If N category is determined by lymphography or isotope scans, insert "1" or "i" between "N" and appropriate number (e.g., N12 or Ni2). If nodes are histologically positive after surgery, add "+," if negative, add "−."

Distant Metastasis (M)

MX	Not assessed
M0	No (known) distant metastasis
M1	Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

Note: Add "+" to the abbreviated notation to indicate that the pathology (p) is proven

HISTOPATHOLOGY

Cell Types — These can be divided into seminomatous and nonseminomatous tumors. The latter can be divided into teratoma, teratocarcinoma, embryonal cell carcinoma, and choriocarcinoma. Mixtures of these types are to be denoted. Lymphomas are excluded. Reference to the WHO nomenclature and classification is recommended.

STAGE GROUPING

No stage grouping is recommended at this time.

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

Residual Tumor (R)

R0	No residual tumor
R1	Microscopic residual tumor
R2	Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF MALIGNANT MELANOMA

In adopting a classification and staging system for malignant melanoma, the American Joint Committee has utilized the work of Clark, McGovern, Breslow, and many others.

1.0 CLINICAL PATHOLOG CLASSIFICATION

1.1 Clinical and Histologic Types of Malignant Melanoma

a. **Malignant melanoma, lentigo maligna type:** This refers to melanoma that develops within Hutchinson melanotic freckle. It grows radially, producing complex colored, highly distinctive clinical lesions. After this radial growth phase, the cells in focal areas penetrate deeper into the dermis and this is referred to as the vertical growth phase.

b. **Malignant melanomas, with radial growth phase of the radial (superficial) spreading type:** This is also characterized by a biphasic growth pattern and about 70% of all cutaneous melanomas are of this type. Whereas the proliferating melanocytes of the radial growth phase of melanoma of the lentigo maligna (Hutchinson) type are confined to the basilar regions of the epidermis, the melanocytes of the radial growth phase of malignant melanoma of the radial (superficial) spreading type essentially grow in the epidermis and invade the papillary dermis, usually in a pagetoid fashion.

c. **Malignant melanoma, nodular type (without intraepidermal growth):** This has no radial growth phase. Such a lesion is usually convex and is always palpable due to its growth elevation above the level of the adjacent normal skin.

d. **Malignant melanoma, unclassified:** This is a term used to denote a melanoma for which the radial growth phase cannot or has not been assigned to the forementioned types.

Most melanomas fall into one of these categories. However, there are occasional malignant melanomas which arise in either a giant hairy nevus, or a blue nevus, or which have a special location such as volar-subungual, or which arise from oral, nasopharyngeal, conjunctival, vaginal, or anal mucous membranes. Melanomas may rarely arise from a visceral site or appear without a demonstrable primary lesion. All of these variations should be specifically coded separately.

Although the available data suggest the importance of the depth and thickness of invasion as a prognostic factor, the Committee has received many comments expressing reservations about the ultimate significance of some of the histologic types. It is true that lentigo maligna (Hutchinson's type) appears to have more of a favorable prognosis at early stages of invasion, but the wisdom of separating the radial (superficial) spreading type from the nodular type was questioned. While it was recognized that they are distinct morphologic types with perhaps different biologic implications, the survivals were similar when the tumor extended beyond the papillary dermis (level III or deeper). The unfortunate term "superficial spreading" was generally thought to be misleading since it continues to be construed as a tumor with superficial invasion **which it is not.** Such an interpretation has led to confusion and patient undertreatment. The Committee therefore suggests the use of the term malignant melanoma with radial growth phase of the radial spreading type.

The American Joint Committee has attempted to embrace the nomenclature devised by the working committees of WHO. In classifying and staging malignant melanoma, those lesions with an adjacent intraepidermal component or radial growth phase of the radial spreading type may be combined with malignant melanoma without an adjacent intraepidermal component (nodular type) and may be coded "melanoma, unclassified."

There is an emerging trend to place great emphasis upon the measured thickness of malignant cellular invasion in micrometers, irrespective of the actual level of invasion. Until it is shown that level or measured thickness or some yet unrecognized criteria is most accurate, it is recommended that all lesions be recorded with both **level and thickness of invasion.**

2.0 HISTOLOGY

2.1 Primary Site: The skin is divided into five levels corresponding to the five levels of invasion: The first level is **not cancer** and is included only because it is a distinct histoanatomic layer of the skin.

Level I (epidermis to epidermal-dermal interface): Lesions involving the epidermis only have been designated Level I. These lesions are considered to be "atypical melanocytic hyperplasia" and will not be included in the staging of malignant melanoma **for they do not represent a malignant lesion**
Level II (papillary dermis): Invasion of the papillary dermis, but not reaching the papillary-recticular dermal interface
Level III (papillary-reticular dermis interface): Invasion involving the full thickness of, and filling and expanding, the papillary dermis; abutting upon, but not penetrating, the reticular dermis
Level IV (reticular dermis): Invasion into the reticular dermis, but not into the subcutaneous tissue
Level V (subcutaneous tissue): Invasion through the reticular dermis into the subcutaneous tissue

2.2 Thickness of invasion into the skin is recorded as an actual measurement as determined by the ocular micrometer measured from the outermost granular layer to the greatest depth of penetration. Actual measurement is to be recorded, but for staging it will be categorized:
   a. Less than 0.75 mm
   b. 0.75 to 1.5 mm
   c. Greater than 1.51 mm to 3.0 mm
   d. Greater than 3.0 mm

2.3 Regional Nodes: The regional nodes are related to the region of the body in which the tumor is located; such first station nodes are:
   a. For head and face: preauricular, upper cervical, submaxillary
   b. For neck and upper chest wall: cervical, supraclavicular
   c. For chest wall generally: anterior and posterior; and for arms: axillary
   d. For hand and upper extremity below the elbow: epitrochlear
   e. For the abdominal wall: anterior and posterior; and for proximal lower extremities: inguinal nodes
   f. For the feet and below the knees: popliteal

2.4 Metastatic Sites: Melanomas metastasize widely and, in addition to the skin, subcutaneous tissues, and lymph nodes, commonly involve the liver, bone, lung, brain, and viscera.

3.0 RULES FOR CLASSIFICATION

3.1 Clinical-Diagnostic Staging: A careful clinical examination, inspection for tumor size, ulceration, and nodularity, inspection of the surrounding skin and subcutaneous tissue for satellites and intransit metastases leading toward the regional lymph node-bearing areas and other suspicious skin lesions, and palpation of the regional nodes are essential. Chest films and hemograms are required, and blood chemistry profiles are encouraged. Other radiographic and radioisotopic procedures are optional depending on clinical presentation.

3.2 Surgical-Evaluative Staging (intraoperative): Rarely utilized.

3.3 Postsurgical Treatment-Pathologic Staging: Evaluation of the entire primary tumor is always advised and rather than just a wedge or punch biopsy, the entire thickness of the skin is needed for accurately classification. Regional nodes should be meticulously evaluated if made available with the specimen.

3.4 Retreatment Staging: Any recurrence or metastatic lesion should be biopsied for confirmation if possible. A complete metastatic workup is advised.

4.0 TNM CLASSIFICATION

4.1 Primary Tumor (T)
The level of invasion and the thickness of penetration determine the T1 to T4 classification. For example, a thin-skinned eyelid lesion at level IV measures only 0.70 mm of invasion and is classified T3. A thin-skinned lesion on the back of the neck at level II measures 2.8 mm of invasion and would also be classified T3.

   T1 Invasion of papillary dermis (L-II) and/or less than 0.75 mm thickness

T2 Papillary-reticular dermis interface (L-III) and/or 0.75 to 1.5 mm thickness

T3 Reticular dermis (L-IV) and/or 1.51 to 3.0 mm thickness

T4 Subcutaneous tissue (L-V) and/or greater than 3 mm thickness

T1a, T2a, T3a, T4a: Satellite(s) within immediate or regional area of the primary lesion

T1b, T2b, T3b, T4b: Intransit metastasis directed toward lymph node-draining basin

4.2 Nodal Involvement (N)

N0 No regional lymph node involvement

N1 Regional lymph node involvement of first station nodes only

N2 Lymph node involvement other than first station nodes

4.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

5.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

6.0 STAGE GROUPING

Stage I

Any T N0 M0
Localized to area or site of origin. Invasion into the papillary dermis (level II) to a maximum depth into the papillary-reticular interface (level III), but which does not penetrate the reticular dermis and/or a maximum thickness measurement of 1.5 mm

Stage II

Any Ta, Tb, N0 or N1, M0
Invasion to a maximum depth of the reticular dermis or subcutaneous tissue (Level IV and V) and/or a thickness measurement of 1.5 mm or more. Regional spread or local satellite(s) directed toward or to the first nodal basin

Stage III

Any T, Ta, or Tb, Any N, M1 or M2
Any T, Ta, or Tb, N1 or N2, Any M
Disseminated spread to lymph nodes other than first station nodes or to skin (specify area) and subcutaneous tissue or to viscera (specify organs)

7.0 HISTOPATHOLOGY

7.1 Types of malignant melanoma: lentigo maligna (Hutchinson's), with adjacent intraepidermal component of radial spreading type (superficial spreading), without adjacent intraepidermal component (nodular), and unclassified

7.2 Tumor Grade (G)
G1 Well-differentiated
G2 Moderately well-differentiated
G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

8.0 REFERENCES

1. Breslow A: Tumor thickness, level of invasion and node dissection in stage I cutaneous melanoma. Ann Surg 182:572-575, 1975

2. Breslow A: Thickness, cross-sectional areas and depth of invasion in the prognosis of cutaneous melanoma. Ann Surg 172:902, 1970

3. Clark WH, From L, Bernardino EA, et al: The histogenesis and biologic behavior of primary human malignant melanomas of the skin. Cancer Res 29:705-726, 1969

4. Mehnert JH, Heard JL: Staging of malignant melanoma by depth of invasion. Am J Surg 110:168-176, 1965

5. Queensland Melanoma Project: Moles and malignant melanoma: terminology and classification. Med J Aust 1:123-124, 1967

6. Clark WH, Ainsworth AM, Bernardino EA, et al: The developmental biology of primary human malignant melanomas. Semin Oncol 2:83-103, 1975

7. Mihm MC, Clark WH, From L: Current concepts: the clinical diagnosis, classification and histogenetic concepts of the early stages of cutaneous malignant melanomas. N Engl J Med 284:1078-1082, 1971

8. McGovern VJ: The classification of melanoma and its relationship with prognosis. Pathology 2:85-98, 1970

9. Davis NC, McLeod GR, Beardmore GL, et al: Primary cutaneous melanoma project. CA 26:80-107, 1976

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

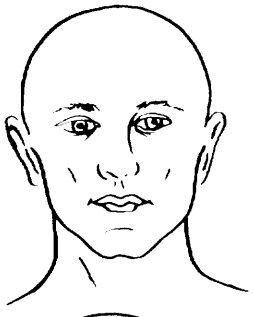
ONCOLOGY RECORD

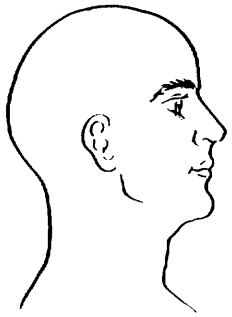
Anatomic Site of Cancer _____

Histologic Cell Type _____
Grade _____

Time of Classification *
Date of Classification _____

cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____





SITE-SPECIFIC INFORMATION — MALIGNANT MELANOMA

Type of Lesion _____
Depth of invasion level I (not a melanoma and further characterization is not necessary) ____
level II ____ level III ____ level IV ____ level V ____
Other description _____
Actual thickness (mm) _____
Site of primary lesion (check diagram) _____
Extent of primary lesion (include all pigmentation) _____
Size in greatest diameter ____ cm

Characteristics
Ulceration _____
Other _____

Regional Spread
Satellite lesions _____
Regional nodes _____

Distant Metastasis: Yes ____ No ____
Organ(s) _____

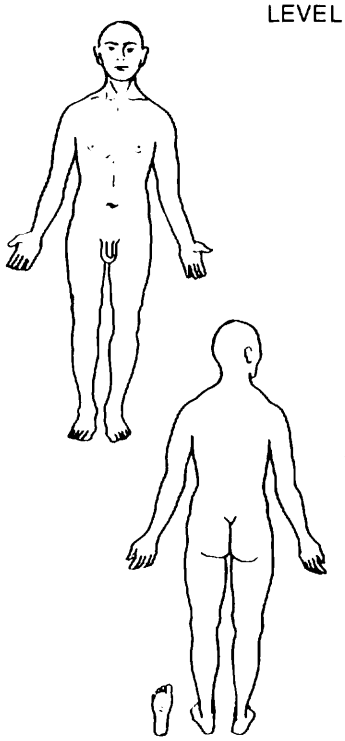
Classification
T ____ N ____ M ____

Stage _____

Treatment (as shown) _____

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____



DEFINITIONS

LEVEL OF INVASION

Primary Site (T): The skin is divided into five levels corresponding to the five levels of invasion

- Level I (epidermis to epidermal-dermal interface): Lesions involving the epidermis only. These lesions are considered to be "atypical melanocytic hyperplasia" and will not be included in the staging of malignant melanoma. Level I is included only for microscopic completeness and is not considered as cancer.
- Level II (papillary dermis): Invasion of the papillary dermis, but not reaching the papillary-reticular dermal interface
- Level III (papillary-reticular dermis interface): Invasion involving the full thickness of, and filling and expanding, the papillary dermis; abutting on but not penetrating, the reticular dermis
- Level IV (reticular dermis): Invasion into the reticular dermis, but not into the subcutaneous tissue
- Level V (subcutaneous tissue): Invasion through the reticular dermis into the subcutaneous tissue

Thickness of Invasion: The thickness of invasion into the skin is recorded as an actual measurement as determined by the ocular micrometer reading.

Regional Nodes (N): The regional nodes are related to the region of the body in which the tumor is located; such first station nodes are:

a. For head and face: preauricular, upper cervical, submaxillary
b. For neck and upper chest wall: cervical, supraclavicular
c. For chest wall generally: anterior and posterior; and for arms: axillary
d. For hand and upper extremity below the elbow: epitrochlear
e. For the abdominal wall: anterior and posterior; and for proximal lower extremities: inguinal nodes
f. For the feet and below the knees: popliteal

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- T1 Invasion of papillary dermis, (L-II) and/or < 75 mm thickness
- T2 Papillary-reticular dermis interface (L-III) and/or 0.75 to 1.5 mm thickness
- T3 Reticular dermis, (L-IV) and/or 1.51 to 3.0 mm thickness
- T4 Subcutaneous tissue (L-V) and/or >3.0 mm thickness
- T1a, T2a, T3a, or T4a: Satellite(s)
- T1b, T2b, T3b, or T4b: Intransit metastasis extending toward regional lymph nodes

Nodal Involvement (N)

- N0 No regional lymph node involvement
- N1 Regional lymph node involvement of first station nodes only
- N2 Lymph node involvement other than first station nodes

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Bone Marrow - MAR
Osseous - OSS	Pleura - PLE
Hepatic - HEP	Skin - SKI
Brain - BRA	Eye - EYE
Lymph Nodes - LYM	Other - OTH

HISTOPATHOLOGY

Types of malignant melanoma: lentigo maligna (Hutchinson's), with adjacent intraepidermal component of radial spreading type (superficial spreading), without adjacent intraepidermal component (nodular), unclassified

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I Localized to area or site of origin;
Any T N0 M0

Stage II Regional spread or local satellite(s) directed toward or to first nodal basin
Any Ta, Tb N0 or N1 M0

Stage III Disseminated spread to lymph nodes other than first station nodes or to skin (specify area) and subcutaneous tissue or to viscera (specify organs)
Any T, Ta, or Tb Any N M1 or M2
Any T, Ta, or Tb N1 or N2 Any M

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF HODGKIN'S DISEASE AND NON-HODGKIN'S LYMPHOMAS

The pathologic classification of Hodgkin's disease and of the non-Hodgkin's malignant lymphomas developed by Rappaport, Lukes, Butler, Dorfman, and others is generally accepted and coming into general use. The anatomic staging system developed for Hodgkin's disease at the Ann Arbor conference has become a worldwide standard, too, and appears to be reasonably satisfactory for the lymphocytic and histiocytic lymphomas. The TNM system, however, is not a workable system for staging the malignant lymphomas. The site of origin of these diseases is usually occult, and there is no way to differentiate "T" from "N" from "M." In these entities the type of neoplastic cell(s), the degree of cellular differentiation, and the pattern of node involvement, that is, nodular (follicular) vs. diffuse proliferation, are often more important than anatomic considerations.

1.0 ANATOMY

Lymph Nodes (LYM): The major lymphatic structures include groups and chains of lymph nodes, the spleen (SPL), thymus, Waldeyer's ring, appendix, and Peyers patches. Minor lymphoid collections are widely dispersed in other viscera and tissues, such as the bone marrow, liver, skin, pulmonary parenchyma, pleurae, gonads, etc. Extranodal (E) lymphoid malignancies are those which arise in tissues away from the major lymphatic aggregates.

2.0 RULES FOR CLASSIFICATION

The diagnosis of malignant lymphoma requires the biopsy of lymph nodes or of an extranodal lymphoid tumor.

2.1 Clinical-Diagnostic Staging: Staging generally involves the use of a sequence of clinical, radiologic, surgical, and histopathologic procedures designed to provide a sound basis for planning therapy. "Clinical-Diagnostic Staging" includes a carefully recorded medical history, physical examination, urinalysis, chest roentgenograms, blood chemistry determinations, a competent blood examination, and an aspiration biopsy of the bone marrow. Bilateral lower extremity lymphangiograms are usually necessary unless there is a contraindication of this procedure. Biopsy of accessible extranodal primary tumors, such as in Waldeyer's ring, is desirable. Bilateral bone marrow biopsies from the iliac crest using the Jamshidi needle frequently obviate the need for bone marrow biopsy at laparotomy. Radioisotope scans of the spleen and liver, additional radiologic studies of the skeleton, and technetium 99m-labeled polyphosphate bone scans may be helpful in some instances. Gallium scans, ultrasound, and CAT scans are investigative procedures.

2.2 Surgical-Evaluative Staging: Nearly one-third of patients who appear to have stage I or II Hodgkin's disease with involvement of the cervical and/or mediastinal lymph nodes have occult disease in the spleen. About 25% of patients with non-Hodgkin's lymphoma present with evidence of abdominal disease which requires laparotomy for diagnosis and, in some of these patients, the spleen is not or cannot be removed. In many instances, laparotomy is necessary for biopsy of suspicious lymph nodes disclosed by lymphangiograms. Splenectomy may be necessary in Hodgkin's disease to identify microscopic foci of neoplasia. The liver may be biopsied by a percutaneous needle procedure, sometimes directed by peritoneoscopy, or by needle or wedge specimens obtained at laparotomy.

2.3 Postsurgical Treatment-Pathologic Staging: Occasionally an extranodal site of tumor is resected along the gastrointestinal tract which permits the examination of the entire specimen along with adjacent mesenteric lymph nodes. Involvement of tissues is indicated as + or –

2.4 Retreatment Staging: Suspected recurrence or relapses require biopsy confirmation. Patients may be restaged at this juncture using the procedures outlined above.

3.0 STAGING CLASSIFICATION

Stage I	Involvement of a single lymph node region (I) or of a single extralymphatic organ or site (I_E)
Stage II	Involvement of two or more lymph node regions (number to

be stated) on the same side of the diaphragm (II), or localized involvement of an extralymphatic organ or site and of one or more lymph node regions on the same side of the diaphragm (II_E)

Stage III — Involvement of lymph node regions on both sides of the diaphragm (III) which may also be accompanied by localized involvement of extralymphatic organ or site (III_E) or by involvement of the spleen (III_S) or both (III_S)

Stage IV — Diffuse or disseminated involvement of one or more extralymphatic organs or tissues with or without associated lymph node enlargement. The reason for classifying the patient as stage IV is identified further by specifying sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Systemic Symptoms. — Each stage is subdivided into "A" and "B" categories, "B" for those with defined general symptoms and "A" for those without. The "B" designation will be given to those patients with (1) unexplained loss of more than 10% of body weight in the six months before admission; (2) unexplained fever with temperatures above 38°C; (3) night sweats. Pruritus alone does not qualify for "B" classification, nor does a short febrile illness associated with a known infection. (Carbone PP, Kaplan HS, Musshoff K, et al: Report of the committee on Hodgkin's disease staging classification. Cancer Res 31:1860, 1971).

In reference to systemic "B" symptoms in Hodgkin's disease, there is divided opinion regarding pruritus. This symptom is hard to define quantitatively and uniformly, but when it is recurrent or otherwise unexplained, and ebbs and flows in parallel with disease activity, it may be the equivalent of a "B" symptom of major significance.

Patients with lymphocytic lymphomas often have remarkably few symptoms even though many node areas or extranodal sites are involved. An accurate assessment of the performance status (Karnofsky scale), with allowances being made for unrelated diseases, is most important in patients with early disease. Those with advanced or progressive disease may present with malaise, reduced exercise tolerance, weight loss, fever, and sweating.

4.0 GENERAL CONSIDERATIONS

In dealing with extranodal disease in non-Hodgkin's lymphomas, the name of the organ or site, such as Waldeyer's ring, should be stipulated following the numeric designation of stage. The symbol "E" when used alone would, thus, signify only the direct extension of disease to an adjacent organ which will usually occur only in Hodgkin's disease.

The anatomic extent of disease in the malignant lymphomas is defined by an appropriate sequence of diagnostic procedures selected for a given disease in a particular individual. Forty to 85% of patients with lymphocytic lymphoma have readily demonstrable blood and/or bone marrow involvement. With appropriate hematologic studies, lymphangiography, and percutaneous needle biopsies of the liver when indicated, over 80% of these patients can be demonstrated to have stage IV disease without being subjected to laparotomy. In histiocytic lymphomas, occult foci of disease may occur in the abdomen and the incidence of blood and bone marrow involvement is considerably less. Laparotomy may be necessary in selected patients for optimal therapeutic planning.

On the basis of physical findings, roentgenographic observations, scans, and histologic and cytologic data, one eventually arrives at a designation of stage. There is always some variation, often with good reason, in the degree of completeness and adequacy of the data used for staging (see Data Form for Cancer Staging). In patients with Hodgkin's disease who appear to have stage IA or IIA disease by clinical staging with foci only above the diaphragm, splenic involvement can be demonstrated in one-third by splenectomy. In those who have enlarged lymph nodes in both cervical and inguinal regions, the standard group of studies on which staging can

be based should include biopsy of a lymph node, chest and skeletal roentgenograms, blood chemistry determinations, urinalysis, blood studies, and bone marrow biopsy. Lymphangiograms are always necessary unless there are contraindications to this procedure. Their importance should not be denegated despite problems that may be involved in their interpretation. They are obviously a demonstration of gross anatomy and not histology. A "staging celiotomy" is not an adequate procedure if it is done without previous lymphangiography. The dye remains in the nodes for at least 4 to 6 months, often for 1 to 2 years, and changes in size and displacement can be followed serially by plain roentgenograms during this period.

Foci of lymphoreticular disease in the paraaortic region above the level of the second lumbar vertebra, in the porta hepatis, splenic hilum, mesentery, gut wall, and other sites in the abdomen cannot be demonstrated by lymphangiography or other noninvasive techniques. Laparotomy with splenectomy may be necessary to detect foci of disease in the spleen, to establish the etiology of splenomegaly, or to investigate equivocal lymphangiographic findings. Hypersplenism in patients who tolerate radiotherapy or chemotherapy poorly may be corrected by splenectomy, and at the same time liver and node biopsies obtained. In elderly patients, in many of those who have extensive or diffuse disease with "B" systemic symptoms, lymphocyte-depleted Hodgkin's disease or recurrent histiocytic lymphoma, and in those in whom total nodal radiotherapy or cycles of multiagent chemotherapy will be given anyway, there is usually nothing to gain from laparotomy.

5.0 HISTOPATHOLOGY

The scheme of classifying Hodgkin's disease developed at the Rye Conference and that of Rappaport for the non-Hodgkin's lymphomas should be generally adopted and followed meticulously. Descriptive terms used should be rigorously standardized, with all observers being aware that there is considerable variation in technical skill and in histologic interpretation in different institutions and localities. Questionable interpretations should be submitted to a panel of experts.

5.1 **Hodgkin's disease**

Lymphocyte predominance
Nodular sclerosis
Mixed cellularity
Lymphocyte depletion
Unclassified

5.2 **Non-Hodgkin's Lymphomas**

Nodular or Diffuse

Lymphocytic, well-differentiated
Lymphocytic, poorly differentiated
Mixed histiocytic-lymphocytic
Histiocytic
Histiocytic medullary reticulosis
Unclassifiable. Burkitt's.

6.0 PERFORMANCE STATUS (Karnofsky Scale). See Introduction

7.0 DATA FORM FOR CANCER STAGING

This form serves as a reminder in acquiring and summarizing data regarding the classification and staging of malignant lymphomas, leading to a specification on the bottom line.

8.0 REFERENCES

1. Dollinger MR, Golbey RB, Karnofsky DA: Cancer chemotherapy. DM April, 1969, p 11

2. Karnofsky DA, Abelmann WH, Craver LF, et al: The use of the nitrogen mustards in the palliative treatment of carcinoma. Cancer 1:634, 1948

DATA FORM FOR CANCER STAGING

Name _____ **Date of Birth** _____ **Sex** _____ **Hospital No.** _____

Time of Staging_____Clinical-Diagnostic_____Surgical-Evaluative_____ Recurrence _____

☐ **Hodgkin's Disease**

- ☐ Nodular sclerosis
- ☐ Lymphocyte predominance
- ☐ Mixed cellularity
- ☐ Lymphocyte depletion
- ☐ Unclassified

☐ **Non-Hodgkin's Lymphoma**

- ☐ Nodular (follicular) ☐ Diffuse
  - ☐ Lymphocytic, well-differentiated
  - ☐ Lymphocytic, poorly differentiated
  - ☐ Mixed histiocytic-lymphocytic
  - ☐ Histiocytic
  - ☐ Histiocytic medullary reticulosis
  - ☐ Unclassifiable ☐ Burkitt's

	+	−	?	Duration (mos)
Fever	☐	☐	☐	_____
Sweats	☐	☐	☐	_____
Wt loss (10% in 6 mos)	☐	☐	☐	_____
Pruritus	☐	☐	☐	_____
Performance status (Karnofsky scale)				_____
Other disabling diseases				_____
Immunoglobulin abn., serum				_____
urine				_____

Diagnostic Procedures (pretreatment studies done)

P.E., blood exam	☐	I.V. pyelograms	☐	Liver biopsy, needle	☐
Blood chemistry survey	☐	Inf vena cavogram	☐	Liver biopsy, with peritoneoscopy	☐
Chest x-ray	☐	GI x-rays	☐	Celiotomy with splenectomy, node and liver biopsies	☐
Marrow aspiration	☐	Liver/spleen scan	☐		
Marrow biopsy	☐	Tomograms, chest	☐	Other_____	☐
Lymphangiograms	☐	Bone scans	☐		

Extent of Disease

Area	Abnormal Physical Findings Rt.	Lt.	Abnormal X-Ray Findings (including scans) Bil.	Bil.	Abnormal Biopsy Sites (+ or −) Rt.	Lt.
Waldeyer's ring	☐	☐			☐	☐
Cervical nodes	☐	☐			☐	☐
Supraclavicular nodes	☐	☐			☐	☐
Infraclavicular nodes	☐	☐			☐	☐
Axillary nodes	☐	☐			☐	☐
Mediastinum	☐	☐	☐		☐	
Hilar nodes	☐	☐	☐	☐	☐	☐
Lung parenchyma	☐	☐	☐	☐	☐	☐
Inguinal-femoral nodes	☐	☐				
Para-aortic nodes	☐	☐	☐	☐	☐	☐
Others (or extra-nodal sites)	☐	☐ _____	☐ _____		☐ _____	
Spleen	☐	size, cm____	☐		☐	
Liver	☐	size, cm ____	☐		☐	
Bones and Marrow			☐		☐	

Stage by Extent and Diagnostic Workup

I II III IV Clinical (node biopsy, chest x-ray, blood chemistry, blood and bone marrow examinations, lymphangiograms)
I II III IV Above plus laparotomy, splenectomy, and biopsies (specified)
I II III IV Laparotomy without splenectomy

Classification of Symptoms A B

_____M.D.

_____M.D.

CRITERIA OF PERFORMANCE STATUS (PS)
(Karnofsky Scale)

			Host Physical State
Able to carry on normal activity; no special care is needed	100%	Normal; no complaints; no evidence of disease	
	90%	Able to carry on normal activity; minor signs or symptoms of disease	H0
	80%	Normal activity with effort; some signs or symptoms of disease	
Unable to work; able to live at home; care for most personal needs; a varying amount of assistance is needed	70%	Cares for self; unable to carry on normal activity or to do active work	H1
	60%	Requires some assistance, but is able to care for most of his needs	H2
	50%	Requires much assistance and frequent medical care	
Unable to care for self; requires equivalent of institutional or hospital care; disease may be progressing rapidly	40%	Disabled; requires special care and assistance	
	30%	Severely disabled; hospitalization may be indicated although death not imminent	H3
	20%	Very sick; hospitalization necessary; active supportive treatment necessary	H4
	10%	Moribund; fatal processes progressing rapidly	
	0%	Dead	

STAGING OF PRIMARY MALIGNANT BONE TUMORS

Primary malignant lesions of the bone present important problems of diagnosis and treatment. Vital to making a diagnosis are both interpretation of roentgenograms and analysis of histopathologic features of the disease. In clinically appraising a patient for therapy, it is necessary to know the natural history of the disease, the clinical characteristics, the extent of disease, the histopathologic features, and the influence a specific therapy may have on it.

The Task Force on Primary Malignant Bone Tumors developed a protocol to evaluate information for staging of bone tumors. A field trial was made using a significant number of case records from five different institutions, which led to the conclusion that, because an insufficient number of cases with roentgenograms were available, a retrospective analysis was worthless. In determining the extent of bone involvement and, often, in identifying the site of tumor origin, roentgenographic information proved critical, and only a few roentgenograms of involved bone were available for review in any of the selected centers where a significant number of malignant bone tumor cases were on file.

The protocol developed by the task force proved to be an excellent guide as to what information is needed for retrospective or prospective studies, or both, and its use is recommended as a data-collecting technique for obtaining information for whatever classification and staging may be considered.*

The task force concluded that the future of the classification of primary malignant bone tumors lies in prospective studies and that establishing an accurate diagnosis with extent of disease is absolutely necessary for evaluating bone tumor classification and staging for end-results reporting. It is hoped that institutions having the capability and a large volume of bone tumors will use the data form so that at a future time information will become available that can be used in determining a recommended staging system.

It seems appropriate, however, to identify certain histopathologic classifications as examples and discuss their use in separating bone neoplasms into specific types that seem to follow a definite clinical course. An evaluation of the treatment of these specific types of tumor reflects the effectiveness of the therapy used.†

Such classifications reflect the histologic tissue pattern that remains the decisive factor in the diagnostic interpretation of the neoplasm. In certain cases, however, judgment is based on the dominant histologic appearance of tissue taken from various parts of the lesion. In addition, the clinical findings may be of help, but the roentgenographic studies, often regarded as part of the gross pathologic picture, frequently afford important evidence as to the malignant or benign nature of the lesion. Laboratory studies are of little aid in diagnosing the average primary malignant bone tumor (an exception is multiple myeloma).

The pathologist, the surgeon, or the roentgenologist dealing with bone tumors should view the diagnostic problem not only from his standpoint but also from that of the other disciplines concerned.

No doubt, prospective clinical trials will be enhanced by more adequate case records and will permit a satisfactory clinical classification for staging and end-results reporting of primary malignant bone tumors in the future.

Instructions for use of protocol for classification of malignant bone tumors to aid in collecting and recording the necessary data are as follows:

The purpose of this study is to develop and test a method for a meaningful staging classification for primary malignant bone tumors. The malignant tumors qualifying for this study comprise all primary malignant tumors of skeletal tissues of the body. Extraskeletal malignant bone tumors are excluded.

For the correct interpretation of the collected data, it is necessary to have a description of the material supplied by each institution. In order to have this description, each abstractor should provide the following information completely.

*Sample protocol forms are available from the American Joint Committee Office, 55 East Erie, Chicago, IL 60611

†Summaries of these classifications are appended after the data form as well as references.

Patient Identification and History. — It is important that the method of obtaining cases be specified by the abstractor. (Were the cases identified through the tumor registry, the record room, the departmental files in pathology or surgery? Were the roentgenograms and histopathologic findings reviewed?) Please note this information in the space provided for "Source of Case" in the abstract form.

All patients with histologically confirmed primary bone malignancy who received their first treatment in the reporting institution are to be included. Patients who had a previous biopsy (including excisional biopsy) elsewhere within an interval of 3 months and were then treated at the reporting institution are to be included.

Adequate follow-up information on the group of cases to be abstracted is essential, and every effort should be made to obtain such information, if possible. Any institution that is not able to provide current follow-up information on at least 90% of its cases should not participate in this study.

Date of Onset or Duration Prior to Admission: Do not include symptoms or other findings after the initiation of treatment (exception: histopathology).

Definition of Starting Time: In considering the definition of starting time for reporting of cancer survival and end results, the date of initiation of treatment is to be used as starting time for evaluation of therapy. Thus, the starting point from which survival rates are calculated is defined as the date, in treated patients, when first definitive tumor-directed treatment was commenced, and, in untreated patients, as the date on which it was decided that no tumor-directed treatment would be given. This definition is used since it will usually coincide with the date of clinical staging of the cancer. All dates in the treatment section of protocol are to be filled out if possible.

Initial Treatment: Include any treatment initiated within 4 months of initial diagnosis.

Clinical Findings. — Clinical findings are the clinical evaluation of the lesion at the time of initial workup in the hospital.

Location of Primary: See list of bones attached. Please indicate the specific bone involved in those locations where the bones are listed under the general anatomic classification such as metatarsal bone, etc. Also identify left as "L" and right as "R," when appropriate.

Tumor Size: List specific dimensions from palpation, if given.

Roentgenographic Findings. — Extent of Involvement: Extension beyond tissue of origin into surrounding periosteal zone or soft parts.

Specific Location Within Bone: Tumors should be specifically located as to the diaphysis, metaphysis, epiphysis, or combinations. Specify localization of the tumor as involving the proximal or distal end for long bones. If more than one area is involved (i.e., diaphysis and metaphysis), check each appropriate block. In certain instances in flat bones it will be necessary to define the location with reference to the proximity to the joint.

Pathologic Findings. — Record gross findings obtained at definitive surgery: size (three dimensions) and location (in long bone). Designate those lesions 5 cm or less from the joint line as proximal or distal.

Histologic Type. — There is an understandable variation in the terms used by the various pathologists in describing the histology of this group of lesions. The histologic types to be included are the following:

Osteosarcoma
Parosteal osteosarcoma
Chondrosarcoma
Fibrosarcoma
Malignant giant cell tumor
Primary reticulum cell sarcoma (lymphosarcoma)
Ewing's sarcoma
Other — specify (by diagnosis)

Terms such as periosteal sarcoma, undifferentiated round cell sarcoma, hemangiosarcoma (or its synonyms), "adamantinoma," etc. should be entered as given in the pathologic reports where they differ from the classification given above. Include undifferentiated bone sarcoma under "Other." Do **not** include chordoma of bone or myeloma.

At times there is some variation in the diagnostic label that a particular neoplasm is given during its course. If the reporting institution changes its histologic diagnosis during the course of treatment, all diagnoses should be

listed with dates. The task force recommends that the **Histologic Typing of Primary Bone Tumors and Tumor-Like Lesions,** published by the World Health Organization, Geneva, 1972, be used for specific definitions of histologic typing.

Recurrence or Metastasis at Follow-Up. — The abstractor should sign the protocol and indicate the date the record was abstracted.

REFERENCE

1. Copeland MM, Robbins GF, Myers MH: Staging system for primary malignant tumors of bone: a progress report. **In** Yearbook of Cancer M.D. Anderson: Management of Primary Bone and Soft Tissue Tumors During 1977. In press

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____
Histologic Cell Type _____
Grade _____
Time of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM_____
Date of Classification _____

SITE-SPECIFIC INFORMATION — PRIMARY MALIGNANT BONE TUMORS

Symptoms (check all applicable)

	Duration
___ Pain	_____
___ Swelling	_____
___ Weight Loss	_____
___ Functional impairment	_____
___ Fever	_____
___ Malaise	_____
___ Other, specify _____	_____

Clinical Findings (check all applicable)
Location of primary R ___ L___ _____
Clinical size _____ cm Not palpable

	Yes	No	NM
Skin temperature elevation	___	___	___
Systemic fever (1st exam)	___	___	___
Tenderness	___	___	___
Venous distention	___	___	___
Lymphedema	___	___	___
Fracture	___	___	___
Ecchymosis	___	___	___
Muscle atrophy	___	___	___
Lymph node evaluation	___	___	___

Specify node(s) _____

Laboratory Findings (1st admission)

	Norm	Elev	Decr
Alkaline phos	_____	_____	_____
Hemoglobin	_____	_____	_____
Calcium	_____	_____	_____
Phosphorus	_____	_____	_____
Total proteins	_____	_____	_____
WBC	_____	_____	_____

Differential count _____

Pathologic Findings
Biopsy of primary ___ Not done
This institution ___ Yes ___ No
Tourniquet used ___ Yes ___ No
Type of biopsy ___ Excisional
___ Incisional
___ Trochar ___ Needle
Histologic type _____
Source _____ Pathology report
_____ Review slides
Type _____

Definitive Surgery
Gross size ___x___x___
(dimensions in cm)
Location within bone (long bones only)
___ Proximal ___ Distal ___ Central
Final diagnosis _____
(histopathology)

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

Roentgenographic Findings
___ Roentgenogram ___ Angiogram
___ Tomogram
Bone scan (type) _____
Quality _____ Date _____
Specific location of tumor within bone _____

Long bone, specify R _____ L _____
___ Epiphysis ___ Metaphysis ___ Proximal
___ Distal ___ Diaphysis (central)
___ Periosteal
___ Pelvic Bone R _____ L _____
___ Cranium _____
(bone and site)
___ Mandible R _____L _____
___ Spine C ___ T ___ L ___ S ___ Co _____
___ Scapula R _____ L _____
___ Rib R _____ L _____
Soft tissue mass, specify _____
_____

Extent of involvement
___ Single primary tumor
___ Multifocal primary within one bone
Multiple primaries in more than one bone
Size: Longitudinal _____ cm
Transverse _____ cm
Lesion edge
___ Sharp edge with sclerosis
___ Sharp edge without sclerosis
___ Ill-defined
Character of bone involvement
___ Sclerotic ___ No mention
___ Lytic ___ No mention
___ Medullary involvement ___ No mention

Cortical involvement ___ No mention
___ Thickening ___ Thinning ___ Perforation
Periosteal reaction ___ No mention
___ Lamination ___ Spiculation
___ Solid sclerosis ___ Amorphous
___ Soft parts ___ No mention
Specify type _____

Evidence of metastases (1st exam):

	Pos	Neg	Not done
Chest film	_____	_____	_____
Chest tomogram	_____	_____	_____
Bone survey			
___ Complete	_____	_____	_____
___ Partial	_____	_____	_____
___ Isotope bone scan	_____	_____	_____

Type isotope _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

No descriptors for primary tumor (T), regional lymph nodes (N), or distant metastasis (M) are recommended by the Task Force on Malignant Bone Tumors at this time. Prospective use of this malignant bone tumor data-collecting form will hopefully improve the recording of basic data needed for future prognostic factor evaluation.

HISTOPATHOLOGY

Osteosarcoma, parosteal osteosarcoma, chondrosarcoma, fibrosarcoma, malignant giant cell tumor, primary reticulum cell sarcoma (lymphosarcoma), and Ewing's sarcoma. Terms such as periosteal sarcoma, periosteal osteosarcoma, undifferentiated round cell sarcoma, hemangiosarcoma (or its synonyms), adamantinoma, and undifferentiated bone sarcoma should be entered as given in the pathology reports where they differ from the aforementioned classification. **Do not include** chordoma of bone or myeloma.

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4
The prognostic significance of grading for primary malignant bone tumors is unpredictable

STAGE GROUPING

No stage grouping is recommended at present.

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor
  Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

LIST OF BONES

Axial Skeleton

Skull

- Cranium
  - frontal
  - parietal
  - sphenoid
  - zygoma
  - temporal
  - occipital
  - maxilla
- Mandible
- Other _____
- Hyoid bone

Vertebral column

- 1st cervical or atlas
- 2nd cervical or axis
- 3rd cervical
- 4th cervical
- 5th cervical
- 6th cervical
- 7th cervical
- 1st thoracic
- 2nd thoracic
- 3rd thoracic
- 4th thoracic
- 5th thoracic
- 6th thoracic
- 7th thoracic
- 8th thoracic
- 9th thoracic
- 10th thoracic
- 11th thoracic
- 12th thoracic
- 1st lumbar
- 2nd lumbar
- 3rd lumbar
- 4th lumbar
- 5th lumbar
- 1st sacral
- 2nd sacral
- 3rd sacral
- 4th sacral
- 5th sacral
- coccyx

Ribs (left or right) and sternum

- 1st rib
- 2nd rib
- 3rd rib
- 4th rib
- 5th rib
- 6th rib
- 7th rib
- 8th rib
- 9th rib
- 10th rib
- 11th rib
- 12th rib
- sternum

Appendicular Skeleton (left or right)

Upper extremity

- clavicle
- scapula
- humerus
- radius
- ulna
- carpal
- metacarpal (identify) _____
- phalanges (identify) _____

Lower extremity

- pelvis
  - ilium
  - ischium
  - pubis
- femur
- patella
- tibia
- fibula
- tarsal (identify) _____
- metatarsal (identify) _____
- phalanges (identify) _____

Histologic Typing of Primary Bone Tumors and Tumor-Like Lesions*

I. Bone-forming tumors
   A. Benign
      1. Osteoma
      2. Osteoid osteoma and osteoblastoma (benign osteoblastoma)
   B. Malignant
      1. Osteosarcoma (osteogenic sarcoma)
      2. Juxtacortical osteosarcoma (parosteal osteosarcoma)

II. Cartilage-forming tumors
   A. Benign
      1. Chondroma
      2. Osteochondroma (osteocartilaginous exostosis)
      3. Chondroblastoma (benign chondroblastoma, epiphyseal chondroblastoma)
      4. Chondromyxoid fibroma
   B. Malignant
      1. Chondrosarcoma
      2. Juxtacortical chondrosarcoma
      3. Mesenchymal chondrosarcoma

III. Giant cell tumor (osteoclastoma)

IV. Marrow tumors
   1. Ewing's sarcoma
   2. Reticulosarcoma of bone
   3. Lymphosarcoma of bone
   4. Myeloma

V. Vascular tumors
   A. Benign
      1. Hemangioma
      2. Lymphangioma
      3. Glomus tumor (glomangioma)
   B. Intermediate or indeterminate
      1. Hemangioendothelioma
      2. Hemangiopericytoma
   C. Malignant
      1. Angiosarcoma

VI. Other connective tissue tumors
   A. Benign
      1. Desmoplastic fibroma
      2. Lipoma
   B. Malignant
      1. Fibrosarcoma
      2. Liposarcoma
      3. Malignant mesenchymoma
      4. Undifferentiated sarcoma

VII. Other tumors
   1. Chordoma
   2. "Adamantinoma" of long bones
   3. Neurilemmoma (schwannoma, neurinoma)
   4. Neurofibroma

VIII. Unclassified tumors

IX. Tumor-like lesions
   1. Solitary bone cyst (simple or unicameral bone cyst)
   2. Aneurysmal bone cyst
   3. Juxta-articular bone cyst (intraosseous ganglion)
   4. Metaphyseal fibrous defect (nonossifying fibroma)
   5. Eosinophilic granuloma
   6. Fibrous dysplasia
   7. "Myositis ossificans"
   8. "Brown tumor" of hyperparathyroidism

*From Schajowicz F, Ackerman LV, Sissons HA: International Histological Classification of Tumours, Monograph No. 6. Geneva, World Health Organization, 1972. By permission.

Classification of Bone Tumors*

Tumors of osseous origin		
Cartilaginous	Osseous	Resorptive
Osteochondroma, solitary and multiple Chondroma Chondromyxoid fibroma Chondroblastoma, benign and malignant Chondrosarcoma, primary or secondary	Osteomas and ossifying fibromas of skull and jaws Osteoid osteoma Osteogenic sarcoma, sclerosing and osteolytic Parosteal osteoma and myositis ossificans	Bone cyst Diffuse osteitis fibrosa (parathyroidism) Fibrous dysplasia, polyostotic or monostotic Giant cell tumor
Tumors of nonosseous origin		
Marrow and haversian systems	Metastatic deposits	By inclusion or direct invasion
Ewing's sarcoma Primary reticulum sarcoma Multiple myeloma Chloroma and leukemia of bone Reticuloendotheliosis Xanthomas and granulomas of bone	Carcinoma of prostate, breast, kidneys, etc. Metastatic lymphomas, neuroblastomas, and sarcomas	Chordoma Angioma, angiosarcoma Fibroma and fibrosarcoma, fascial or nerve sheath Myosarcoma Liposarcoma

*From Geschickter CF, Copeland MM: Tumors of Bone. Third edition. Philadelphia, JB Lippincott Co., 1949, pp 27-34. By permission.

Classification of 3,987 Primary Tumors of Bone*

Histologic type	Benign	Cases	Malignant	Cases
Hematopoietic 1,481 cases (37%)			Myeloma Reticulum cell sarcoma	1,286 195
Chondrogenic 969 cases (24%)	Osteochondroma Chondroma Chondroblastoma Chondromyxoid fibroma	464 117 24 20	Primary chondrosarcoma Secondary chondrosarcoma Mesenchymal chondrosarcoma	299 35 10
Osteogenic 805 cases (20%)	Osteoid osteoma Benign osteoblastoma	102 28	Osteogenic sarcoma Parosteal osteogenic sarcoma	650 25
Unknown origin 388 cases (10%)	Giant cell tumor	155	Ewing's tumor Malignant giant cell tumor Adamantinoma	210 14 9
Fibrogenic 153 cases (4%)	Fibroma Desmoplastic fibroma	50 3	Fibrosarcoma	100
Notochordal 122 cases (3%)			Chordoma	122
Vascular 58 cases (1.5%)	Hemangioma Hemangiopericytoma	47 4	Hemangioendothelioma	7
Lipogenic 4 cases	Lipoma	4		
Neurogenic 7 cases	Neurilemmoma	7		
	Total benign	1,025	Total malignant	2,962

*From Dahlin DC: Bone Tumors: General Aspects and Data on 3,987 Cases. Second edition. Springfield, Illinois, Charles C Thomas, Publisher, 1967, pp 11-15. By permission.

Benign and Malignant Primary Bone Tumors: Clinicopathologic Entities*

Malignant tumors	Quasimalignant tumors	Benign tumors
Osteogenic sarcoma	Giant cell tumor	Osteoid osteoma
Conventional		Benign osteoblastoma
Juxtacortical		
		Fibrous dysplasia
Chondrosarcoma		
		Solitary
Central		Polyostotic
Peripheral		
Juxtacortical		Chondroma
Fibrosarcoma		Solitary
		Multiple
Well-differentiated		Juxtacortical
Poorly differentiated		
		Osteocartilaginous exostosis
		Solitary
		Multiple
		Desmoplastic fibroma
		Benign chondroblastoma
		Chondromyxoid fibroma
		Nonosteogenic fibroma

*From Jaffe HL: Histogenesis of bone tumors. **In** Tumors of Bone and Soft Tissue (Eighth Annual Clinical Conference on Cancer). Chicago, Year Book Medical Publishers, 1965, pp 41-44. By permission.

*STAGING OF SOFT TISSUE SARCOMA**

The staging system applies to all soft tissue sarcomas except Kaposi's sarcoma, dermatofibrosarcoma, and fibrosarcoma grade 1 (desmoid type). Excluded from the soft tissue category are those sarcomas arising within the confines of the dura mater, including the brain, and sarcomas arising in parenchymatous organs and from hollow viscera. The system is based on an analysis of 1,226 cases obtained from 13 institutions. Cases were collected on the basis of the histology, diagnosis, and type of soft tissue and included cases from all age groups.

In the analysis of the collected material, it was determined early in the study that, in addition to clinical information, the histologic type and grade of the tumor as well as its size were essential information for a meaningful staging system. The histologic diagnosis identifying the type of tumor and the pathologist's assessment of the inherent degree of malignancy of that type are fundamentals on which staging must be based.

Determination of the histologic grade and type of tumor is required for staging soft tissue sarcomas and must be established by a qualified pathologist working with adequate sampling of the tumor.

1.0 HISTOPATHOLOGY

1.1 Tumor Type: Tumors included in the analysis and evaluations are:

Alveolar soft part sarcoma
Angiosarcoma
Extraskeletal chondrosarcoma
Extraskeletal osteosarcoma
Fibrosarcoma
Leiomyosarcoma
Liposarcoma
Malignant fibrohistiocytoma
Malignant mesenchymoma
Malignant schwannoma
Rhabdomyosarcoma
Synovial sarcoma
Sarcoma, type not designated

1.2 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Once the histologic type has been determined, the tumor should be graded according to the accepted criteria of malignancy including cellularity, cellular pleomorphism, and mitotic activity. In addition, the amount of intercellular substance such as collagen or mucoid material should be considered as a favorable factor in assessing the grade.

Also, there are tumors that are highly malignant regardless of their cellular differentiation and they should be classified as grade 3 neoplasms. The most common of these are rhabdomyosarcoma and certain types of angiosarcoma and synovial sarcoma. The age of the patient may also be an important factor in determining the aggressiveness of a given tumor. For example, the prognosis of childhood fibrosarcoma is better than that of the adult forms of this neoplasm. Moreover, superficially located tumors have a more favorable prognosis than those deeply located. For the sake of simplicity, these features have been incorporated into the "G" designation, which has, in turn, been added to the TNM scheme for tumor evaluation.

2.0 ANATOMY

2.1 Primary Site: A large variety of soft tissues can give rise to these sarcomas. The tissue is mesenchymal in origin and includes all types of connective tissue, vascular tissue, muscle, fat, capsules and ligaments, peripheral nerve tissue, and extraskeletal bone and cartilage. Depending upon the location, different structures are at risk and included in the "T" classification.

2.2 Nodal Stations: The lymph node stations relate to the site of origin of the sarcoma and any of the major lymph node compartments may be at risk.

2.3 Metastatic Sites: The lung is the most common site that may be involved but a large variety of remote viscera may be invaded, such as bone, liver, brain, etc.

*For the most part and with only a few variances, recommendations regarding staging of soft tissue sarcoma in children are similar to those of the task force on this cancer. Grading of soft tissue sarcoma has not been utilized, however, in the stage grouping of pediatric tumors.

3.0 RULES FOR CLASSIFICATION

3.1 Clinical-Diagnostic Staging: Physical examination, roentgenograms of region, including chest film and skeletal survey, blood chemistries, and blood counts should be carried out. Arteriography is indicated if it will define tumor extensions and if the tumor has an identifiable blood supply. Lymphangiography is an optional procedure. Radioisotopic scans and studies should be obtained as indicated.

3.2 Surgical-Evaluative Staging: This type of staging is occasionally indicated but would consist of biopsy of extensions of tumors and draining nodes.

3.3 Postsurgical Treatment-Pathologic Staging: After complete resection, the entire specimen is evaluated to determine the type of tumor and its grade of malignancy.

3.4 Retreatment Staging: All recurrences must be determined by biopsy and complete staging, particularly for metastatic disease as indicated above.

4.0 TNM CLASSIFICATION

4.1 Primary Tumor (T)

TX Minimum requirements cannot be met

T0 No demonstrable tumor

T1 Tumor less than 5 cm in diameter

T2 Tumor 5 cm or greater in diameter

T3 Tumor that grossly invades bone, major vessel, or major nerve

4.2 Nodal Involvement (N)

NX Minimum requirements cannot be met

N0 No histologically verified metastases to lymph nodes

N1 Histologically verified regional lymph node metastasis

4.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

5.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

6.0 STAGE GROUPING

Stage I

IA G1 T1 N0 N0
Grade 1 tumor less than 5 cm in diameter with no regional lymph nodal or distant metastases

IB G1 T2 N0 M0
Grade 1 tumor 5 cm or greater in diameter with no regional lymph nodal or distant metastases

Stage II

IIA G2 T1 N0 M0
Grade 2 tumor less than 5 cm in diameter with no regional lymph nodal or distant metastases

IIB G2 T2 N0 M0
Grade 2 tumor 5 cm or greater in diameter with no regional lymph nodal or distant metastases

Stage III

IIIA G3 T1 N0 M0
Grade 3 tumor less than 5 cm in diameter with no regional lymph nodal or distant metastases

IIIB G3 T2 N0 M0
Grade 3 tumor 5 cm or greater in diameter with no regional lymph nodal or distant metastases

IIIC Any G T1,2 N1 M0
Tumor of any histologic grade or size (no invasion) with regional lymph node metastases but without distant metastases

Stage IV

IVA Any G T3 Any N M0
Tumor of any histologic grade of malignancy which grossly invades bone, major vessels, or major nerves with or without regional lymph node metastases but without distant metastases

IVB Any G Any T Any N M1
Tumor with distant metastases

7.0 REFERENCES

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DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____

Histologic Cell Type _____
Grade _____

Time of Classification* cTNM ___ sTNM ___ pTNM ___ rTNM ___ aTNM ___
Date of Classification _____

SITE-SPECIFIC INFORMATION — SOFT TISSUE SARCOMA

Clinical Information

Anatomic Site
- ☐ Head and neck
- ☐ Trunk
- ☐ Extremities
  - ☐ Shoulder and/or arm
  - ☐ Elbow and/or below
  - ☐ Buttocks and/or thigh
  - ☐ Knee and/or below
- ☐ Retroperitoneum or mediastinum
- ☐ Other _____ (specify)

Localization
- ☐ Confined to anatomic site
- ☐ Subcutaneous
- ☐ Muscle
- ☐ Blood vessels
- ☐ Nerves
- ☐ Other _____ (specify)

Tumor Size (largest dimension in cm)
- ☐ Less than 5
- ☐ 5 or more
- ☐ Exact dimensions _____

Regional Lymph Node Involvement
- ☐ None
- ☐ Regional
- ☐ Distant

Metastasis
- ☐ None
- ☐ Bone
- ☐ Lymph node
- ☐ Lung
- ☐ Liver
- ☐ Other _____ (specify)

Pathologic Information

Site of Origin
- ☐ Subcutis
- ☐ Muscle
- ☐ Other _____ (specify)
- ☐ Tendon, fascia
- ☐ Major nerve

Histologic Type
- ☐ Alveolar soft part sarcoma
- ☐ Angiosarcoma
- ☐ Extraskeletal osteosarcoma
- ☐ Extraskeletal chondrosarcoma
- ☐ Fibrosarcoma
- ☐ Leiomyosarcoma
- ☐ Liposarcoma
- ☐ Malignant fibrohistiocytoma
- ☐ Malignant mesenchymoma
- ☐ Malignant schwannoma
- ☐ Rhabdomyosarcoma
- ☐ Synovial sarcoma
- ☐ Sarcoma, type not designated

Tumor Invasion
- ☐ Skin
- ☐ Subcutis
- ☐ Muscle
- ☐ Blood vessel
- ☐ Nerve
- ☐ Bone
- ☐ Viscus
- ☐ Other _____ (specify)

Grade of Malignancy
- ☐ Grade 1 Well-differentiated
- ☐ Grade 2 Moderately well-differentiated
- ☐ Grade 3-4 Poorly to very poorly differentiated

Tumor Size (largest dimension in cm)
- ☐ Less than 5
- ☐ 5 or more
- ☐ Exact dimensions _____

Regional Lymph Node Involvement
- ☐ None
- ☐ Regional
- ☐ Negative results

Distant Metastasis
- ☐ None
- ☐ Bone
- ☐ Lymph node
- ☐ Lung
- ☐ Liver
- ☐ Other _____ (specify)

Classification
T ____ N ____ M ____
Stage _____
Residual Tumor
R _____
Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

- TX Minimum requirements cannot be met
- T0 No demonstrable tumor
- T1 Tumor less than 5 cm in diameter
- T2 Tumor 5 cm or greater in diameter
- T3 Tumor which grossly invades bone, major vessel, or major nerve

Nodal Involvement (N)

- NX Minimum requirements cannot be met
- N0 No histologically verified metastases to regional lymph nodes
- N1 Histologically verified regional lymph node metastasis

Distant Metastasis (M)

- MX Not assessed
- M0 No (known) distant metastasis
- M1 Distant metastasis present

Specify _____

Specify sites according to the following notations:

Pulmonary - PUL	Lymph Nodes - LYM	Skin - SKI
Osseous - OSS	Bone Marrow - MAR	Eye - EYE
Hepatic - HEP	Pleura - PLE	Other - OTH
Brain - BRA		

HISTOPATHOLOGY

Alveolar soft part sarcoma	Leiomyosarcoma	Malignant schwannoma
Angiosarcoma	Liposarcoma	Rhabdomyosarcoma
Extraskeletal chondrosarcoma	Malignant fibrohistiocytoma	Synovial sarcoma
Extraskeletal osteosarcoma	Malignant mesenchymoma	Sarcoma, type not designated
Fibrosarcoma		

GRADE

Well-differentiated, moderately well-differentiated, poorly to very poorly differentiated, or numbers 1, 2, 3-4

STAGE GROUPING

Stage I	- 1A	G1	T1	N0	N0	Grade 1 tumor less than 5 cm in diameter with no regional lymph nodal or distant metastases
	- 1B	G1	T2	N0	M0	Grade 1 tumor 5 cm or greater in diameter with no regional lymph nodal or distant metastases
Stage II	- IIA	G2	T1	N0	M0	Grade 2 tumor less than 5 cm in diameter with no regional lymph nodal or distant metastases
	- IIB	G2	T2	N0	M0	Grade 2 tumor 5 cm or greater in diameter with no regional lymph nodal or distant metastases
Stage III	- IIIA	G3	T1	N0	M0	Grade 3 tumor less than 5 cm in diameter with no regional lymph nodal or distant metastases
	- IIIB	G3	T2	N0	M0	Grade 3 tumor 5 cm or greater in diameter with no regional lymph nodal or distant metastases
	- IIIC	Any G	T1,2	N1	M0	Tumor of any histologic grade or size (no invasion) with regional lymph node metastasis but without distant metastases
Stage IV	- IVA	Any G	T3	Any N	M0	Tumor of any histologic grade of malignancy which grossly invades bone, major vessels, or major nerves with or without regional lymph node metastases but without distant metastases
	- IVB	Any G	Any T	Any N	M1	Tumor with distant metastases

Residual Tumor (R)

- R0 No residual tumor
- R1 Microscopic residual tumor
- R2 Macroscopic residual tumor

Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER IN PEDIATRIC PATIENTS

Cancers in pediatric patients have recently been considered by a Task Force of the American Joint Committee. In the fall of 1975, a combined meeting of representatives of SIOP, AJC, and UICC set up preliminary recommendations regarding a TNM classification and staging of neuroblastoma, Wilms' tumor, and soft tissue sarcomas in children. Subsequently there have been three additional meetings. Representatives from the Japanese Joint Committee joined the group at our last meeting. The staging system that follows is presented for a prospective feasibility trial that will be undertaken by several institutions in the United States, Japan, and Europe in 1977 and 1978 and is provisional pending accumulation of further data. It is planned that after this field trial, a final staging system will be presented at the International Union Against Cancer in Buenos Aires in 1978. In the future, further refinement of classifying and staging of other cancers occurring in children will be undertaken.

TNM CLASSIFICATION AND STAGING OF PEDIATRIC TUMORS*

Nephroblastoma (Wilms')
Neuroblastoma (including ganglioneuroblastoma and ganglioneuroma)
Soft tissue sarcomas

General Rules for Classification

1. The TNM system is based on the assessment of:
   - the extent of the primary tumor — T
   - the condition of the regional nodes — N (the codes used for N categories are provisional)
   - the absence or presence of distant metastases, including lymph node involvement beyond the regional nodes — M

2. Clinical-Diagnostic TNM is based on clinical and radiologic examinations before any treatment. Mandatory examinations are specified for each tumor; if not available X is used.

*At the present time no data forms for cancer staging in pediatric patients have been developed. These will be proposed in the future. In the meantime, all data considered pertinent to staging of cancer should be recorded in the patient's record.

3. Postsurgical Treatment-Pathologic TNM or "pTNM" is based on evidence derived from surgical operation and histopathology. When surgery is performed after radiotherapy and/or chemotherapy, the category y is added (ypTNM).

4. Staging, traditionally, is mainly based on the situation after surgery. Two staging systems, however, are proposed for trial — clinical-diagnostic and postsurgical treatment-pathologic. They are not similar and do not have the same meaning since they are decided at different times on the basis of different information. The category y also applies to surgical-pathologic staging.

WILMS' TUMOR

Clinical TNM

Mandatory: Clinical examination, I.V.P., P.A., and lateral chest films

cT

TX Inadequate information on the primary tumor
T0 The primary is undetectable by palpation or radiographic procedure

Two alternatives are being considered for the field trials:

A.

T1 Not crossing midline by palpation and/or I.V.P.
T2 Crossing midline by palpation and/or I.V.P.

B.

T1 Area of renal shadow on I.V.P.† $<80\ cm^2$
T2 Area of renal shadow on I.V.P.† $>80\ cm^2$

No T3 in Wilms' tumor

T5 Bilateral primary tumors occuring simultaneously

N

Definitions: Regional lymph nodes are defined as those nodes located in the hilum of the kidney, the renal pedicle, and para-aortic

†Calculated by measuring the maximum vertical and horizontal axis.

region between the diaphragm and the bifurcation of the aorta. All other nodes are considered distant metastases.

Since lymphangiography is rarely performed in Wilms' tumor, this usually cannot be assessed.

NX Inadequate information (no lymphangiogram)

N0 Para-aortic lymph nodes considered normal on lymphangiogram

N1 Lymph nodes considered to contain tumor

M

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Postsurgical Treatment-Pathologic TNM

This indicates the local extent of the tumor and of the lymph nodes and whether or not complete removal was done and is derived from the first surgical attempt at removal (and from histopathology). When surgery is performed after radiotherapy and/or chemotherapy, the category y is added (e.g., ypT-1). This excludes cases found to be inoperable at first surgery, treated with XRT and/or chemotherapy, and reoperated; these are pT3C.

pT

TX Inadequate information on the primary tumor

T0 Not applicable in Wilms' tumor

T1 Intrarenal tumor (completely encapsulated). Excision complete. Margins histologically free

T2 Tumor extending beyond the capsule or renal parenchyma. Excision complete*

pT3 Excision incomplete

3A Microscopic residual tumor confined to the tumor bed. To include histologically positive adhesions, previous biopsy or localized operative rupture is assumed not to have involved the peritoneal cavity

3B Macroscopic residual or widespread contamination of normal tissues during surgery, or evidence of preoperative rupture

3C Cases where attempted nephrectomy proved impossible. These cases cannot be reclassified as yPT at later surgery

pT5 Bilateral disease histologically confirmed

pN

NX No surgical excision of regional lymph nodes performed, or there is inadequate information on the pathologic findings

N0 Sampled lymph nodes histologically negative

N1 Sampled lymph nodes histologically positive. All tumorous regional lymph nodes are considered resected

N2 Sampled lymph nodes histologically positive. Tumorous nodes not considered totally resected (including surgically ruptured nodes)

*This includes breach of the renal capsule and/or tumor seen microscopically outside the capsule and tumor adhesions microscopically confirmed and infiltrations of, or tumor thrombosis within, the renal vessels outside the kidney. The tumor infiltrates the renal pelvis and/or ureter, peripelvis, and pericalyceal fat.

pM

MX Inadequate information

M0 No distant metastasis found at surgery

M1 Distant metastasis found or confirmed at surgery

NEUROBLASTOMA (Including Ganglioneuroblastoma and Ganglioneuroma)

Clinical TNM

Mandatory: Clinical examination, I.V.P., skeletal survey, P.A. and lateral chest roentgenogram, and bone marrow examination. Myelography should be done if a dumbbell tumor is suspected.

cT

The primary tumor site is to be indicated by:
Cervical - CER
Thorax - THO
Abdomen - ABD
Pelvis - PEL
Other - OTH

In the case of neuroblastoma, it is often impossible to differentiate between the primary tumor and the adjacent lymph nodes, therefore, T assessment will relate to the total mass.

TX Inadequate information on the primary tumor

T0 The primary tumor cannot be detected. The diagnosis is made by examination of metastatic tumor and/or biochemical tests

T1 The primary tumor is < 5 cm on palpation and/or roentgenogram

T2 The primary tumor is 5 to 10 cm

T3 The primary tumor is >10 cm

T5 Multicentric tumor occurring simultaneously. When there is any doubt as to multicentricity versus metastasis, the latter should be presumed

In the case of unilateral tumor, the subscript **a** is added if the tumor is not crossing the midline, and **b** if it crosses it.

Example: "T thor 1" is a tumor arising in the thorax of less than 5 cm on chest roentgenogram.

N

Definitions: Regional lymph nodes are defined as follows:

- In an **abdominal** or **pelvic** primary, all the lymph nodes that are within the abdomen and pelvis, including the external iliac nodes
- In a **thoracic** primary, all the lymph nodes that are within the thorax and the supraclavicular regions
- In a **cervical** primary, all the lymph nodes that are within the neck and supraclavicular regions
- All other involved lymph nodes are considered distant metastases

NX Inadequate information on regional lymph nodes

N0 Normal lymph nodes are assessed clinically and/or radiographically (lymphangiography is necessary for coding N0 in the abdomen and pelvis)

N1 Regional lymph nodes considered to contain tumor

M

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Postsurgical Treatment-Pathologic TNM

This indicates the local extent of the tumor and of the lymph nodes and whether or not complete removal was done and is derived from the first surgical attempt at removal (and from histopathology). When surgery is performed after radiotherapy and/or chemotherapy, the category y is added (e.g., yPT-1). This excludes cases found to be inoperable at first surgery, treated with XRT and/or chemotherapy, and re-operated; these are pT3C.

When more than one surgical procedure is carried out without intervening therapy as part of the primary treatment, this should be considered as one operation for pTNM classification (e.g., dumbbell or multicentric tumors).

pT

TX Inadequate information on the primary tumor, or no surgery performed on the primary. This is different from pT3C

T0 Primary site cannot be established at surgery (e.g., previously treated: yPT0 or multiple tumors in which the primary is not obvious)

T1 Tumor is considered completely removed. No histologic evidence of involved margins

No pT2 in neuroblastoma

pT3 Documented incomplete removal of tumor

3A **Microscopic** residual tumor

3B **Macroscopic** residual tumor including those patients undergoing grossly subtotal or partial excision

3C Attempted removal of primary tumor proved impossible. These cases can not be reclassified as yPT at later surgery. Only biopsy

pT5: Multicentric tumor

pN

NX No surgical excision of regional lymph nodes performed, or there is inadequate information on the pathologic findings

N0 Sampled lymph nodes histologically negative

N1 Sampled lymph nodes histologically positive. All tumorous regional lymph nodes are considered resected

N2 Sampled lymph nodes histologically positive. Tumorous nodes not totally resected

pM

MX Inadequate information

M0 No distant metastasis found at surgery

M1 Distant metastases found or confirmed at surgery (including positive bone marrow)

Staging

A - **Clinical Staging**

Based on clinical, radiologic, and bone marrow findings before any treatment

Stage I/II

Single nonmetastatic tumor <10 cm meeting criteria for **T1, T2, N0**

Stage III:

Single nonmetastatic tumor either >10 cm **or** with suspected regional lymph node involvement, meeting criteria for **T3 or N1, or both, M0**

Stage IV

Single tumor of any local extent, metastasis (es) present including nodes beyond regional lymph nodes. **Any T, Any N, M1**

Stage V

Multicentric primary tumor, of any local extent, with or without metastasis (es). **Any T, Any N, Any M**

B - **Postsurgical Treatment - Pathologic Staging**

Stage I

Single nonmetastatic tumor of any size, with no evidence of lymph node involvement, considered totally resected. Meeting criteria for **pT1, pNX, pN0, pM0**

Stage II
Single primary tumor of any size, with regional lymph node involvement. No distant metastases. Primary and involved lymph nodes considered **totally resected.** Meeting criteria for **pT1, pN1, pM0.**

Stage III
Single primary tumor of any size. Documented incomplete removal of the primary and/or involved lymph nodes. No distant metastases. **T3, N1, M0**

Stage IIIA
Microscopic residual tumor. **(pT3A); M0**

Stage IIIB
Macroscopic residual tumor. **(pT3B)** and/or **pN2, M0**

Stage IIIC
Tumor which could not be removed at all. **(pT3C), M0**

Stage IV
Single tumor of any local extent, metastasis (es) present. **Any T, Any N, Any M**

Stage V
Multicentric primary tumor of any local extent. **Any T, Any N, Any M**

STAGING OF SOFT TISSUE SARCOMAS IN PEDIATRIC PATIENTS*

Clinical TNM

Mandatory: Clinical examination, P.A., lateral chest roentgenogram, skeletal survey, and bone marrow examination. For primaries in the head, include skull roentgenograms and appropriate tomography and neuroradiologic investigations. For primaries below the diaphragm including lower limbs, include I.V.P. and/or lymphangiography.

*For the most part and with only a few variances, recommendations regarding staging of soft tissue sarcoma in children are similar to those of the task force on this cancer. Grading of soft tissue sarcoma has not been utilized, however, in the stage grouping in pediatric tumor.

cT

Each tumor site is to be indicated by:
ORB - orbit
HEA - head and neck
LIM - limbs
PEL - pelvis, including walls, genital tract, and pelvic viscera
ABD - abdomen, including walls and viscera
THO - thorax, including walls, diaphragm, and viscera

TX Inadequate information on the primary tumor

T0 The site of the primary tumor cannot be established. The diagnosis is made by histologic examination of metastatic tumor

T1 The greatest diameter of the primary tumor is less than 5 cm and the tumor is confined to the organ or tissue of origin (e.g., nodule in the cheek 2 cm in diameter; parotid glands and bones not involved)

T2 The greatest diameter of the primary tumor is 5 cm or greater but remains confined to the organ or tissue of origin

T3 Involvement of one or more contiguous organs or tissues by tumor of any size

In case of doubt between 1, 2, and 3, code 3 **only** if contiguous involvement is demonstrated (e.g., radiologically in the case of bones). If only suspected, code 1 or 2.

Examples of Contiguous Involvement:
- Middle ear: bone, CNS, peripheral nerve
- Orbit: bones (radiologically)
- Tonsil: base of tongue, soft palate (any involvement beyond the pillar)
- Nasopharynx:
  bones and sinus (radiologically)
  nasal cavity
  cranial nerve palsies and any CNS involvement
- Tongue: floor, cheek, tonsil, gums
- Parotid area: VII nerve, skin, bone, pharynx
- Limbs: bones (radiologically), skin, nerves

- Paratesticular tumor: skin
- Bladder: prostate (particularly most of the tumors of the base of the bladder are T3). Cystoscopy may show prostate not involved in some cases
- Vagina: labia, uterus, pelvic walls, bladder
- Retroperitoneal: all T3

T5 Does not apply to soft tissue sarcoma. When there is more than one tumor, it is considered there is a primary and a metastasis

N

Definitions: A complete list of all possible tumor sites defining regional lymph nodes is not given. The following are examples:

- Head: nodes are considered metastatic below the clavicles
- Abdomen and pelvis: nodes above the diaphragm are metastases
- Limbs: all nodes more centrally placed than groin or axilla are metastases

In the case of clearly unilateral tumors, all contralateral involved nodes are metastases

NX Inadequate information on lymph nodes

N0 Normal lymph nodes as assessed clinically and/or radiographically (lymphangiography is necessary for coding N0 in the abdomen and pelvis and lower limbs)

N1 Regional lymph nodes considered to contain tumor

M

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

Postsurgical Treatment - Pathologic TNM

This indicates the local extent of the tumor and of the lymph nodes and whether or not complete removal was done and is derived from the first surgical attempt at removal (and from histopathology). When surgery is performed after radiotherapy and/or chemotherapy, the category y is added (e.g., ypT-1). This excludes cases found to be inoperable at first surgery, treated with XRT and/or chemotherapy, and re-operated; these are pT3C.

When more than one surgical procedure is carried out as part of the **primary treatment** (e.g., removal of a primary in the leg and, secondarily, wide excision of histologically involved margin), it should be considered as one operation for pTNM classification.

pT

TX Inadequate information on the primary tumor. This category includes patients who may have a biopsy for diagnostic purpose but for whom radical surgery is not proposed. This is different from pT3C

T0 Primary site cannot be established at surgery (e.g., previously treated ypT0 or multiple tumors in which the primary is not obvious)

T1 Completely resected tumor confined to the organ or tissue of origin, with margins histologically free of tumor

T2 Tumor extending beyond the organ or tissue of origin but completely resected, with margins histologically free of tumor

pT3 Documented incomplete removal of tumor

3A Microscopic residual tumor confined to the tumor bed

3B Macroscopic residual tumor, including those patients undergoing grossly subtotal or partial excision, patients with gross spillage, or patients with malignant ascites

3C Attempted removal of primary impossible. Biopsy alone. These cases cannot be reclassified as yPT at later surgery

pT5 Not applicable to soft tissue sarcoma. One has to decide which tumor is the primary and then assess it

pN

NX No surgical excision of regional lymph nodes performed, or there is inadequate information on the pathological findings

N0 Sampled lymph nodes histologically negative

N1 Sampled lymph nodes histologically positive. Tumorous regional lymph nodes are considered resected

N2 Sampled lymph nodes histologically positive. Tumorous nodes not totally resected

pM

MX Inadequate information

M0 No distant metastasis found at surgery

M1 Distant metastases found or confirmed at surgery, including positive bone marrow

Staging

A - **Clinical Staging**
Based on clinical, radiologic, and bone marrow findings before any treatment.

Stage I/II
Nonmetastatic tumor of any size confined to the organ or tissue of origin meeting criteria for **T1, T2, N0, M0**

Stage III
Nonmetastatic tumor of any size, either involving one or more adjacent organs or structures **or** with suspected regional lymph node involvement or both meeting criteria for **T3** or **N1** or **both** or **M0**

Stage IV
Distant metastases present. **Any T, Any N, M1**

No stage V in soft tissue sarcoma; multiple sites are considered metastases

B - **Postsurgical Treatment - Pathologic Staging**

Stage I
Nonmetastatic tumor of any size, confined to its organ or tissue of origin, completely resected, with histologically free margins, no nodes sampled or negative nodes. **pT1, pN, X0**

Stage II
Nonmetastatic tumor of any size either extending beyond the organ or tissue of origin or with positive lymph nodes, or both. However, tumor and/or tumorous lymph nodes are considered totally resected. **pT2** and/or **pN1, M0**

Stage III
Nonmetastatic tumor whatever its size and local extent. Documented incomplete removal of the primary and/or of the tumorous lymph nodes

Stage IIIA
Microscopic residual tumor **(pT)**

Stage IIIB
Macroscopic residual tumor **(pT)** and/or **pN2**

Stage IIIC
Tumor which could not be removed at all **(p T)**

Stage IV
Metastasis (es) present. **Any T, Any N, M1**

STAGING OF CANCER OF THE BRAIN

The most critical feature in the classification of brain tumors is histopathology. Accurate pathologic criteria and classification are essential to an understanding of the clinical and biologic behavior of the gliomas in particular, and most other tumors as well. The anatomic location and extent of tumors within the central nervous system are also of clinical and prognostic significance. Neuroradiologic-diagnostic procedures have become increasingly more accurate and reliable in providing topographic and morphologic information on tumors of the central nervous system and are useful at various points in diagnosis and management.

1.0 HISTOPATHOLOGY

1.1 Tumors that are included in the analysis and evaluation are:

1. Astrocytomas
2. Oligodendrogliomas
3. Ependymal and choroid plexus tumors
4. Glioblastomas
5. Medulloblastomas
6. Meningiomas
7. Neurilemmomas (neurinomas, Schwannomas)
8. Hemangioblastomas
9. Neuronal tumors
10. Sarcomas
11. Reticulum cell sarcomas (microgliomas)

1.2 Histologic grade usually correlates with biologic activity of the tumor. This is particularly the case with malignant astrocytomas, the most common form of glioma. The age of the patient at the time of diagnosis is also of major importance for prognosis.

G1 Well-differentiated

G2 Moderately well-differentiated; no mitoses

G3 Poorly differentiated; occasional mitoses

G4 Very poorly differentiated; frequent mitoses, necrosis, marked pleomorphism

There is some criticism of the use of morphologic criteria alone for purposes of grading, but most classification systems are capable of incorporating such a system as an index of aggressiveness. This is further discussed in the Appendix.

2.0 ANATOMY

2.1 Primary Sites: A variety of tissues within the central nervous system can give rise to neoplasms. These include astrocytes and other glial cells, meninges, blood vessels, pituitary and pineal cells, and neural elements proper. The major structural sites involved are: the various lobes of the cerebral hemispheres; the midline structures including midbrain, pons, and medulla; the posterior fossa; and the spinal cord.

2.2 Nodal Stations: There are no lymphatic structures draining the central nervous system.

2.3 Metastatic Sites: Certain brain tumors can seed into the subarachnoid space. Hematogenous spread is very uncommon, but on rare occasions has occurred in bone and other sites.

3.0 RULES FOR CLASSIFICATION

3.1 Clinical-Diagnostic Staging: This is based on neurologic symptoms and signs and neurologic diagnostic tests including skull radiographs, electroencephalograms, isotopic brain scans, cerebral angiography, pneumoencephalography, and computerized tomographic scanning.

3.2 Surgical-Evaluative Staging: This is based on the findings at craniotomy or other surgical procedures, including extent of tumor resection and the nature of the surgical margins.

3.3 Postsurgical Treatment-Pathologic Staging: This is based on histopathology, grade, and microscopic evidence of completeness of removal.

3.4 Retreatment Staging: Each recurrence must be treated as a new problem and requires complete reevaluation as in the primary workup.

3.5 Autopsy Staging: This is based on autopsy findings of histopathology, grade, and extent of disease.

4.0 TNM CLASSIFICATION

4.1 Primary Tumor (T)

TX No available information on primary tumor

T0 Primary tumor is undetectable

Supratentorial tumor:

T1 Greatest diameter is less than 5 cm; confined to one side

T2 Greatest diameter is more than 5 cm; confined to one side

T3 Invades or encroaches upon the ventricular system; greatest diameter may be less than 5 cm

T4 Crosses the midline, invades the opposite hemisphere, or extends infratentorially

Infratentorial tumor:

T1 Greatest diameter is less than 3 cm; confined to one side

T2 Greatest diameter is more than 3 cm; confined to one side

T3 Invades or encroaches upon the ventricular system; greatest diameter may be less than 3 cm

T4 Crosses the midline, invades the opposite hemisphere, or extends supratentorially

4.2 Nodal Involvement (N)

Does not apply to this site.

4.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Subarachnoid Space	- CSF
Pulmonary	- PUL
Lymph Nodes	- LYM
Osseous	- OSS
Hepatic	- HEP
Bone Marrow	- MAR
Occult	- OCC
Other	- OTH

Add "+" to the abbreviated notation to indicate that the pathology is proven.

5.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

6.0 STAGE GROUPING

The essential feature in determining stage is the histologic grade.

Stage	I			
	IA	G1	T1	M0
	IB	G1	T2,3	M0
Stage	II			
	IIA	G2	T1	M0
	IIB	G2	T2,3	M0
Stage	III			
	IIIA	G3	T1	M0
Stage	III			
	IIIA	G3	T1	M0
	IIIB	G3	T2,3	M0
Stage	IV	G4	T1-4	M0
		G1-3	T4	M0
		Any G	Any T	Any M

Studies in progress may produce findings that will alter these recommendations at some point in the future when refined data on end results are available.

APPENDIX

HISTOLOGIC GRADING OF TUMORS OF THE CENTRAL NERVOUS SYSTEM

Criteria for the Diagnosis of Malignancy in Tumors of the Central Nervous System and Allied Structures

The uncritical application, to tumors of the central nervous system and allied structures, of those criteria for histologic and biologic malignancy which generally pertain to other neoplasms is inadequate for the following reasons:

1. Irrespective of the histologic malignancy of the tumor, its unimpeded growth within the confines of the skull as a space-occupying and expanding lesion inevitably leads to a fatal termination, which by definition is equated to clinical malignancy.

2. Similarly, the local pressure effects by an intracranial tumor upon vital neural structures may result in the clinical effects of malignancy, irrespective of the histologic type of tumor.

3. The obstructive effect of a growing tumor leads to the production of secondary occlusive hydrocephalus.

4. Certain criteria of malignancy of neoplasms which, in other body systems, pertain to their growth and spread, especially the characteristic of infiltrative growth and the capacity to metastasize, either within or outside the central nervous system, do not necessarily pertain, or have to be modified, to the evaluation of the malignant behavior of central nervous system tumors.

Thus tumors of the central nervous system and allied structures, in addition to their intrinsic benign or malignant histologic character that, to a considerable extent, determines their biologic behavior, may by their specific localization acquire certain characteristics that collectively will add up to the picture of what is regarded as "benign," "semi-benign," "relatively malignant," or "highly malignant."

The numerical grading used in this classification is based upon **histologic criteria** of malignancy and should be considered as an **estimate** of the usual behavior of each type of tumor. **Numerical grade I is considered to be the most benign and grades II, III, and IV indicate increasing degrees of malignancy.**

In this general evaluation, the pathologist confronted with the problem of malignancy and prognosis is faced with two sets of data. In the first analysis the evaluation of malignancy must clearly be based on a retrospective assessment of the postoperative prognosis and survival rates of other known similar examples, so that a final and reasonably accurate clinicopathologic correlation is arrived at which both reinforces the purely histopathologic evaluation of malignancy and at the same time is reinforced by it.

Second, the pathologist deduces malignancy from a number of purely histologic and cytologic data. These include increase of cellularity, the presence and rate of mitotic figures, the presence of atypical mitotic figures, pleomorphism of tumor cells, pleomorphism of tissue architecture, in particular necroses, abnormally prominent stromal reaction, disorderly stromal reaction and overgrowth, and the formation of pathologic blood vessels (corresponding to the angiographic appearance of arteriovenous fistulas).

On the other hand, other features that are usually regarded as indicative of, or synonomous with, malignancy need not necessarily be recognized in the case of tumors of the central nervous system, especially those of neuroectodermal origin. For instance, lack of circumscription and focal parenchymatous invasion is not a necessary accompaniment of cellular anaplasia or ultimate clinical malignancy. Also the actual presence of mitotic figures (as in oligodendroglioma) does not necessarily imply a particularly malignant behavior; the overall number of mitoses and the presence of abnormal mitotic figures are more important in evaluation. Similarly, local invasion of the leptomeninges is often clearly dissociated from either of the two features just quoted. This is, for example, the case in the pilocytic astrocytoma that involves the wall of the third ventricle, the optic nerve, the cerebellum, etc.

Although distant meningeal and ventricular metastases are often characteristic of highly malignant tumors such as the medulloblastoma, this phenomenon again is not always to be correlated with the highest degrees of cytologic malignancy, as seen in some oligodendrogliomas.

THE QUESTION OF GRADING

Following Broders' classification of epithelial tumors elsewhere in the body, an attempt has been made by Kernohan and his school to apply a system of grading by ascending degrees of malignancy numbered 1 to 4 to certain tumors of neuroectodermal origin, namely astrocytoma, oligodendroglioma, ependymoma, and neuroastrocytoma. This attempt stemmed both from a desire to simplify the then current classification of tumors of the central nervous system and from a need to offer to the neurosurgeon a prognostic evaluation of the tumor removed at surgery based on certain definite histologic and cytologic criteria. Attractive though this attempt at simplification might be, it has, however, to meet with a number of objections:

1. The sample of tissue so analysed may from surgical necessity not be representative of the tumor as a whole.

2. The specific evolution of the particular tumor in terms of its anaplastic potentialities is not fully expressed by such a scheme of grading; to illustrate this: a cerebellar pilocytic astrocytoma graded 1 does not have the same anaplastic potential as a cerebral astrocytoma or some other tumors also graded 1.

3. The pleomorphism of cell and tissue structures so frequently inherent in primary neuroectodermal tumors poses additional difficulties to the application of a simplified system of grading.

4. This cytologic grading makes it extremely difficult to place tumors with mixed cell populations into an already predetermined tumor category.

Nevertheless, the above remarks should not be regarded as basically antagonistic to some attempts at expressing the degree of malignancy of a particular tumor of the central nervous system. Indeed, from the clinical and therapeutic points of view, no classification based on purely histologic entities is satisfactory unless adequate cognizance is taken of, and information provided on, the degree of malignancy of a particular tumor submitted for examination. Thus, it is the duty and prerogative of the pathologist to provide his clinical colleagues with an informed opinion on the likely evolution of a particular tumor, and to some extent this prognostic opinion is embodied in the recognition of specific clinicopathologic neuro-oncologic entities. As an illustration, it might be pointed out that two tumors of similar cellularity, isomorphous appearance, and mitotic rate, such as the medulloblastoma and some oligodendrogliomas, will not necessarily and in fact usually do not exhibit the same biologic behavior. This acquired body of knowledge is clearly the result of previous collaborative clinicians and pathologists in the field of neuro-oncology.

DATA FORM FOR CANCER STAGING

Patient Identification
Name _____
Address _____
Hospital or Clinic Number _____
Age _____ Sex _____ Race _____

Institutional Identification
Hospital or Clinic _____
Address _____

ONCOLOGY RECORD

Anatomic Site of Cancer _____ Histologic Cell Type _____
Grade _____
Type of Classification* cTNM _____ sTNM _____ pTNM _____ rTNM _____ aTNM _____
Date of Classification _____

SITE-SPECIFIC INFORMATION—BRAIN

Initial Symptom(s) _____ Duration _____
Pertinent Family History _____ Antecedent Illness _____
Previous Therapy _____ Concomitant Illness _____
Clinical Evaluation:

Symptom	Duration (wks)	Sign	Degree of Deficit
Headache	_____	Altered state of consciousness	_____
Mental change	_____	Papilledema	_____
Visual disturbance	_____	Cranial nerve palsy (R) _____ (L) _____	_____
Seizure	_____	_____	Cerebellar deficit
Motor Loss (R) _____ (L) _____ (R) _____ (L) _____	_____		
Sensory Loss (R) ___ (L) ___	_____	Motor paresis (R) _____ (L) _____	_____
Speech disturbance	_____	Sensory deficit (R) _____ (L) _____	_____
Other _____	_____	Other _____	_____

Diagnostic Studies

Study	Date(s)
EEG	_____
Nuclear scan	_____
CT scan	_____
Angiogram	_____
Air Study	_____
Other _____	_____

Therapy

Surgery	Date(s)
Biopsy only	_____
Subtotal resection	_____
Radical subtotal resection	_____
"Total" resection	_____
Lobectomy	_____
Shunt	_____
Other _____	_____

Tumor Character

encapsulated	_____
vascular	_____
cystic	_____
infiltrative	_____

T evaluation

TX_____	T2 _____
T0 _____	T3 _____
T1 _____	T4 _____
Size(cm)	_____
Weight(g)	_____

Complications of Therapy
Surgical morbidity _____
Surgical mortality _____
Operative complication _____
Radiation toxicity _____

Radiotherapy
Type _____
Method _____

Dates
_____
Total Dose _____

Chemotherapy
Drug(s) _____
_____
_____

Dates
_____
_____
_____

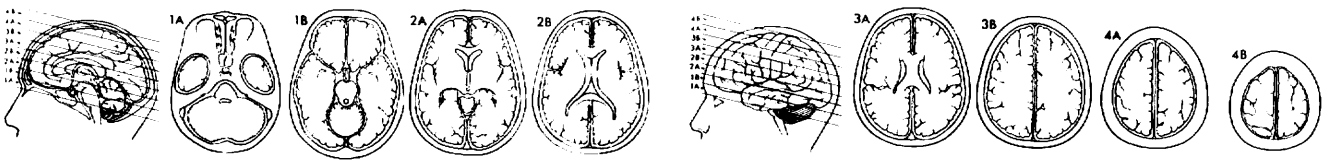
Drug toxicity _____

Metastasis
MX ___ M0 ___ M1 _____

Protocol _____

Other Adjunctive Therapy
_____
_____

Dates
_____
_____



Classification
T _____ N _____ M _____

Residual Tumor
R _____

Host — Performance Status (H)
H _____ Scale used: AJC _____ Zubrod _____ Karnofsky _____

*cTNM, clinical-diagnostic; sTNM, surgical-evaluative; pTNM, postsurgical treatment-pathologic; rTNM, retreatment; aTNM, autopsy.

DEFINITIONS

TNM CLASSIFICATION

Primary Tumor (T)

TX No available information on primary tumor
T0 Primary tumor is undetectable

Supratentorial Tumor:

T1 Greatest diameter is less than 5 cm; confined to one side
T2 Greatest diameter is more than 5 cm; confined to one side
T3 Greatest diameter may be less than 5 cm; invades or encroaches upon the ventricular system
T4 Crosses the midline, invades the opposite hemisphere, or extends infratentorially

Infratentorial Tumor:

T1 Greatest diameter is less than 3 cm; confined to one side
T2 Greatest diameter is more than 3 cm; confined to one side
T3 Greatest diameter may be less than 3 cm; invades or encroaches upon the ventricular system
T4 Crosses the midline, invades the opposite hemisphere, or extends supratentorially

Node Involvement (N) - Does not apply to this site

Distant Metastasis (M)

MX Not assessed
M0 No (known) distant metastasis
M1 Distant metastasis present
Specify _____

Specify according to the following notations:

Subarachnoid Space	- CSF
Pulmonary	- PUL
Lymph Nodes	- LYM
Osseous	- OSS
Hepatic	- HEP
Bone Marrow	- MAR
Occult	- OCC
Other	- OTH

GRADE

Well-differentiated; moderately well-differentiated, no mitoses; poorly differentiated, occasional mitoses; very poorly differentiated, frequent mitoses, necrosis, and marked pleomorphism

STAGE GROUPING

Stage	I			
	IA	G1	T1	M0
	IB	G1	T2,3	M0
Stage	II			
	IIA	G2	T1	M0
	IIB	G2	T2,3	M0
Stage	III			
	IIIA	G3	T1	M0
	IIIB	G3	T2,3	M0
Stage	IV	G4	T1-4	M0
		G1-3	T4	M0
		Any G	Any T	Any M

Residual Tumor (R)

R0 No residual tumor
R1 Microscopic residual tumor
R2 Macroscopic residual tumor
Specify _____

HOST (H) — Performance Status of Host	ECOG/ Zubrod scale	Karnofsky scale (%)
H0 Normal activity	0	90-100
H1 Symptomatic but ambulatory — cares for self	1	70-80
H2 Ambulatory more than 50% of time — occasionally needs assistance	2	50-60
H3 Ambulatory less than 50% of time — nursing care needed	3	30-40
H4 Bedridden — may need hospitalization	4	10-20

STAGING OF CANCER OF THE SKIN

1.0 ANATOMY

1.1 Primary Site: Skin cancers usually arise from those skin surfaces exposed to sunlight which include the face, ears, hands, scalp, and, to a much lesser degree, the protected truncal regions of the body and extremities.

1.2 Nodal Stations: Depending upon the origin of the skin cancer, the regional nodes are the ones involved. The common sites of the face drain to the parotid, submaxillary, and cervical nodal areas. The hands drain to the epitrochlear axillary and supraclavicular nodal areas.

1.3 Metastatic Sites: The most common site of metastases is the lung. Other sites for distant spread are rare.

2.0 RULES FOR CLASSIFICATION

2.1 Clinical-Diagnostic Staging: The assessment of the skin cancer is based upon inspection and palpation of the involved area and regional nodes. Roentgenographic examination of underlying bony structures, particularly in the scalp about the mastoid region where there is bony involvement, is important, especially if the lesion is fixed.

2.2 Surgical-Evaluative Staging: Confirmation of the extent of disease by biopsy of suspected cutaneous or subcutaneous spread is necessary. Nodal aspiration or biopsy of suspicious nodes is desirable but not required.

2.3 Postsurgical Treatment-Pathologic Staging: Complete resection of the primary site is indicated.

2.4 Retreatment Staging: Biopsy for confirmation is recommended. Reevaluation of nodal involvement or spread to lung is important as basal cell carcinomas become more extensive.

3.0 TNM CLASSIFICATION

3.1 Primary Tumor (T)

TIS Preinvasive carcinoma (carcinoma in situ)

T0 No primary tumor present

T1 Tumor 2 cm or less in its largest dimension, strictly superficial or exophytic

T2 Tumor more than 2 cm but not more than 5 cm in its largest dimension or with minimal infiltration of the dermis, irrespective of size

T3 Tumor more than 5 cm in its largest dimension or with deep infiltration of the dermis, irrespective of size

T4 Tumor involving other structures such as cartilage, muscle, or bone

3.2 Nodal Involvement (N)

The nodal involvement for cervical nodes is identical to that of the head and neck cancers, and this can also be applied to other nodal regions as well.

N0 No clinically positive nodes

N1 Single clinically positive homolateral node less than 3 cm in diameter

N2 Single clinically positive homolateral node 3 to 6 cm in diameter or multiple clinically positive homolateral nodes, none over 6 cm in diameter

N2a Single clinically positive homolateral node 3 to 6 cm in diameter

N2b Multiple clinically positive homolateral nodes, none over 6 cm in diameter

N3 Massive homolateral node(s), bilateral nodes, or contralateral node(s)

N3a Clinically positive homolateral node(s), none over 6 cm in diameter

N3b Bilateral clinically positive nodes (in this situation, each side of the neck should be staged separately; that is, N3b: right, N2a; left, N1)

N3c Contralateral clinically positive node(s) only

3.3 Distant Metastasis (M)

MX Not assessed

M0 No (known) distant metastasis

M1 Distant metastasis present
Specify _____

Specify sites according to the following notations:

Pulmonary - PUL
Osseous - OSS
Hepatic - HEP
Brain - BRA
Lymph Nodes - LYM
Bone Marrow - MAR
Pleura - PLE
Skin - SKI
Eye - EYE
Other - OTH

4.0 POSTSURGICAL TREATMENT RESIDUAL TUMOR (R)

R0 No residual tumor

R1 Microscopic residual tumor

R2 Macroscopic residual tumor
Specify _____

5.0 STAGE GROUPING

No stage grouping is recommended at this time.

Note: The American Joint Committee for Cancer Staging utilizes the same definitions for cancer of the skin as far as the primary site (T) is concerned. However, for the regional nodes (N) and distant metastasis (M) the definitions vary. UICC definitions are as follows in these two categories:

Nodal Involvement (N)
The clinician may record whether palpable nodes are considered to contain growth or not.

N0 No palpable nodes

N1 Movable homolateral nodes
N1a Nodes not considered to contain growth
N1b Nodes considered to contain growth

N2 Movable contralateral or bilateral nodes
N2a Nodes not considered to contain growth
N2b Nodes considered to contain growth

N3 Fixed nodes

Distant Metastasis (M)

M0 No evidence of distant metastasis

M1 Distant metastasis present, including lymph nodes beyond the region in which the primary tumor is situated or satellite nodules more than 5 cm from the border of the primary tumor

No stage grouping is recommended at present by the UICC or by the American Joint Committee.

6.0 HISTOPATHOLOGY

The predominant tumors are squamous cell and basal cell carcinoma. The pathologic diagnosis is required to utilize this classification. Tumor grading for squamous cell carcinoma is recommended. Reference to the WHO nomenclature is advised.

6.1 Tumor Grade (G)

G1 Well-differentiated

G2 Moderately well-differentiated

G3-G4 Poorly to very poorly differentiated

Use whichever indicator is most appropriate (term or G + number)

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