

**COLLABORATIVE STAGE
DATA COLLECTION SYSTEM
USER DOCUMENTATION
AND CODING INSTRUCTIONS**

SECTION 2
Lab Tests and Tumor Markers
Site-Specific Factor Notes

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LAB TESTS AND TUMOR MARKERS

Recording Lab Tests and Tumor Markers in Site-Specific Factors

Important Notes

The following information is intended as a guide to help the registrar locate the test in the medical record and to identify which lab test results should be coded in the Collaborative Stage Data Collection System site-specific factors (SSF).

1. The results of many tumor markers and other laboratory tests vary according to the laboratory conducting the test. The normal reference range is included in the tumor marker comments as background information *only*. Some site-specific factors ask for a lab value, others ask for the “interpretation” of the lab test (normal, elevated, and so forth).

When the site-specific factor asks for the interpretation of a lab test, code the clinician’s/pathologist’s interpretation, if available, as first priority. This would include statements of “abnormal”, “elevated”, “normal”, “equivocal”, “present”, “absent”, and so forth. In addition, the physician's statement of a T, N, or M value or stage group for the case could be an implied interpretation of a lab value used to determine the TNM classification, taking all information into consideration.

Example 1 Physician summarizes breast cancer workup by saying "HER2 IHC was positive at 3+. Registrar would code interpretation as 010 (positive).

Example 2 Physician statement: "He was found to have a PSA of 4.5." The medical record indicates that the biopsy results were positive and the physician stages the case as T1c (tumor identified by needle biopsy, e.g., because of elevated PSA). Registrar may code PSA Interpretation as 010 elevated because it resulted in the needle biopsies that were staged as T1c.

Note: If the pathologist uses the term "indeterminate," code as 030 (borderline; undetermined if positive or negative) if that code exists in the site-specific factor. If code 030 does not exist, code as 999.

a. In the absence of a physician’s interpretation of the test, if the reference range for the lab is listed on the test report, the registrar may use that information to assign the appropriate code.

Example 3 Medical record laboratory report shows ovarian cancer patient's CA-125 as 235 (normal range < 35 U/ml). Registrar may infer that CA-125 is elevated (code 010).

b. When there is no clinician/pathologist interpretation of the lab test and no description of the reference range in the medical record the registrar should code 999 (not documented, unknown) to code the SSF. Do not code the lab value interpretation based on background information provided in this manual for the SSF.

Example 4 Physician reports that Alpha Fetoprotein (AFP) collected in the office for a patient suspected to have primary liver cancer was 750 but does not interpret this value. Background information in CS User Documentation indicates a high normal would be > 500 but hepatocellular

carcinoma values are > 1000. Registrar should code AFP Interpretation as 999, unknown or no information.

Note: There will be some cases where an interpretation may be inferred from the background information in the CS User Documentation because the lab result is extremely abnormal. In such cases, common sense would dictate that the case should be coded as 010 (elevated) rather than 999.

Example 5 Physician reports a CEA of 450 for a colon cancer without interpreting it. Background information in the CS User Documentation indicates a high normal would be 5 ng/ml. Registrar may code CEA as 010 Elevated.

2. In the site-specific notes in this document, only the codes pertaining to coding the test are listed. Refer to the specific CS schema tables for additional code choices when the test results are not in the medical record.

3. **What does SI mean?** SI is the French abbreviation for International System (*Systeme Internationale*), standard units of measure (meter, kilogram, second). Most SI values are based on the kilogram and the liter. A nanogram (ng) is one-thousandth of a microgram (µg). A milliliter (ml) is one-thousandth of a liter. So a lab value expressed in µg/L is equivalent to the same value expressed in ng/ml. Some lab values, such as hormone levels, are recorded in International Units per Liter (IU/L). This is equivalent to mIU/mL. The equivalence of mIU to ng varies according to what is measured. SI Conversion: 1 µg/L = 1 ng/ml. For example, 1 ng of AFP is approximately equal to 1 mIU.

Note: Micrograms (µg) per liter may be printed as ug/L.

4. **Prefixes and abbreviations.** Units of measure can be described and written in various ways in the medical record. In some circumstances, the unit of measure may be dependent on the printer used for the report. For example, the prefix “micron” (one millionth of a unit) is represented in scientific notation by the Greek letter *mu* (µ), but not all printers have the capability to print Greek symbols. As a result, micro- may be printed as a lower case *u* or as the abbreviation mc. Do not confuse the abbreviation for micro- (u) with the abbreviation for Unit (an international system measurement, U). Tables I-2-1a – I-2-1c below show abbreviations for units of measurement and the abbreviations for fractions or multiples of those units.

Table 1-2-1a. Measurement Prefixes		
Number	Prefix	Written
1,000,000	Mega-	M
1000	Kilo-	k
10	Deka-	da
1 (baseline)		
1/10	Deci-	d
1/100	Centi-	c
1/1000	Milli-	m
One millionth	Micro-	µ, u, or mc

Table 1-2-1a. Measurement Prefixes

One billionth	Nano-	n
One trillionth	Pico-	p
One quadrillionth	Femto	f

**Table 1-2-1b
Unit Abbreviations**

Unit	Abbrev
Liter	l
Unit	U
Meter	m
Unit-of-substance	mole, mol
Gram	g, gr
Milli-Equivalent	mEq, meq

Table 1-2-1c. Examples

Femtomole	fmol
Microgram	ugr, mcg, µgr
Milliliter	ml

Table I-2-2. Common codes in Site-Specific Factors

Code	Description
000	0 ng/ml
001	0.1 or less ng/ml
002-979	0.2-97.9 ng/ml
980	98.0 or greater ng/ml
988	Not applicable: Information not collected for this case (May include cases converted from code 888 used in CSV1 fro “Not applicable” or when the item was not collected. If this item is required to derive T, N, M, or any stage, use of code 988 may result in an error.)
997	Test ordered, results not in chart
998	Test not done (test was not ordered and was not performed)
999	Unknown or no information. Not documented in patient record

Code 000. In a numeric site-specific factor, such as a lab value for CEA, Chromogranin, CA-125, code 000 means a zero value on the test itself.

Rounding. Rounding instructions for most numeric site-specific factors: for numbers or percentages less than 1 (such as 0.3 or 0.4%), round up to 001. Do not round down to 000, as this means a zero value. For numbers above 1, round .1 to .4 down, and round .5 to .9 up to the next whole unit.

Examples 10.4% therapy response Code as 010.
25% tumor necrosis Code as 025
Size of metastasis in lymph node: 0.4 mm Code as 001
95% chemotherapy effect Code as 095

Upper Range of Lab Test Values. The upper range of values is usually 97.9 or 979 (depending on the type of test), with code 980 indicating that the actual test result was 98.0/980 or higher.

Code 988 – Not Applicable: Information Not Collected For This Case. In most site-specific factors, code 988 appears as ‘Not applicable: Information not collected for this case.’ The intended meaning for code 988 is that the registry does not routinely collect the information for cases coded using this schema. Code 988 is not intended to mean that the information is not collected for a case because the information is deemed not applicable for the particular case circumstances. This code may be used if the data field is not required by the registry’s standards setters. However, code 988 cannot be used by a registry where the field is required for collection.

Example Colon Site-Specific Factor 9, KRAS, is required for collection by COC-Accredited facilities in all areas and all registries in SEER regions. Canadian registries and registries not participating in the COC Accreditation program in National Program of Cancer Registries (NPCR) states may use code 988 if the registry makes the decision not to collect information about KRAS. COC-Accredited and SEER registries must select a code other than 988 to complete this field.

Note: TCR requires the collection of KRAS in SSF 9 for colon.

Note: In CS version 1, the ‘not applicable code’ was 888, which limited the code range for lab test values. In CS version 2, code 888 was converted to 988.

Code 997 – Test Ordered, Results Not In Chart. If it is known that the test was ordered but there is no report in the record, select the code that indicates that the test was ordered but results are not available (code description varies depending on site-specific factor and primary site). This code is useful as a quality control flag to indicate cases where information may be available at a later date.

Code 998.

Test Not Done. If there is a statement that the test was not performed, select the code that documents that the test was not done (code description varies depending on site-specific factor and primary site). Do not assume that the test was not done if the report is not available in the medical record; use code 999 instead (except as noted in the next paragraph).

Test Never Done by Facility. This code may also be used by a registry in a facility that does not perform the test. In other words, code 998 can also be used if the registry staff have discussed tests with the laboratory medicine department of the facility and the lab has indicated that it never does the test and never sends it to a reference lab. Decisions on these

tests should be documented in the registry's procedure manual or coding manual and reviewed annually, as tests and procedures may be added or dropped by the facility. If the facility does offer the test (in-house or sent out), code 998 should not be used unless there is a statement in the record that the test was not done for the case.

Other Meanings. Code 998 may have other meanings in some site-specific factors, generally related to a procedure not being performed or a specimen not available. Read the definitions carefully.

Examples:

CorpusCarcinoma SSF2: No pathologic specimen available

Melanoma Skin SSF7: No histologic examination of primary site.

Rectum SSF5: No preoperative treatment or no resection of primary site after preoperative treatment

Code 999. If there is no information in the medical record about the lab value, use code 999.

Note: Source documents are suggested for some site-specific factors as the most likely sources of information. If no source document is suggested, use any information provided in the medical record. If a pathology report is suggested, that document includes any addenda or revisions to the report, as well as any synoptic report, CAP protocol, or cancer checklist information provided by the pathologist.

SITE-SPECIFIC FACTORS COMMON TO SEVERAL SCHEMAS

Lactate Dehydrogenase: LDH, LDH Value, LDH Upper Limit of Normal: TCR collects for MelanomaSkin and Testis

Source documents: clinical laboratory report; may be included in a liver or hepatic panel/profile, a cardiac panel, or a general metabolic panel of tests

Other names: LD, Lactate dehydrogenase, lactase dehydrogenase, lactic acid dehydrogenase.

Normal reference range: varies widely by laboratory, patient age, and the units of measurement. Examples of reference range lab values:

Lab A Total LDH 71 – 207 U/L

Lab B Total LDH 300 – 600 U/L

Lab C Total LDH 45 – 90 U/L

Lab D Total LDH 150 – 250 U/L

When cells (normal or tumor) are damaged or destroyed, an enzyme called lactate dehydrogenase (LDH) is released into the bloodstream. LDH is an indirect indication of possible tumor burden or

damage to an organ, which may be caused by metastatic involvement of liver or lung, or a myocardial infarction. The total LDH should be the test value that is coded, but there are five fractions of LDH that measure tissue specific cellular damage: LD1 and LD2: heart, red blood cells and kidneys; LD3: lung; LD4 and LD5: liver, skin and skeletal muscles. LDH is elevated in 60% of patients with non-seminomatous germ cell tumors of the testis. LDH is not a screening test, nor is it diagnostic of melanoma, ocular adnexal lymphoma, or testicular cancer.

**Serum Lactate Dehydrogenase (LDH) (MelanomaSkin); LDH Interpretation
Preorchietomy Lactate Dehydrogenase (LDH) Range (Testis); Post-Orchietomy Lactate Dehydrogenase (LDH) Range (Testis) C S n**

Record the code describing the range of the highest LDH value prior to treatment, based on the reference range used by the lab. The codes vary slightly for each schema, but the concepts are the same. For MelanomaSkin, read the codes and definitions carefully, as several were made obsolete and the data were converted or the code was re-used in version 0203. In the table below, 'orch' is short for orchietomy.

Note: Use only the codes for the primary site being abstracted.

Melanoma	Pre-orch	Post-orch	Description
000	000	000	Within normal limits
010	010	010	Range 1: less than 1.5 times the upper limit of normal for that lab; <i>for melanoma only</i> : Stated as elevated, <i>For ocular adnexal lymphoma only</i> : 1.5 to 5 times limit of normal
			<i>For ocular adnexal lymphoma only</i> : 5.1 to 10 times upper limit of normal
020	020	020	Range 2: 1.5 to 10 times the upper limit of normal for
030	030	030	Range 3: more than 10 times the upper limit of normal for that lab
		990	Post-orchietomy LDH unknown, but pre-orch LDH
	991	991	LDH (pre/post-orch) stated to be elevated
	992	992	LDH (pre/post-orch) unknown, but concurrent tumor stated to be normal
	993	993	LDH (pre/post-orch) unknown, but concurrent tumor stated to be elevated; <i>Post-orch only</i> : Stated as Stage IS
	995		Pretreated case, initial LDH range recorded as post-
	996		No orch; initial LDH recorded as post-orch [rare]
997	997	997	Test ordered, but results not in chart
998	998	998	Test not done; test not ordered and not performed
999	999	999	Unknown; no information; not documented in medical

To calculate whether the lab result is in a particular range, multiply the lab's upper limit of normal (usually stated on the report) times the stated multiplier. For example, if the test is done for a melanoma and the result is within normal limits, code as 002. If the test result is elevated, determine whether it is less than 1.5 times the upper limit of normal (code 004), between 1.5 and 10 times the upper limit of normal (code 005) or more than 10 times the upper limit of normal (code 006).

Example Test result is 155. Normal range: Lab A 105 to 333 IU/L;
Lab B Female: 46-100 IU/L Male: 46-232 IU/L
Lab C 45 - 90 U/L

For Labs A and B, that result is within the normal range (code 000).

For Lab C, the test result is elevated (upper limit of normal for Lab C is 90). Calculate 1.5 times the upper limit of normal for Lab C ($1.5 \times 90 = 135$). For Lab C, this test result would be coded as 020 for testis, between 1.5 and 10 times the upper limit of normal.

For melanoma, an abnormal value (SSF4 codes 010-030) must be documented by at least two separate tests obtained more than 24 hours apart, according to the *AJCC Cancer Staging Manual*.

Note: LDH may not be done for early stage melanomas. If so, code as 999.

Microsatellite Instability (MSI): TCR collects for Colon and Rectum,

Source documents: pathology report, reference lab report, supplemental report, admitting note or consultation reporting a test done elsewhere

Microsatellite instability (MSI) is a molecular marker (genetic test using polymerase chain reaction) performed on tumor tissue to identify differences in length of sections of nonfunctioning DNA. The differences in length may be caused by problems with the genes that normally repair DNA. A highly positive MSI (MSI-H) test may be related to the development of cancer in a condition called hereditary nonpolyposis colorectal cancer (HNPCC or Lynch Syndrome). HNPCC is a hereditary autosomal dominant condition characterized by rapid progression from adenomas to malignant lesions. Low-positive (MSI-L) or stable (MSS) MSI result means it is unlikely that the cancer results from a hereditary genetic condition.

MSI may also be a predictive marker of a patient's response to chemotherapy as well as an indicator of the patient's prognosis. Indications for MSI testing include colorectal cancer in a patient less than 50 years old, the presence of other HNPCC-associated tumors, or family history of colorectal cancer.

Code the statement in the report whether the microsatellite instability test is stable (code 020), unstable low (code 040), unstable high (code 050), or unstable, not stated as low or high (code 060).

Code 988 may be used by any registry, since this field is not required by the standards setters.

Code as 999 if there is no mention of an MSI test in the record.

Mitotic Count: TCR collects for GISTEsophagus, GISTStomach, GISTSmallIntestine, GISTColon, GISTAppendix, GISTRectum, MelanomaSkin, GISTPeritoneum

Source documents: pathology report

Other names: mitotic rate, mitotic index (a ratio—do not record this measurement), mitotic activity

Mitotic count is a way of describing the potential aggressiveness of a tumor. For GIST tumors, the count is translated into a mitotic rate that is used with T, N, and M to stage group a case. Record the number of cells actively dividing as determined by the pathologist. The count will vary according to the type of tumor. Follow the instructions in the SSF notes for the primary cancer being coded.

GIST (appendix, colon, esophagus, peritoneum, rectum, small intestine, stomach): count per 50 HPF* or 5 square millimeters

Melanoma of skin: count per square millimeter

* The usual high power is 40 x magnifications.

This site-specific factor is a three-digit field with an implied decimal point between the second and third digits. For example, if the mitotic rate is reported as 12 mitoses per 50 HPF for a gastrointestinal stromal tumor, record as 120.

1. Use code 000 if there are no mitoses present in the high power field area designated for the primary cancer (10, 40, 50 HPF).
2. Codes in the range 001 to 008 are used when the number of mitoses is reported as a decimal number (part of a whole mitotic figure).
3. Use code 009 when the pathologist states that the mitotic rate is less than 1 mitosis per HPF area.
4. Codes in the 010 to 100 range are used when there are between 1 and 10 mitoses per HPF area.
5. Codes 990 – 992 can be used for general statements that the mitotic rate is up to the cut point for low mitotic rate for the primary site being coded or more than the cut point for a high mitotic rate. For MelanomaSkin, this may be stated as “nonmitogenic” (code 990) or “mitogenic” (code 991).
6. Use code 996 when the unit of measurement is not consistent with the primary site specification. For example, the pathologist states that a neuroendocrine tumor of the colon has a mitotic rate of 6 per 40 HPF (the denominator for NET tumors is per 10 HPF).
7. Use code 998 when there has been no specimen from the primary site.
8. Use code 999 if there is no mention of a mitotic rate in the pathology report.

Collaborative Stage Data Collection System Coding Manual and Instructions

Part I Section 2: Site-Specific Notes

Note: Not all code choices are listed in the following discussions of site-specific factors. ALWAYS refer to the complete listing of codes in the Site-Specific Table when coding the site-specific factor.

Head and Neck Sites

Coding Regional Lymph Nodes

For head and neck sites, regional lymph node information is coded in several fields (Table I-2-4). TCR collects the fields in the table below for all head and neck sites.

Table I-2-4. Regional Lymph Nodes Data Fields

FIELD	DESCRIPTION
CS Lymph Nodes	Regional lymph nodes: number, laterality
CS Reg Nodes Eval	Clinical or pathologic evaluation
CS LN Pos	Number of lymph nodes microscopically positive
CS LN Exam	Number of lymph nodes microscopically examined
SSF1	Size of lymph node

The CS Lymph Nodes field contains information about the nodes involved, their number and laterality. CS Reg Nodes Eval contributes information about whether the involved lymph nodes were determined clinically or pathologically, with or without neoadjuvant treatment. CS LN Pos provides detail about the number of nodes involved, supported by CS LN Exam.

Site-Specific Factor 1 – Size of Lymph Nodes: TCR collects SSF 1 for all head and neck sites. Site-Specific Factor (SSF) 1 is used to code the size of involved lymph nodes. This information is needed to derive the N value for both sixth and seventh edition TNM staging. SSF1 uses the standard CS version 2 size measurement scale, 001 to 979 measured in millimeters. To convert centimeters to millimeters, multiply by 10.

Example Largest cervical lymph node measures 2.3 centimeters on CT scan. *Code as 023 (mm).*

1. Code the largest diameter of any involved regional lymph node (listed in CS Lymph Nodes). The measurement can be pathologic, if available, or clinical.
2. Use code 000 when no regional lymph nodes are involved.
3. Use code 980 for any lymph node larger than 979 millimeters.
4. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
5. Use special codes 990-997 for non-specific sizes if an exact size is not stated in the medical

record.

6. Use code 999 when there is no information about the size of involved regional lymph nodes.

Site-Specific Factor 25 – Schema Discriminator: TCR collects for Nasopharynx/PharyngealTonsil

Source documents: pathology report, imaging report, endoscopy report

ICD-O topography code C11.1, posterior wall of nasopharynx, includes both the mucosal surface of the posterior wall and the adenoid or pharyngeal tonsil. Two CS version 2 schemas use C11.1, but the schemas map to different seventh edition TNM chapters. The posterior wall of nasopharynx (mucosal surface) is staged with nasopharynx, and the lymphoid tissues of the pharyngeal tonsil are staged with the oropharynx. In order to determine which schema should be presented to the abstractor for topography code C11.1, a schema discriminator has been included as Site-Specific Factor 25 for both Nasopharynx and PharyngealTonsil. This schema discriminator applies only to C11.1. For all other Nasopharynx sites (C11.0, C11.2, C11.3, C11.8, and C11.9) code SSF25 to 981.

Code the description of the true primary site as stated in the medical record.

1. Use code 010 when the primary site is stated as posterior wall of nasopharynx (NOS); this will present the Nasopharynx schema for coding and mapping to TNM.
2. Use code 020 when the primary site is stated as adenoid, pharyngeal tonsil or nasopharyngeal tonsil; this will present the PharyngealTonsil schema for coding and mapping to TNM.
3. See schema table for additional code choices.

Upper Gastrointestinal (UGI) Tract Esophagus, Stomach, Small Intestine

(See also sections on gastrointestinal stromal tumors (GISTs) and neuroendocrine tumors (NETs))

Histologic Terminology

1. The terminology preferred by pathologists for carcinoma in situ of the esophagus is *high grade dysplasia*. This terminology is not reportable to most cancer registries. Therefore, it may be a future issue that early/very low stage esophageal cancer is under-reported as a result of registry reporting terminology. If high grade dysplasia of the esophagus is a reportable cancer, it should be coded as 000 in CS Extension.
2. The seventh edition of the *AJCC Cancer Staging Manual* stage-groups esophageal cancers differently by cell type. The computer algorithm that derives the stage group will use the histology code to determine whether the case will map to either the adenocarcinoma stage grouping or the squamous cell carcinoma stage grouping. Squamous cell carcinomas generally have a worse prognosis than adenocarcinomas. If the diagnosis is a cancer of mixed histology or something other

than adenocarcinoma or squamous cell carcinoma, the computer algorithm will group the case with the squamous cell carcinomas.

Site-Specific Factor 25 – Schema Discriminator Involvement of Cardia and Distance from Esophagogastric Junction (EGJ): TCR collects for Esophagus-GE Junction and Stomach

The esophagus chapter of the AJCC Cancer Staging Manual seventh edition includes the esophagogastric junction (also called the cardia or gastroesophageal junction) and the proximal 5 cm of the stomach. The cardia is defined as the opening or junction between the esophagus and the stomach, and it is between 0.1 and 0.4 cm in length. In CS version 2, there is a separate schema for Esophagus-GE Junction, which includes all of the cardia (C16.0) and is mapped to the seventh edition esophagus staging. Two additional stomach topography codes are included in the proximal 5 cm of the stomach, the fundus (C16.1) and body (C16.2). This 5 cm boundary measurement is based on the Siewert classification of gastroesophageal cancers, which defines an area 5 cm above and 5 cm below the cardia or esophagogastric junction. To determine whether a cancer in the fundus or body of the stomach should be coded according to the esophagus schema or the stomach schema, it is necessary to identify the midpoint or epicenter of the tumor. If the midpoint is at or above the cardia, the tumor is definitely esophageal. If the midpoint of the tumor is within 5 cm distal to the gastroesophageal junction (GEJ) and the lesion extends to or across the GEJ, the case should be coded with the Esophagus-GE Junction schema. If the midpoint of the tumor is within 5 cm distal to the GEJ and the lesion does not extend to the GEJ, the case should be coded with the stomach schema. Any tumor with a midpoint more distal than 5 cm from the GEJ is coded with the stomach schema.

In order to determine which schema should be used for gastric tumors within 5 cm of the GE junction, a schema discriminator has been included as Site-Specific Factor 25. Select the code that best describes the location and extent of the tumor, and the computer algorithm will bring the correct schema to the screen. If the tumor midpoint is anywhere in the stomach other than cardia, fundus or body, use code 981. If the tumor midpoint is in the cardia itself, use code 982.

Clinical Assessment of Regional Lymph Nodes

Site-Specific Factor 1: TCR collects for Esophagus, EsophagusGEJunction, and Stomach.

Site-Specific Factor 2: TCR collects for Small Intestine, Colon, Appendix [carcinoma], and Rectum

Source documents: imaging report, possibly physical exam; *does not include* surgical observation or lymph node biopsies

The purpose of this field is to document a diagnostic work-up to assess regional lymph nodes before surgery or neoadjuvant therapy. This data field handles correct mapping to the clinical N category when multiple involved regional lymph nodes are identified on imaging of the chest, abdomen or pelvis. Diagnostic procedures include CT, MRI, plain radiographs and endorectal ultrasound (EUS). It is possible, but unlikely, that a physical exam would show involved regional nodes for the

gastrointestinal tract. Endoscopic procedures without ultrasound are excluded; they can only view the inside of the gastrointestinal tract and cannot assess regional lymph nodes.

1. Use code 000 when there is imaging or ultrasound and lymph nodes are not mentioned or stated to be uninvolved. A statement of “no adenopathy” of *regional* lymph nodes (meaning no regional lymph nodes are enlarged or abnormal) is sufficient to code 000.
2. Use a code in the 100 – 399 range (varies by site) when imaging or ultrasound was done and there is a statement of a clinical N (N1, N2, N3 according to primary site) or a specific number of involved nodes in lieu of a statement of clinical N.
3. Use code 400 when imaging or ultrasound mentions clinically positive nodes but does not indicate how many or give a clinical N value.
4. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
5. Gastrointestinal tract sites are included in the “inaccessible nodes rule,” but only in unusual cases are gastrointestinal tract sites staged clinically. Do not apply the “inaccessible nodes rule” to code this field. There must be an attempt to assess regional lymph nodes clinically prior to the start of treatment in order to code 000.
6. Use code 999 when
 - a. there is no diagnostic work-up to assess regional lymph nodes
 - b. there is no imaging or ultrasound reported
 - c. it is unknown whether imaging or ultrasound was done
 - d. a scan or ultrasound states adenopathy is present without making a definite statement that the nodes are clinically positive (such as fixed, matted, or metastatic terminology). The terms *adenopathy*, *enlargement*, *suspicious*, and so forth, by themselves are not sufficient to code as involvement. For example, statements of “adenopathy” or “suspicious lymph nodes” should be coded as 999, but a statement of “lymph nodes suspicious for malignancy” should be coded as 400.

Colon, Appendix, Rectum, Anus

(See also sections on gastrointestinal stromal tumors (GISTs) and neuroendocrine tumors (NETs))

Site-Specific Factor 5 – Tumor Regression Grade: TCR collects for Rectum

Source document: pathology report

Tumor regression grade is a standardized value that indicates the patient’s response to neoadjuvant (preoperative) treatment. A low value as defined in the CAP protocol (CS code 000 or 010) is associated with better prognosis. The information may also be given in descriptive terms rather than a code and may be called “treatment effect.” Code the description of tumor regression only from the primary tumor specimen.

1. Code the grade or descriptive term reported by the pathologist in codes 000-030.
2. Use code 000 if the pathologist describes complete response, “no viable tumor cells,” or “acellular pools of mucin” and no residual tumor.
3. Use code 990 if the pathology report mentions treatment response but is not more specific in terms of a grade or complete, moderate, minimal or poor response.
4. Use code 998 if the patient had no preoperative (neoadjuvant) treatment or had no surgical resection of the tumor.
5. Use code 999 if it is unknown whether a treatment response is present.
6. If tumor regression is given as a grade other than 0-3, consult the pathologist for the correct code.
7. Do not code Tumor Regression Grade in the fields Grade Path Value or Grade Path System.

Site-Specific Factor 7 – Microsatellite Instability (MSI): TCR collects for Colon and Rectum. See [Microsatellite Instability](#) in LAB TESTS AND TUMOR MARKERS on page A-94

Site-Specific Factor 9 – KRAS: TCR collects for Colon and Rectum

Source document: pathology report or clinical laboratory report

Other names: K-Ras, K-ras, Ki-Ras

KRAS is an oncogene (a gene that, when mutated or overexpressed, helps turn a normal cell into a cancer cell). Mutations of KRAS indicate that a patient may not respond to the anti-epidermal growth factor receptor drugs cetuximab (Erbix) or panitumumab (Vectibix). ASCO recommends that Stage IV colorectal patients be tested for KRAS if anti-EGFR therapy is being considered. There are two types of KRAS genes: normal and mutated. The normal KRAS gene is also called the wild type allele; the mutated gene may be described as abnormal or having an abnormal codon (abnormal DNA sequence). Follow CS timing rules when completing this data item—if the KRAS test was only performed on tissue from a recurrence of colorectal cancer, do not code the results in SSF9.

1. Use code 010 if the pathologist describes KRAS as mutated or abnormal.
2. Use code 020 if the pathologist indicates that KRAS is normal or “wild type” (no mutations).
3. Use code 997 when there is a statement in the record that the test was ordered but the results are not available.
4. Use code 998 when there is a statement in the record that the test was not ordered or not done.

5. Use code 999 when there is no documentation in the record that the test was done or what the results were. This will usually be the code used when the patient has low stage (Stage I or II) colorectal cancer.

Site-Specific Factor 10 – 18q Loss of Heterozygosity (LOH): TCR collects for Colon and Rectum

Source documents: pathology report or clinical lab report

Other names: allelic loss, gene deletion, loss of chromosomal material related to 18q

Loss of heterozygosity (LOH) in a chromosome means that genetic material normally found in a specific area of a chromosome is missing. In other words, this is damage to the chromosome that results in failure of tumor suppression, which in turn may cause the development or progression of a malignancy. This site-specific factor codes a specific chromosomal defect is on the long arm (q) of chromosome 18. Normal cells have two complete copies of each chromosome, a state called heterozygosity. The presence of 18q LOH is an adverse prognostic factor and may predict resistance to fluorouracil-based chemotherapy. Special molecular diagnostic tests look for missing genetic material.

1. Use code 010 if the pathologist states the assay is positive for loss of heterozygosity in 18q (unfavorable).
2. Use code 020 if the pathologist states the assay is negative for loss of heterozygosity (favorable).
3. Use code 030 if the 18q LOH assay was done but there is no statement of the results.
4. Code 988 may be used by any registry, since this field is not required by the standards setters.
5. Use code 997 when there is a statement in the record that the test was ordered but the results are not available.
6. Use code 998 when there is a statement in the record that the test was not ordered or not done.
7. Use code 999 when there is no documentation in the record that the test was done or what the results were.

Site-Specific Factor 11 – Histopathologic Grading: TCR collects for Appendix

Source document: pathology report

The histopathologic grading of mucinous adenocarcinomas (morphology codes 8480, 8481 and 8490) appears to have prognostic value for appendiceal carcinomas. Mucinous adenocarcinomas have a better prognosis and are graded differently from intestinal-type adenocarcinomas—a two-grade system, low or high. Adenocarcinomas of the appendix use a standard four-grade system. Grade is used in deriving AJCC stage groups IVA (low grade mucinous adenocarcinoma or well-differentiated

adenocarcinoma with intraperitoneal metastasis) and IVB (high grade mucinous adenocarcinoma or moderately and poorly differentiated adenocarcinoma with non-peritoneal metastasis).

1. Code histopathologic grade for all appendix carcinomas as described in the pathology report.
2. Mucinous adenocarcinoma: Use code 011 for low grade. Use code 021 for high grade.
3. Non-mucinous adenocarcinomas (codes other than 8480, 8481, and 8490):
 - a. Use code 010 for Grade 1 or well differentiated.
 - b. Use code 020 for Grade 2 or moderately differentiated.
 - c. Use code 030 for Grade 3 or poorly differentiated.
 - d. Use code 040 for Grade 4 or undifferentiated.
4. Code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
5. Use code 998 if there was no histologic confirmation or the patient did not have surgery.
6. Use code 999 if there is no information in the record about histopathologic grade.

Gastrointestinal Stromal Tumors (GIST)

(Esophagus, Stomach, Small intestine, Appendix, Colon, Rectum, and Peritoneum—omentum and mesentery)

Gastrointestinal stromal tumors (GISTs) are a rare type of soft tissue sarcoma (mesenchymal tumor). They are different from carcinomas of the gastrointestinal tract because they develop in the muscle layer and grow outward. These tumors were first described as a distinct entity in 1998 and codes were added to ICD-O-3 in 2000. GIST is an umbrella term covering most mesenchymal tumors of the stomach and intestine. Most tumors diagnosed as leiomyosarcomas a decade ago are now referred to as GISTs.

GISTs are believed to develop from the interstitial cells of Cajal that regulate peristalsis. Because the staging of GISTs is based on the size of the primary tumor and the mitotic count, a new chapter was added to the seventh edition of the AJCC Cancer Staging Manual, and new schemas were added to CS version 2. There are separate GIST schemas for esophagus, stomach, small intestine, appendix, colon, rectum and peritoneum (omentum and mesentery).

About 55% of GISTs occur in the stomach, followed by 30% in the small intestine. Other sites are much less frequent. Even in the stomach, GISTs are only 1-3% of all gastric malignancies. In the small intestine, GISTs are about 20% of all malignancies. About 35-50% of gastrointestinal stromal tumors are malignant. Both the GIST chapter of the AJCC Cancer Staging Manual and the schemas in CS version 2 can be used to code benign, borderline, and malignant GISTs, but only malignant GISTs

should be reported to population-based cancer registries. Benign and borderline GISTS may be reportable-by-agreement in facility-based registries.

All GISTS use the same site-specific factors, but to maintain site-specific factor formatting similar to carcinomas of the gastrointestinal sites, the numbering of the site-specific factors differs among the upper GI, lower GI, and peritoneum sites. In the discussion below, the site-specific factor will be described by name rather than SSF number.

Mitotic Count

TCR collects for GIST of Esophagus, Stomach, Small Intestine, Appendix, Colon, Rectum, and Peritoneum-omentum and mesentery.

See Mitotic Count in LAB TESTS AND TUMOR MARKERS on page A-94.

Mitotic count is a site-specific factor for a number of primary sites. For GIST, the standard measurement is the total number of mitoses per 50 high power fields (HPF at 40 times magnification) or per 5 square millimeters.

1. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

SSF10 - Location of Primary Tumor: TCR collects for GISTPeritoneum

The GIST Peritoneum schema includes an extra site-specific factor for location of the primary tumor because all of the peritoneum structures are coded to C48.1, but two separate stage tables are used to derive the TNM values. Code 020, Omentum, uses the GIST stomach stage tables. All other specified structures in the peritoneum use the GISTSmallIntestine stage tables.

- 010 Mesentery; Mesoappendix; Mesocolon
- 020 Omentum
- 030 Pelvic peritoneum
- 040 Rectouterine pouch; Cul de sac; Pouch of Douglas
- 998 Other specified peritoneal site

Neuroendocrine Tumors (Stomach, Small intestine, Appendix, Colon, Rectum and Ampulla of Vater)

Neuroendocrine tumors (NET) originate in the diffuse neuroendocrine system from cells that produce small amounts of hormones in response to signals from the nervous system. There are neuroendocrine cells in many body systems, including respiratory tract, lung, skin (Merkel cell carcinoma), gastrointestinal tract, and endocrine glands. Neuroendocrine cells regulate neighboring cells. NETs are also called carcinoids, but the preferred terminology is well-differentiated neuroendocrine tumor. In the gastrointestinal system, abnormal production of hormones can cause unusual symptoms, such as flushing, fatty diarrhea (steatorrhea), and dumping syndrome.

Neuroendocrine tumors in general are rare, so they are not well understood and there may be difficulty in diagnosing them. Gastrointestinal NETs can grow slowly for many years before producing symptoms leading to diagnosis. Malignant NETs tend to be more aggressive than carcinomas and metastasize earlier. When they metastasize, the most common site is liver, but NETs will also metastasize to lymph nodes and bone. Small NETs less than 1 cm in size are unlikely to spread, but a tumor larger than 2 cm has a 95% chance of developing metastases. The principle criteria for staging NETs are size of tumor and depth of invasion, which are part of CS Tumor Size and CS Extension, respectively.

Well-differentiated or low grade neuroendocrine carcinoma (ICD-O-3 morphology code 8240; also called carcinoid, NOS) is most common in the appendix and rectum, and uncommon in the colon. Enterochromaffin (EC) cell carcinoid (8241) is most common in the appendix. Entero-Chromaffin-Like (ECL) cell tumor (8242) is most common in the gastric fundus or body. Neuroendocrine tumor (8246) is a broad term covering carcinoids and some adenocarcinomas. Atypical carcinoid (8249) is also included among the codes that are mapped to the TNM system, but is uncommon in the gastrointestinal tract. The NET schemas for stomach, small intestine, appendix, colon, rectum, and ampulla of Vater include malignant gastrinomas, which are found in the duodenum and ileum as well as the stomach. These morphology codes were not staged in the sixth edition of the *AJCC Cancer Staging Manual*. The CS version 2 computer algorithm will not derive sixth edition T, N, M, or stage group.

To maintain site-specific factor formatting similar to carcinomas of the gastrointestinal sites, the numbering of the site-specific factors differs among the upper GI and lower GI sites.

Clinical Assessment of Regional Lymph Nodes

Site-Specific Factor 1: TCR collects for NETStomach.

Site-Specific Factor 2: TCR collects for NETColon, CarcinoidAppendix and NETRectum

Source documents: imaging report, possibly physical exam; *does not include* surgical observation or lymph node biopsies

The purpose of this field is to document a diagnostic work-up to assess regional lymph nodes before surgery or neoadjuvant therapy. This data field handles correct mapping to the clinical N category when multiple involved regional lymph nodes are identified on imaging of the chest, abdomen or pelvis. Diagnostic procedures include CT, MRI, plain radiographs and endorectal ultrasound (EUS). It is possible, but unlikely, that a physical exam would show involved regional nodes for the gastrointestinal tract. Endoscopic visualization procedures are excluded; they can only view the inside of the gastrointestinal tract and cannot assess regional lymph nodes.

1. Use code 000 when there is imaging or ultrasound and lymph nodes are not mentioned or stated to be uninvolved. A statement of “no adenopathy” of *regional* lymph nodes (meaning no regional lymph nodes are enlarged or abnormal) is sufficient to code 000.

2. Use a code in the 100 – 399 range (varies by site) when imaging or ultrasound was done and there is a statement of a clinical N (N1, N2, N3 according to primary site) or a specific number of involved nodes in lieu of a statement of clinical N.
3. Use code 400 when imaging or ultrasound mentions clinically positive nodes but does not indicate how many or give a clinical N value.
4. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
5. Gastrointestinal tract sites are included in the “inaccessible nodes rule,” but only in unusual cases are gastrointestinal tract sites staged clinically. Do not apply the “inaccessible nodes rule” to code this field. There must be an attempt to assess regional lymph nodes clinically prior to the start of treatment in order to code 000.
6. Use code 999 when
 - a. there is no diagnostic work-up to assess regional lymph nodes
 - b. there is no imaging or ultrasound reported
 - c. it is unknown whether imaging or ultrasound was done
 - d. a scan or ultrasound states adenopathy is present without a definitive statement that the nodes are clinically positive (such as fixed, matted, or metastatic terminology). The terms *adenopathy*, *enlargement*, *suspicious*, and so forth, by themselves are not sufficient to code as involvement. For example, statements of “adenopathy” or “suspicious lymph nodes” should be coded as 999, but a statement of “lymph nodes suspicious for malignancy” should be coded as 400.

Biliary Organs and Pancreas (Liver, Intrahepatic Bile Ducts, Perihilar Bile Ducts, Cystic Duct, Distal Bile Duct, Ampulla of Vater, Gallbladder, Pancreas {Head, Body and Tail, Other})

A number of changes in CS version 2 schemas resulted from revisions to chapters in the seventh edition of the *AJCC Cancer Staging Manual*, particularly in the liver and biliary sites. Intrahepatic bile ducts (C22.1) were separated from liver (C22.0). These schemas are now histology-specific. Primary liver cancers include morphology codes 8170-8175, hepatocellular carcinoma and its subtypes. Intrahepatic bile duct histologies include 8160, cholangiocarcinoma, 8161, bile duct cystadenocarcinoma, and 8180, combined hepatocellular and cholangiocarcinoma. Only these cell types will derive T, N, M and Stage Group for seventh edition mapping.

The extrahepatic bile ducts were split into three chapters in TNM seventh edition: perihilar bile ducts (proximal to the origin of the cystic duct), the cystic duct, and distal bile duct (between the junction of the cystic duct and the ampulla of Vater). Perihilar bile ducts include the right, left, and common hepatic duct. Distal bile duct is essentially the common bile duct below the point where the cystic duct and common hepatic duct join. The separate stagings for the extrahepatic bile ducts caused an issue in CS version 2 because all of the extrahepatic bile ducts are coded to C24.0 in ICD-O-3. Without extra information about the precise location of the tumor, the computer does not know which schema to present to the abstractor. Consequently, a “schema discriminator” is required to determine which CS schema is to be used for a case.

Schema Discriminator Site-Specific Factor 25: TCR collects for BileDuctsPerihilar, Cystic Duct, and BileDuctsDistal.

Code the location of the tumor, such as hepatic duct or Klatskin tumor. The computer algorithm will then bring up the schema based on the code entered in the schema discriminator. Code 030 will display the cystic duct schema; codes 040 and 070 will display the distal bile duct schema. All other codes will display the perihilar bile ducts schema because 70-80% of all extrahepatic bile duct malignancies arise in the perihilar ducts (right, left, and common hepatic ducts).

- 010 Perihilar bile duct(s); Proximal extrahepatic bile duct(s); Hepatic duct(s)
- 020 Stated as Klatskin tumor (tumor at junction of right, left and common hepatic ducts)
- 030 Cystic bile duct; cystic duct (duct between gallbladder and common bile duct)
- 040 Common bile duct, including common duct, NOS (also called choledochal duct)
- 050 Diffuse involvement; More than one subsite involved, subsite of origin not stated
- 060 Subsite of extrahepatic bile ducts not stated OR subsite stated as middle extrahepatic bile duct AND treated with combined hepatic and hilar resection
- 070 Subsite of extrahepatic bile ducts not stated OR subsite stated as middle extrahepatic bile duct AND treated with pancreaticoduodenectomy
- 100 C24.0 - originally coded in CS version 1 (this code should not be used for 2010 diagnoses and forward)
- 999 Subsite of extrahepatic bile ducts not stated and not classifiable in codes 050-070

Site-Specific Factor 10 – Tumor Growth Pattern: TCR collects for Intrahepatic Bile Ducts

Source document: pathology report

This site-specific factor documents the absence or presence of a periductal growth pattern by the cholangiocarcinoma. The presence of periductal infiltrating growth pattern is classified as T4 in TNM seventh edition. This site-specific factor will modify the extent of tumor coded in CS Extension for the BileDuctsIntrahepatic schema if a periductal component is present in the tumor, and is therefore required for TNM staging for this schema as of CS version 0203.

There are two types of growth patterns for intrahepatic bile duct carcinomas: mass-forming (60% of intrahepatic bile duct cases) and periductal infiltrating (20%), as well as a mixed type having characteristics of both (20%). The mass-forming type, as the name implies, grows outward (radially) from the duct and invades the liver parenchyma in a well-defined mass. The periductal infiltrating type spreads along the duct in a diffuse manner that may be associated with poorer prognosis. Collection of this information on a national scale may help further define this association.

Record whether a periductal tumor growth pattern is absent or present.

1. Use code 000 when
 - a. the tumor is described as mass-forming type
 - b. the pathologist indicates absence of periductal component

- c. the pathologist indicates no periductal component of growth pattern
 - d. there is no mention of a tumor growth pattern
2. Use code 010 when the pathologist indicates the presence of a periductal or mixed growth pattern
 3. Use code 999 when there is no information about tumor growth pattern in the medical record or when there is no pathology report.

Lung AND Pleura

Major changes occurred in the staging of lung cancers in the seventh edition of the *AJCC Cancer Staging Manual*. For example, pleural effusion was moved from T4 to M1, and separate tumor nodules in the same lobe of the lung were moved from T4 to T3 while separate tumor nodules in a different lobe of the same lung were moved from M1 to T4. Two site-specific factors were added in CS version 2.

For pleura, four additional site-specific factors were added to pleural effusion, which was a factor in CS version 1.

Site-Specific Factor 1 – Separate Tumor Nodules in Ipsilateral Lung: Collected by TCR.

Source documents: imaging reports and pathology reports

Beginning with cases diagnosed on or after January 1, 2010, separate tumor nodules in the same lung are recorded separately from CS Extension codes. This site-specific factor is used in “extra tables” along with Tumor Size, Extension, and Mets at DX to determine the output values for T and M in seventh edition.

Record the presence or absence of separate tumor nodules in the lobes of the same lung (ipsilateral) as the primary site. Do not code separate tumor nodules in the opposite (contralateral) lung in this field; code them in CS Mets at DX. Information about separate tumor nodules can be obtained from imaging (clinical) or pathology reports (pathologic).

1. Use code 000 when no separate tumor nodules are noted or when separate tumor nodules are not mentioned.
2. Use code 010 when there are separate tumor nodules in the same lobe as the primary tumor (ipsilateral lung, same lobe).
3. Use code 020 when there are separate tumor nodules in a different lobe of the same lung.

4. Use code 030 when there are separate tumor nodules in both the same lobe and a different lobe of the same lung.
5. Use code 040 when there are separate tumor nodules but it is not known whether they are in the same lobe or a different lobe of the same lung.
6. Code 988 should not be used by any registry because this field is required by all standards setters.
7. Use code 999 if it is unknown whether there are separate tumor nodules or when there is no documentation in the patient record.

Site-Specific Factor 1 – Pleural Effusion (Pleura): TCR collects for Pleura

Source documents: imaging, pathology and cytology reports

Other terms: pleural fluid, thoracentesis

Pleural effusion is the accumulation of fluid between the two layers of pleura: visceral (covering the lungs) and parietal (lining the chest wall and covering the diaphragm). Pleural effusion is a symptom of mesothelioma that increases the summary stage from local or regional direct extension to distant involvement.

Record the absence or presence of pleural effusion. If pleural effusion is present and examined microscopically, record whether the pleural effusion is non-malignant, malignant, or not specified.

1. Use code 000 when there is no evidence of pleural effusion
2. Use code 010 when
 - a. pleural effusion is found microscopically to be non-malignant
 - b. pleural effusion is stated to be negative for malignant cells
 - c. pleural effusion is seen on imaging but pleural fluid cytology is negative for malignant cells
3. Use code 020 when
 - a. pleural effusion is found microscopically to be malignant
 - b. pleural effusion is stated to be positive for malignant cells
 - c. pleural fluid cytology described as suspicious or suspicious for mesothelioma
4. Use code 030 when
 - a. pleural effusion is reported on imaging but there is no cytology [pleural effusion, NOS]
 - b. pleural fluid cytology is described as atypical or atypical mesothelial cells but not specifically to be non-malignant or malignant)
5. Code 988 should not be used by any registry because this field is required by all standards setters.

6. Use code 999 when
 - a. it is unknown whether pleural effusion is present
 - b. pleural effusion is not documented in the patient record

Skin

Skin, MelanomaSkin, MerkelCell (Skin, Penis, Scrotum, Vulva), MycosisFungoides (MelanomaEyelid is discussed with Eye sites)

Site-Specific Factor 1 – Measured Thickness (Depth) (Melanoma of Skin, Scrotum)

Site-Specific Factor 1 – Measured Thickness (Depth), Breslow’s Measurement (MelanomaSkin)

Source document: pathology report

Other names: maximum tumor thickness, Breslow depth of invasion, Breslow thickness, Breslow measurement, Breslow’s microstaging. This site-specific factor measures tumor thickness or tumor depth (vertical dimension), not the size (lateral dimension). The depth of invasion of the primary tumor is recognized as an important predictor for risk of nodal metastases in some tumors. The depth of invasion or tumor thickness measurement for skin, scrotum, and melanoma of skin is collected in hundredths of millimeters as stated in the pathology report for the resected specimen. The measurement of tumor thickness (Breslow depth) is precisely defined in the melanoma protocol of the College of American

Pathologists (CAP checklist) as a vertical measurement from the granular layer of the epidermis (or base of ulceration) to the deepest point of invasion, as measured on a calibrated ocular micrometer.

Code a measurement specifically labeled as “thickness” or “depth” or “Breslow depth of invasion” in the pathology report. In the absence of this label, a measurement described as taken from the cut surface of the specimen may be coded. And in the absence of either of these labels, the third dimension in a statement of tumor size can be used to code this field.

If the tumor is excised post-neoadjuvant treatment, tumor measurements cannot be compared before and after treatment to determine which would indicate the greater involvement. The same code (998) is used for cases with no surgical procedure of the primary site and cases with surgical procedure of the primary site after neoadjuvant treatment.

Because the thickness table is similar to many other tables that collect a measurement, it is important to identify the correct unit of measurement. The value collected for skin, scrotum and melanoma of skin is measured in *hundredths* of millimeters. This site-specific factor actually has two names: Measured Thickness (Depth), Breslow Measurement for melanoma of the skin and Measured Thickness (Depth) for skin and scrotum. For MelanomaSkin, several codes from CS version 1 have been made obsolete and the data have been converted to a new code in CS version 2.

In the range 001 to 979, code the actual tumor thickness, tumor depth, or Breslow measurement in hundredths of millimeters as stated in the pathology report. This is a three-digit field with an implied decimal point between the first and second digits.

Examples Tumor described as 0.15 mm in depth – code as 015
Lesion 1 mm thick – code as 100
Breslow 2.5 mm – code as 250
Thickness of 10 mm (1 cm) – code as 980 (9.80 millimeters or larger)

The 900 codes are used to document specific case situations.

1. Use code 990 for *skin and scrotum only* when
 - a. there is a statement of microinvasion but no depth is given
 - b. there is a description of a microscopic focus or foci but no depth is given
2. For MelanomaSkin, code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
3. Use code 998 *for skin and scrotum only* when there is no histologic exam of the primary site.
4. Use code 999 when
 - a. tumor depth or thickness information is unknown, including cases in which the primary tumor is removed but the measurement of thickness cannot be determined from the pathology report
 - b. tumor thickness or depth is not documented in the medical record
 - c. *for melanoma of skin only*: there is a statement of microinvasion but no depth is given
 - d. *for melanoma of skin only*: there is a description of a microscopic focus or foci but no depth is given

Site-Specific Factor 2 – Ulceration (MelanomaSkin): TCR collects for Melanoma of Skin

Source documents: pathology report, physical exam, consultant notes, other statement in medical record

Ulceration of the epidermis over a cutaneous melanoma is an important adverse prognostic factor. The presence of ulceration upstages the melanoma to the next higher category, for example from T1a to T1b. Ulcerated melanomas typically show invasion through the epidermis, whereas nonulcerated melanomas tend to lift the overlying epidermis. The determination of ulceration is based on several pathologic criteria and must be microscopically confirmed.

Code whether ulceration of the melanoma is present, based on information in the pathology report. If there is no mention of ulceration in the pathology report, assume ulceration is not present and code 000.

1. Use code 000 when there is
 - a. a statement in the pathology report that no ulceration is present
 - b. no mention of ulceration in the pathology report
2. Use code 010 when the pathologist states that ulceration is present.

3. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

4. Use code 999 when
 - a. it is unknown whether there was a pathology report
 - b. the pathology report is not documented in patient record

Site-Specific Factor 3 – Clinical Status of Lymph Node Mets: TCR collects for MelanomaSkin and MerkelCell {Skin, Penis, Scrotum, and Vulva}

Source documents: physical exam, consultant notes, other statement in record

Other names: micrometastasis, macrometastasis, occult nodal metastases

The tumor burden (microscopic versus macroscopic metastases) in regional lymph nodes is an important prognostic factor for cutaneous melanoma. According to the AJCC Melanoma Task Force, the majority of stage III patients have clinically occult rather than clinically apparent nodal metastases. Involvement of regional lymph nodes is based on both physical examination (palpation) and imaging, as well as microscopic confirmation resulting from diagnostic sentinel lymph node biopsy. This site-specific factor records whether microscopic lymph node metastases are present. This site-specific factor applies to tumor in regional lymph nodes only; do not code the status of in-transit metastases or satellite nodules in this field even though this information is collected in CS Lymph Nodes.

1. Use code 000 when
 - a. in-transit metastases or satellite nodules are present (Melanoma: CS Lymph Nodes codes 130, 140, 150, 154; Merkel Cell sites: CS Lymph Nodes code 400) but no lymph nodes are involved
 - b. there is no regional involvement (CS Lymph Nodes is 000)
 - c. lymph node metastases are clinically apparent but pathologically negative
2. Use code 010 when
 - a. there are microscopic lymph node metastases or “micrometastases”
 - b. lymph nodes are negative on palpation or imaging but contain metastases on pathology
 - c. lymph nodes are negative on palpation or imaging but positive for isolated tumor cells (ITCs) on pathology
 - d. lymph node metastases are confirmed microscopically but there is no statement of the clinical status in the medical record
3. Use code 020 when
 - a. lymph node metastases are clinically apparent and they are confirmed microscopically
 - b. lymph node metastases are clinically apparent and there is no pathology
4. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

5. Use code 999 when

- a. it is unknown whether regional lymph nodes are involved micro- or macroscopically
- b. there is no information about regional lymph nodes
- c. the status of regional lymph nodes is not documented in the patient record

Site-Specific Factor 4 – Serum Lactate Dehydrogenase (LDH) (MelanomaSkin)

See LDH in LAB TESTS AND TUMOR MARKERS on page A-92

LDH is a site-specific factor for several primary sites.

Site-Specific Factor 7 - Primary Tumor Mitotic Count/Rate: TCR collects for MelanomaSkin.

See Mitotic Count in LAB TESTS AND TUMOR MARKERS on page A-94.

Mitotic count or mitotic rate is a site-specific factor for a number of primary sites. For cutaneous melanoma, the standard measurement is the total number of mitoses per 1 square millimeter. For melanoma of skin, a mitotic rate of 1 or more mitotic figure per square millimeter is a powerful adverse prognostic factor, according to the College of American Pathologists.

Site-Specific Factor 12 – High Risk Features: TCR collects for Skin and (Skin of) Scrotum

Source documents: pathology report, consultation report, other statements in the medical record

Other names: high risk histologic features, high risk tumor features

In addition to the tumor size (diameter, not depth), the presence of certain specific high risk features is of prognostic significance for non-melanoma skin cancers other than Merkel cell. The presence of two or more of the high risk features listed below upstages a lesion 2 cm or less in greatest dimension from T1 to T2.

This site-specific factor is to be calculated and coded by the registrar. Information can be taken from any part of the medical record. Disregard any unknown or negative features; count only those that meet the criteria below (each positive feature equals one risk factor). Tally the number of high risk features present, and assign the code representing that number.

Histologic grade or differentiation: Poorly differentiated/Undifferentiated (grade 3 or 4)—review pathology report and 6th digit of ICD-O morphology code elsewhere on the cancer registry abstract

Depth of tumor: 2 mm or more in depth—review pathology report and site-specific factor 1, Depth of invasion (tumor thickness)

Clark level IV or V—review pathology report and site-specific factor 10, Clark level

Perineural invasion—review pathology report and site-specific factor 11, Perineural invasion

Primary site: skin of external ear (C44.2) OR skin of lip (hair-bearing, also called non-glabrous lip) (C44.0)—review physical exam, pathology report and other parts of the medical record, as well as ICD-O-3 primary site code elsewhere on the cancer registry abstract

Note: *Lymph-vascular invasion* was included as a high risk feature in CS versions 0201 and 0202 but was removed from the final list by AJCC. Cases with lymph-vascular invasion should be reviewed and recoded in CS version 0203.

1. Use code 000 when the medical record indicates no high risk features are present.
2. Use a code in the range 001 to 005 for the exact number of high risk features either stated by the clinician or calculated by the registrar.
3. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
4. Use a code in the 991 to 993 range when the medical record indicates high risk features are present but there is no information about which ones or how many.
5. Use code 999 when
 - a. it is unknown whether any high risk features present
 - b. there is no documentation of high risk features in the medical record

Site-Specific Factor 16 – Size of Lymph Nodes: TCR collects for Skin and (Skin of) Scrotum

Source documents: pathology report, imaging report, physical exam, other statement in medical record

The size and number of involved lymph nodes are prognostic factors for non-melanoma skin cancer other than Merkel cell. This site-specific factor supplements the information in CS Lymph Nodes to enable mapping to the N category. The code structure and definitions are the same as for site-specific factor 1 in the head and neck sites. This site-specific factor captures information about the size of the entire involved lymph node, not just the size of the metastasis within the lymph node.

Code the largest dimension (diameter) in millimeters of the involved regional lymph node(s) in the range 001 to 979. The measurement may be clinical or pathologic (pathologic takes priority if there has been no neoadjuvant therapy). Do not code information about distant lymph nodes in this field.

1. Use code 000 in this field if there are no regional lymph nodes involved (CS Lymph Nodes is coded 000).
2. Use code 990 if the tumor in the lymph node(s) is described as a microscopic focus or foci and no size is given.

3. Use the appropriate code in the 991 to 997 range if the largest size of an involved regional node is described imprecisely (for example ‘less than 2 cm’ or ‘greater than 4 cm’).
 - a. If the only information given is a statement of N value by the clinician, code the corresponding size description in the 992 to 997 range.
4. Use code 999 when
 - a. there is no information about the size of involved regional nodes
 - b. when it is unknown whether regional lymph nodes are involved
 - c. the size of involved lymph nodes is not documented in the medical record

Merkel Cell Carcinoma

Site-Specific Factor 3 – Clinical Status of Lymph Node Mets: TCR collects for (MerkelCell {Skin, Penis, Scrotum, and Vulva})

See Clinical Status of Lymph Node Mets on pg A-111.

Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

Site-Specific Factor 11 – Regional Lymph Node – Laterality: TCR collects for MerkelCellVulva.

The MerkelCellVulva schema is a combination of Merkel cell carcinoma and the standard schema for vulva as a gynecologic cancer. This site-specific factor is included in the MerkelCellVulva schema to retain compatibility with AJCC sixth edition for mapping of the N category.

Code the appropriate description of involved regional lymph nodes.

1. Use code 000 when all regional lymph nodes are negative.
2. Use code 010 when
 - a. all positive regional nodes are ipsilateral
 - b. involved lymph nodes are described as unilateral
3. Use code 020 when
 - a. at least one regional lymph node is involved on both sides of the pelvis
 - b. involvement is described as bilateral or contralateral
4. Use code 030 when regional lymph node(s) are described as positive but the laterality of the involved nodes is unknown.
5. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
6. Use code 998 when
 - a. lymph nodes were not examined

b. lymph nodes were not assessed

7. Use code 999 when

- a. there is no information in the medical record about regional lymph node involvement
- b. the status of regional lymph nodes is unknown

MycosisFungoides

Site-Specific Factor 1 – Peripheral Blood Involvement: TCR collects for MycosisFungoides

Source documents: pathology report, clinical laboratory reports of blood analysis (tissue and blood samples)

Other names: Peripheral blood involvement: circulating Sezary cells
 T-cell clonality: T-cell receptor (TCR) gene rearrangement
 Monoclonal: clone +, clone positive
 Polyclonal: clone –, clone negative

Mycosis fungoides is the most common type of primary cutaneous T-cell lymphoma. Sezary syndrome is a more aggressive type of primary cutaneous T-cell lymphoma in which a specific type of malignant T lymphocytes (Sezary cells) is present in the circulating blood. Staging of mycosis fungoides includes analysis of the circulating blood for Sezary cells. This analysis can be done by microscopy or flow cytometry. Results of microscopy are reported as counts of Sezary cells per cubic millimeter or the percentage of Sezary cells as a proportion of total lymphocytes. Flow cytometry looks for specific cell surface markers such as CD26.

Information about peripheral blood involvement and T-cell clonality identified by polymerase chain reaction (PCR) or Southern blot analysis is combined in a “B” category unique to mycosis fungoides staging in the TNM system. The basic categories are B0 (no significant blood involvement); B1 (low blood tumor burden); and B2 (high blood tumor burden). Any mention of B2 puts the case into Stage IV. B0 and B1 are subcategorized by clonality. In the sixth edition of TNM and CS version 1, mycosis fungoides site-specific factor 1 described only the presence or absence of Sezary cells in circulating blood. In the seventh edition and CS version 2, the structure of SSF1 is more complex. Codes 001 to 003 have been made obsolete and new codes and definitions have been created to account for peripheral blood involvement and clonality. The lack of monoclonality (clone negative) generally indicates a better prognosis.

Code a statement of peripheral blood involvement and clonality (if given) as reported by the clinician from tissue and/or blood samples. If the physician does not provide a B rating but counts or percentages of neoplastic cells, flow cytometry test results, and/or clonality test results are performed, use the appropriate code for the amount of blood involvement with “clone unknown”.

Codes 010 – 030: Absence of significant blood involvement (no peripheral blood involvement)

010 Clone negative; Stated as B0a

includes $\leq 5\%$ atypical (Sezary) cells in peripheral blood, clone negative

020 Clone positive; Stated as B0b

- includes $\leq 5\%$ atypical (Sezary) cells in peripheral blood, clone positive
- 030 Clone unknown; Stated as B0 [NOS]
 < 1000 Sezary cells
 includes $\leq 5\%$ atypical (Sezary) cells in peripheral blood, clone unknown

Codes 040 – 060: Low blood tumor burden: more than 5% of peripheral blood lymphocytes are atypical (Sezary) cells but does not meet the criteria of B2

- 040 Clone negative; Stated as B1a
 050 Clone positive; Stated as B1b
 060 Clone unknown; Stated as B1 [NOS]

Additional codes

- 070 High blood tumor burden: 1000/uL Sezary cells or more with positive clone; Stated as B2
 080 Percent of atypical peripheral blood lymphocytes not stated and B rating not stated
 090 Sezary cell counts, blood flow cytometry, and/or clonality results in chart, B rating not stated
 988 This code should not be used by any registry in the US or Canada, as all standards setters require these fields.
 997 Sezary cell counts, blood flow cytometry, and/or clonality tests ordered, test results not in chart, B rating not known
 999 Unknown or no information; not documented in patient record

Soft Tissue

Soft Tissue, HeartMediastinum, Retroperitoneum, Peritoneum
 (PeritoneumFemaleGen is discussed with GYN sites.)

The histologies for the soft tissue schema include a wide range of sarcomas and mixed tumors (non-carcinoma and non-hematopoietic) in the ICD-O-3 morphology code range 8800 to 9582, except 9140 Kaposi sarcoma, which has its own schema. The primary sites included in the soft tissue schema include the peripheral nerves and autonomic nervous system (C47._) and the connective, subcutaneous, and other soft tissues throughout the body (C49._). The peritoneum schema includes omentum and mesentery primary sites (C48.1-C48.2, C48.8) and all sarcomas in the range 8800 to 9852 except gastrointestinal and endometrial stromal sarcomas (8935-8936) and Kaposi sarcoma (9140). The retroperitoneum schema (C48.0) includes the same histologies as peritoneum.

Site-Specific Factor 1 – Grade for Sarcomas: TCR collects for Soft Tissue, HeartMediastinum, Retroperitoneum, and Peritoneum.

Source documents: pathology report

Other names: FNCLCC grade, NCI grade

For soft tissue sarcomas, the grade of the tumor is the predominant prognostic indicator, and grade has been included as a category in TNM stage grouping for sarcomas since the first edition of the TNM system in 1978. Through the sixth edition, a four-grade system was used. There are a number of grading systems for adolescent and adult soft tissue tumors, the most widely used of which are the National Cancer Institute (NCI) system and the system of the French Federation of Cancer Centers Sarcoma Group (FNCLCC). Both are three-grade systems using criteria for mitotic activity, extent of

necrosis, and differentiation, and both are highly correlated with prognosis. The NCI system also quantifies cellularity and pleomorphism for certain types of sarcomas, making it somewhat more difficult to use. The seventh edition of the *AJCC Cancer Staging Manual* adopted the FNCLCC grading system as the preferred grading system. This site-specific factor allows any three grade system for sarcomas to be coded. It should be noted that stage grouping uses essentially a two tier system, where grade 1 is categorized as low grade and grades 2 and 3 are categorized as high grade. Grading should be attempted for all sarcomas, although a fine/core needle biopsy may not yield enough tissue to assign a grade in a three-grade system.

Code the grade stated in the pathology report. Do not code “well differentiated” or “poorly differentiated” or similar terminology in this field. If the only information available is “low grade” or “high grade”, use code 100 or 200 as appropriate. Codes 010-030 take priority over codes 100 and 200, and can also be coded in Grade Path Value and Grade Path System. If there is no biopsy/resection or there is no microscopic examination of tissue from the primary site, use code 998.

1. Use code 010 when the pathology report specifies the grade as Grade 1 [of 3].
2. Use code 020 when the pathology report specifies the grade as Grade 2 [of 3].
3. Use code 030 when the pathology report specifies the grade as Grade 3 [of 3].
4. Use code 100 when the grade is stated as “low grade” [NOS] with no mention of numeric grade.
5. Use code 200 when the grade is stated as “high grade” [NOS] with no mention of numeric grade.
6. Code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
7. Use code 998 when there is
 - a. no histologic examination of the primary site
 - b. no biopsy or resection
8. Use code 999 when
 - a. the sarcoma is ungraded
 - b. the grade cannot be determined
 - c. the grade for the sarcoma is unknown
 - d. there is no information in the medical record about tumor grade
 - e. the tumor is not a sarcoma

Site-Specific Factor 25 – Schema Discriminator: TCR collects for Peritoneum.

Source documents: face sheet, other statement of patient gender in medical record

Both sarcomas and carcinomas of the peritoneum can be staged. For peritoneum, a schema discriminator is necessary to identify the gender of the patient so that the correct schema can be presented to the abstractor. Carcinomas in the morphology code range 8000-8576, specialized gonadal neoplasms, and mixed complex and stromal neoplasms (except gastrointestinal stromal tumors) are coded with the same staging criteria for female patients as ovarian cancer in the PeritoneumFemaleGen schema.

Code 002, Female, presents the PeritoneumFemaleGen schema to the abstractor. All other categories of gender (codes 001, 003, 004, 009 and 100) present the Peritoneum schema to the abstractor. For males, a carcinoma of the peritoneum will output T NA N NA M NA Stage NA. Code 981 is new in CS version 0203 and includes non-carcinoma, non-GIST histologies formerly coded as “blank” in CS versions 0200 through 0202.

Breast

Note: TCR collects all of the following SSF’s for Breast.

Coding Regional Lymph Nodes

For breast, regional lymph node information is coded in several fields (Table I-2-12). These SSFs will be discussed as a group.

Table I-2-12

Field	Description
CS Lymph Nodes	Regional lymph nodes: number, laterality
CS Reg Nodes Eval	Clinical or pathologic evaluation
CS LN Pos	Number of lymph nodes microscopically positive
CS LN Exam	Number of lymph nodes microscopically examined
CS SSF3	Number of positive ipsilateral Level I-II Axillary Lymph Nodes
CS SSF4	Immunohistochemistry of Regional Lymph Nodes
CS SSF5	Molecular Markers of Regional Lymph Nodes

Coding regional lymph node involvement for breast cancers is more complex than for many other sites, especially when dealing with isolated tumor cells (ITCs) and micrometastases. The following definitions may help clarify the code choices in CS Lymph Nodes and Site-Specific Factors 3 – 5. For a more detailed explanation, see the section in the breast chapter of the *AJCC Cancer Staging Manual*, seventh edition, called “Specific Considerations for Evidence-Based Changes to the *AJCC Cancer Staging Manual*, seventh edition,” beginning on page 362.

Isolated Tumor Cells (ITCs). Pathologists can detect isolated tumor cells (ITCs) spread from a breast cancer into regional lymph nodes. These are very small deposits of tumor cells, no larger than 0.2 mm or no more than 200 cells—so small that they are *not* considered significant for assigning stage. They usually do not show evidence of malignant activity in the nodes, such as proliferation or stromal reaction. To be identified as ITCs, they must be single tumor cells or small clusters not more than 0.2 mm. As more data are collected about these ITCs, their prognostic significance may be better

understood. In both the sixth and seventh editions, nodes containing only ITCs are *not* considered positive nodes and are classified as pN0 in TNM. ITCs are most often found using immunohistochemistry tests on sentinel lymph node specimens. The ITCs may sometimes also be seen on routine H&E stained sections.

Hematoxylin and Eosin (H & E). (from “Hematoxylin & Eosin: (The Routine Stain)”), by H. Skip Brown, BA, HT(ASCP), from: <http://www.sigmaldrich.com/img/assets/7361/Primer-H&Emay04.pdf>.

In histology, the standard or routine stain is the hematoxylin and eosin stain, better known as the “H&E” stain. With rare exceptions, every specimen being examined will first receive an H&E stain to give the laboratorian a visible look at the nucleus of the cells and their present state of activity. With most disease states there is abnormal growth and/or division in the nucleus of the cells. The hematoxylin and eosin stain uses two separate dyes, one staining the nucleus and the other staining the cytoplasm and connective tissue. Hematoxylin is a dark purplish dye that will stain the chromatin (nuclear material) within the nucleus, leaving it a deep purplish-blue color. Eosin is an orangish-pink to red dye that stains the cytoplasmic material including connective tissue and collagen, and leaves an orange-pink counterstain. This counterstain acts as a sharp contrast to the purplish-blue nuclear stain of the nucleus, and helps identify other entities in the tissues such as cell membrane (border), red blood cells, and fluid.

Micrometastasis. When the tumor deposits in the lymph nodes are larger than 0.2 mm but not larger than 2.0 mm, they are defined as micrometastasis. Nodes with micrometastasis *are* defined as positive for staging.

In coding CS Lymph Nodes and Site-Specific Factors 3-5, the important things to abstract are the size of the tumor detected in the lymph nodes and the methods of detection.

Site-Specific Factor 3—Number of Positive Ipsilateral Level I-II Axillary Lymph Nodes

Source documents: pathology report

In CS version 1, this field was called Number of Positive Ipsilateral Axillary Lymph Nodes. In CS version 2, the content has been modified slightly to limit the count of axillary lymph nodes to levels I and II on the same side of the body as the primary site. These nodes are the low axillary (level I and intramammary) and mid-axillary (level II, also called interpectoral or Rotter’s nodes). Thus the count of axillary lymph nodes now *excludes* level III (high axillary, also called apical or infraclavicular; N3a), internal mammary (N3b) and supraclavicular (N3c) lymph nodes. (Do not confuse intramammary nodes, which are within breast tissue and included in level I, with internal mammary nodes, which are along the sternum and map to N3b.) The number of positive Ipsilateral Level I-II axillary lymph nodes determines the N category and the pathologic stage group.

The structure of this 3-digit field is similar to the 2-digit field Regional Nodes Positive, and the same coding rules apply to both fields.

1. This field is based on pathologic examination of ipsilateral (same side as the primary cancer) level I and II axillary lymph nodes, so pathologic information is included even if the patient had neoadjuvant therapy prior to lymph node removal.
2. Do not include lymph nodes containing only isolated tumor cells (ITCs—metastases less than 0.2 mm in size) in the count of positive nodes.
3. Use code 000 when all level I and II axillary lymph nodes are negative on pathologic examination.
4. Use a code in the range 001 to 089 for the exact count of level I and II axillary lymph nodes, or 090 if more than 89 level I and II axillary lymph nodes are positive.
5. Use code 095 if there was only a positive aspiration of level I or II axillary lymph node(s).
6. Use code 097 if level I and II axillary lymph nodes were positive but the number is not specified.
7. Use code 098 when
 - a. no axillary nodes were examined
 - b. an axillary dissection was performed but no axillary lymph nodes were found
 - c. there is a clinical diagnosis (no axillary lymph nodes were removed)
8. Use code 099 when it is unknown whether axillary lymph nodes are positive.
9. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

Site-Specific Factor 4 – Immunohistochemistry (IHC) of Regional Lymph Nodes

Source documents: pathology report

Other names: cytokeratin (HC) staining, pankeratin (IHC) staining, immunocytochemistry, immunochemistry

Immunohistochemistry (IHC) tests use antibodies to stain for proteins of interest in tissue specimens. The IHC test for metastatic breast cancer in lymph nodes uses antibodies to cytokeratin. Specific stains include AE1, AE3, AE1/3, MNF116 and CAM5.2. Other IHC tests are used on the primary breast tumor, rather than the lymph nodes, to assess estrogen and progesterone receptors and HER2 neu (human epidermal growth factor receptor). Immunohistochemistry is an additional test performed by the pathologist on lymph nodes that are pathologically negative on standard H&E stains. If IHC is done, it will be noted as an addendum to the pathology report of the specimen or reported on a separate form. If there is no mention of IHC in the medical record, code breast Site-Specific Factor 4 as 000 Not done.

Site-Specific Factor 4 codes IHC results for isolated tumor cells (ITCs—see above) in lymph nodes only, as shown in Table I-2-14 below. Use a code in the range 000 to 009 when CS Lymph Nodes is

coded 000 (no regional lymph nodes involved). If regional lymph nodes are positive, code Site-Specific Factor 4 as 987.

Code	Routine H&E Stains	Molecular studies (RT-PCR)
000	Negative	Not done or unknown if done
000	Negative, ITC status not mentioned	
000	Nodes clinically negative (not examined pathologically)	
000	Negative	Not mentioned
001	Negative	Done, ITCs not present (negative)
002	Negative	Done, ITCs present (positive)
987 Not applicable: CS Lymph Nodes not coded 000		

Code 988 should not be used by any registry in the US or Canada, as all standard setters require these fields.

Site-Specific Factor 5 – Molecular (MOL) Studies of Regional Lymph Nodes

Source documents: pathology report

Reverse transcriptase polymerase chain reaction (RT-PCR), a molecular test looking for expression of the genes of interest, is an even more sensitive test used to detect ITCs in lymph nodes. This test is rarely done, so this field will almost always be coded 000 if CS Lymph Nodes is coded 000 (negative).

Code the results of molecular studies in Site-Specific Factor 5 as shown in Table I-2-15. Use a code in the range 000 to 002 when CS Lymph Nodes is coded 000 (no regional lymph nodes involved). If regional lymph nodes are positive, code Site-Specific Factor 5 as 987.

Code	Routine H&E stains	Molecular studies (RT-PCR)
000	Negative	Not done or unknown if done
000	Negative, ITC Status not mentioned	
000	Nodes clinically negative (not examined pathologically)	
000	Negative	Not mentioned
001	Negative	Done, ITCs not present (negative)
002	Negative	Done, ITCs present (positive)
987 Not applicable: CS lymph Nodes not coded 000		

Code 988 should not be used by any registry in the US or Canada, as all standards setters required these fields.

Site-Specific Factor 1 – Estrogen Receptor (ER) Assay

Other names: ER, ERA, Estrogen Receptor Assay, Estrogen Receptor Status, Estradiol Receptor, Estrogen Binding Protein, hormone receptor status (with PRA).

In CS version 0203, code 000 was made obsolete and the data were converted to 998 Test not done. In CS version 0203, code 080 was made obsolete and the data were converted to 997 Test ordered, results not in chart.

Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

Site-Specific Factor 2 – Progesterone Receptor (PR) Assay

Other names PR, PgR, Progesterone Receptor Assay, Progesterone Receptor Status, hormone receptor status (with ERA).

In CS version 0203, code 000 was made obsolete and the data were converted to 998 Test not done. In CS version 0203, code 080 was made obsolete and the data were converted to 997 Test ordered, results not in chart.

Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.

The following information applies to both Estrogen Receptor and Progesterone Receptor Assays.

Source documents: pathology report (usually as an addendum), separate clinical laboratory report

Estrogen receptor (ER) positivity and progesterone receptor (PR) positivity are favorable prognostic factors in breast cancer, as well as endometrial carcinoma and meningioma. Positive results indicate a favorable response to endocrine (hormonal) therapy. Combined ER and progesterone receptor (PR) positivity is associated with increased response to anti-estrogen therapies. There are a variety of ways to report information on ER and PR results, but there is almost always a summary statement that the result is positive or negative.

Example 1	Test Name	Staining	Percent	Result
	Assay Type	Intensity	Positive	
		Average	(%)	
	Estrogen Receptor	3+	72	Positive
	Progesterone Receptor	3+	57	Positive

Example 2 The neoplastic cells show mild (1+/4+) cytoplasmic staining with the estrogen receptor marker. The neoplastic cells exhibit abundant (3+/4+) nuclear staining with progesterone receptor marker.

Example 3 ER positive (72%); PR positive (68%)

Record the pathologist's interpretation of the assay value from the tumor specimen. Results from the ER or PR assay done prior to neoadjuvant therapy take priority. If assays are performed on more than one specimen and any result is interpreted as positive, code as 010 Positive/elevated. If there are no results prior to neoadjuvant treatment, code the results from a post-treatment specimen. Do not report the results of an ER or PR done as part of a multigene test such as OncotypeDX or MammaPrint.

- 1.. Use code 010 when the ER or PR is reported as positive or elevated.
2. Use code 020 when the ER or PR is reported as negative or normal.
3. Use code 030 when the ER or PR is reported as borderline; undetermined whether positive or negative.

Note: New guidelines for interpreting test results do not provide for a borderline result. Therefore, the code for borderline will rarely, if ever, be used for diagnoses 2010 forward. The new guidelines state that any test which results in 1% of the cells staining positive is a positive test. If <1% of cells stain, the test is considered negative.

4. Code 988 should not be used by any registry in the US or Canada, as all standards setters require these fields.
5. Use code 996 when the ER or PR test was ordered but the results are not interpretable.
6. Use code 997 when the ER or PR test was ordered but the results are not in the medical record.
7. Use code 998 when there is a statement in the medical record that the test was not done, not ordered and/or not performed, for example, if the tumor tissue is completely in situ.
8. Use code 999 when
 - a. there is no information in the medical record about the ER or PR test
 - b. it is unknown whether the ER or PR test was performed
 - c. the patient has only a clinical diagnosis of breast cancer

The two most common ways to report ER and PR results are the proportion score (PS) (Table I-2-16) and the intensity score (IS) (Table I-2-17). Both the PS and IS are based on immunohistochemical staining of tumor cells. The PS reports the percentage of tumor cells with positive nuclear staining. The IS is the degree of nuclear positivity; in other words, the average

intensity of all positive tumor cells on a scale from pale to dark. In some reports, these two scores are combined for a total score (TS, the sum of the PS and the IS). The Allred score, “H” score, or Quick score may be reported. Each of these is a total score for proportion and intensity. For each of these, results of 0 (None + None) or 2 (<1% + 1 Weak) are considered negative and any sum from 3 to 8 is considered positive.

Table I-2-16
Proportion Score (PS)

0	None
1	> 0 to < 1%
2	1% to 10%
3	10% to 33%
4	33% to 66%
5	> 66%

Table I-2-17
Intensity Score (IS)

0	None
1	Weak
2	Intermediate
3	Strong

Older ER and PR reports may have different cut-offs for negative and positive results. Immunoperoxidase (immunohistochemical) staining of tumor cell nuclei:

< 5%	negative
5 – 19%	borderline; also expressed as 1+ or +
≥ 20%	positive; 20 – 80%; also expressed as 2+ or ++
> 80%	also expressed as 3+ or +++

Another less frequently used assay is the amount of cytosol protein in the tumor sample. This is reported in femtomoles per milligram.

Femtomoles (fmol/mg) of cytosol protein per milligram

< 6	negative
6-10	borderline
> 10	positive
> 100	highly positive

For further information on estrogen and progesterone receptor quantification, refer to the invasive breast cancer protocol published by the College of American Pathologists for AJCC seventh edition, published October 2009 available at

www.cap.org/apps/docs/committees/cancer/cancer_protocols/2009/InvasiveBreast_09protocol.pdf.

RECORDING HER2 INFORMATION

Nine of the site-specific factors for breast collect information about HER2.

Site-Specific Factor 8 – HER2: Immunohistochemistry (IHC) Test Lab Value

Site-Specific Factor 9 – HER2: Immunohistochemistry (IHC) Test Interpretation

Site-Specific Factor 10 – HER2: Fluorescence In Situ Hybridization (FISH) Test Lab Value

Site-Specific Factor 11 – HER2: Fluorescence In Situ Hybridization (FISH) Test Interpretation

Site-Specific Factor 12 – HER2: Chromogenic In Situ Hybridization (CISH) Test Lab Value

Site-Specific Factor 13 – HER2: Chromogenic In Situ Hybridization (CISH) Test Interpretation

Site-Specific Factor 14 – HER2: Result of Other or Unknown Test

Site-Specific Factor 15 – HER2: Summary Result of Testing
Site-Specific Factor 16 – Combinations of ER, PR, and HER2 Results

Source documents: pathology report (usually in an addendum to the report), specialized lab tests, reference laboratory report

Other names: HER2, HER2 neu, c-erbB2, c-neu

HER2 is **H**uman **E**pidermal growth factor **R**eceptor 2, a protein on the surface of cancer cells that accepts growth signals. There are actually four HER categories; only HER2 is of interest for breast cancer. The presence of too many HER2 receptors (“overexpression”) indicates that the tumor may grow more aggressively. About 20-30% of breast cancers overexpress HER2. Overexpression is both a prognostic and predictive factor for breast cancer. A lack of overexpression indicates patient may not respond to certain therapies such as Herceptin (trastuzumab), which is designed to “turn off” or deregulate the overexpression of HER2. There are several ways to measure HER2: immunohistochemistry (IHC), Fluorescence In Situ Hybridization (FISH), and Chromogenic In Situ Hybridization (CISH, pronounced ‘kish’). The information obtained from these tests plays a critical role in treatment planning, because HER2-positive patients tend to respond favorably to the expensive drug Herceptin (trastuzumab) or Tykerb (lapatinib), which work by blocking these receptors and preventing growth signals from getting through to the cancer cell. HER2-positive patients also may have a greater benefit from anthracycline- based adjuvant therapy, such as idarubicin. Usually only one test is performed, but if result of that single test is equivocal, American Society of Clinical Oncology (ASCO) guidelines recommend that a second test be performed.

Common Codes and Definitions for Site-Specific Factors 8 – 14

988 Not applicable: information not collected for this case

Note: Code 988 should not be used by any registry in the US or Canada, as these fields are required by all standards setters.

997 Test ordered, results not in chart

Note: For paired lab value and interpretation tables, code 997 in the lab value table may be used where the value is unknown but the result interpreted; code 997 in the interpretation table may be used where the value is known but the result is not interpreted.

998 Test not done (test not ordered and not performed)

Note: There must be a statement in the medical record that the test was not done or that there were other circumstances that prevented the test from being done, such as a clinical diagnosis only (no histologic specimen). The registry may also have a documented policy that the lab test is never performed by the facility and a specimen is never sent out to a reference laboratory for performance of the test.

999 Unknown; No information; Not documented in patient record

Common Codes and Definitions for Site-Specific Factors 9, 11, 13, 14

010 Test reported as positive or elevated

020 Test reported as negative or normal or within normal limits

030 Test reported as borderline, equivocal, indeterminate, undetermined whether positive or negative

Important note for HER2 field pairs SSFs 8-9, SSFs 10-11, and SSFs 12-13

Code the lab value and interpretation from the same test (same specimen). Do not mix lab values and interpretations from different facilities in the pairs of tests. However, results can be coded from different facilities for different tests (IHC from Hospital 1 and FISH from Hospital 2).

Example

Facility A (breast biopsy): HER-2/neu (ACIS score): 1.7 (reflexed to FISH testing).

Reference states "1.5 to 3.4 - Score 2+". Facility B (resection): HER-2/neu (HercepTest): neg for overexpression. *Using Facility A information, code SSF8 as 020 (2+) and SSF9 as 999 (interpretation not documented). Code SSF10 as 170 and SSF11 as 999 (interpretation not documented). Alternatively, using Facility B information, code SSF8 as 997 (test ordered, results not in record), SSF9 as 020 (negative), SSF10 and SSF11 as 999 (not documented). Do not combine the negative test result from Facility B with the lab result from Facility A.*

Site-Specific Factors 8 – 9 Immunohistochemistry (IHC) Lab Value and Interpretation

Site-specific factor 8 codes the IHC score in a range of 000 to 030, with additional codes for test not done and other explanations for missing information. Site-specific factor 9 codes the interpretation of the IHC score. Read the code definitions carefully. In CS version 0203, codes 001, 002, and 003 were made obsolete and the data were converted to codes 010, 020, and 030, respectively.

Immunohistochemistry or IHC is the most commonly used test for HER2 and is usually the initial HER2 test done. IHC is a special staining process performed on fresh or frozen breast cancer tissue removed during biopsy. The stains used carry various names, such as CB11 (anti HER2 mouse monoclonal antibody), 4B5 (anti HER2 rabbit monoclonal antibody), SP1, SP2, and SP3 (rabbit monoclonal antibodies), HercepTest®, Pathway®, and others. IHC is used to show whether or not the cancer cells have HER2 receptors and/or hormone receptors on their surface. The IHC test gives a score of 0 (no expression) to 3+ (strong complete tumor cell membrane expression) that indicates the amount of HER2 receptor protein on the cells in a sample of breast cancer tissue. If the tissue scores 0 to 1+, it is called "HER2 negative," and Herceptin is not considered effective for tumors with IHC scores of 0 or 1+. When the result is 2+, the HER2 status of the tumor is not clear. This often leads to testing the tumor with FISH (see below). If the tissue score is 3+, it is called "HER2 positive," and the patient is likely to receive Herceptin as part of first course therapy. (The symbols 1+, 2+, and so forth should be read as "1 plus" or "2 plus" rather than "1 positive" or "2 positive.") It is important to note that results of the IHC test may vary from lab to lab and that some labs are more experienced with testing for HER2 than others. The IHC test results are most reliable for fresh or frozen tissue samples. IHC tends to be an unreliable way to test tissue that's preserved in wax or other chemicals. Definitions of "positive" and "negative" interpretations for the test vary from one lab to another. Each

may have a different range for normal values. Look for the interpretation of the test by patient's clinician or the facility pathologist as first priority. In the absence of the local doctor's interpretation, look on the actual lab report for that particular lab's reference values and use that information to assign the appropriate interpretation code. The codes for interpretation are similar to other site-specific factors that are evaluated as positive/elevated, negative/normal, borderline, and so forth. If neither a physician interpretation nor a lab reference range can be found, do not attempt to interpret the results; code as 999 unknown.

Site-Specific Factors 10 – 11 Fluorescence In Situ Hybridization (FISH) Lab Value and Interpretation

FISH results are reported in SSFs 10 (ratio) and 11 (interpretation). The FISH test is another method of testing for overexpression of the HER2 gene that uses fluorescent pieces of DNA that attach only to the HER2 gene copies in cells, which can then be counted under a special microscope. FISH tests include PathVysion®, HER2 FISH pharmDx™, and INFORM®. The FISH technique is more expensive than IHC and takes longer to get the results, but it is also thought to be more accurate. The result is expressed as a ratio of the number of copies of the HER2 receptors to the control rather than as a score. The result is reported as a number with the remainder of the ratio expression implied. For example, the report may indicate a ratio of 2.2 [: 1].

In SSF10, code the exact ratio to two decimal places in the range 100 (1.00) to 979 (9.79), as stated in the report. Code a ratio over 9.79 to 980. For example, a FISH result of 5.5 would be reported as 550; a result of 11.85 would be reported as 980 (ratio of 9.79 or greater). If the result in the report is less than 1, use code 991.

In SSF11, code the local doctor's interpretation of the FISH test, if available; otherwise, look at the results on the lab report. For FISH, the definition of positive, negative or borderline varies from lab to lab. The code structure for this field is similar to other lab tests requiring an interpretation. If a FISH test was performed and the results are interpreted in the chart, record as positive, negative or borderline. If the test results are in the chart but there is no interpretation and no laboratory guideline given, code SSF11 as 999.

Site-Specific Factors 12 – 13 Chromogenic In Situ Hybridization (CISH) Lab Value and Interpretation

CISH results are reported in SSFs 12 (mean number) and 13 (interpretation). CISH is the most recent technique for determining HER2 status, and may be called SPOT-Light® on the report. It has only been approved in the United States since July of 2008. CISH works in a manner similar to FISH, by using small DNA probes to count the number of HER2 genes in breast cancer cells. But this test looks for color changes (not fluorescence) and doesn't require a special microscope, which makes it less expensive. In addition, unlike other tests, it can be used on tissue samples that have been stored in the lab. CISH is in widespread use in Canada, and because of its advantages, CISH may replace FISH testing in the US.

CISH results are expressed as the mean (average) number of HER-2/neu gene copies per cell. In other words, CISH is the ratio of the number of gene copies detected, divided by the number of tumor cell

nuclei counted; for example, 253 gene copies divided by 60 nuclei counted = 4.22. In SSF12, record the exact mean to two decimal places in the range 100 (1.00) to 979 (9.79), as stated in the report. For example, a CISH result of 3.2 would be reported as 320; a result of 10.05 would be reported as 980 (ratio of 9.79 or greater).

Record the interpretation of the CISH test in SSF13, which has a similar code structure to the HER2 IHC and HER2 FISH interpretation fields. For CISH, the definition of positive, negative or borderline varies from lab to lab. If a CISH test was performed and the results are interpreted in the chart, code as positive, negative or borderline. Usually, the results will be either positive or negative, because if the result of counting the mean number of gene copies per cell from 30 cells is between 4.0 and 6.0, another 30 cells are counted and the mean from those 60 cells is interpreted according to the following scoring guideline:

Non-amplification: 1–5 signals/nucleus in tumor cells. Result: negative.

Amplification: > 5 signals/nucleus, or cluster of amplified signals/nucleus in >50% of tumor cells.

Result: positive.

Site-Specific Factor 14 - Result of Other or Unknown Test

Site-specific factor 14 documents other types of HER2 testing, in other words, not IHC, FISH, or CISH. The most likely scenario will be a statement in the CAP Protocol or elsewhere in the chart that the patient is HER2 positive or HER2 negative, with no indication of how this information was determined and no test results in the chart. This may be particularly true for cases diagnosed or treated outside the reporting facility or cases being reported by freestanding radiation therapy or ambulatory surgery centers. Other possibilities are SISH (silver in-situ hybridization) test and RISH (rapid in situ hybridization against mRNA), which are still experimental. The code structure is the same as the IHC, FISH and CISH test interpretation fields. Code a statement of HER2 status (positive, negative, borderline) by the clinician/pathologist in this field when there is no information about the specific HER2 test in the chart.

Site-Specific Factor 15 - Summary Result of Testing

Site-specific factor 15 can be derived from SS Factors 9, 11, 13, and 14. When there is only one test done (IHC, FISH, or CISH), repeat the result of that test in this field. When more than one HER2 test is done, code the final result in this field. If the results of one test are available and a second test is known to have been performed but the results are not available, use code 997.

To determine which result to code in this field, use the following guidelines:

1. Gene-amplification tests (in situ hybridization) are considered to be a more reliable test of the over-expression of the HER2 gene. Thus, if both an IHC and a gene-amplification test (FISH, CISH, etc.) were done, code the result of the gene-amplification test in site-specific factor 15, except as noted below.

2. If the gene-amplification test was given first and the result was borderline/equivocal and an IHC was done to clarify these equivocal results, code the result of the IHC.
3. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

Site-Specific Factor 16 – Combinations of ER, PR, and HER2 Results

This is another summary field that allows researchers to rapidly identify those women who are “triple negative”—ER negative, PR negative and HER2 negative—a group comprising approximately 15% of all breast cancer cases. Younger women, African American women, and Hispanic women are more likely to be triple negative than older women and Caucasians, meaning that they are less likely to respond to hormone therapy or Herceptin as part of their breast cancer treatment.

SSF16 uses information from Site-Specific Factors 1, 2, and 15. The first digit reflects the result of ER testing, the second of PR testing, and the third HER2 testing as shown in Table I-2-19. The values in each digit are simply 0 for a negative test result and 1 for a positive test result. Thus “triple negative” patients are coded 000 in this field. In contrast, code 111 identifies women who are “triple positive.” If the result of any of the three tests is borderline/equivocal, unknown, or not performed, code as 999.

Table I-2-19. Layout of SSF16

1 st digit	2 nd digit	3 rd digit	For each
			0 Negative
ER	PR	HER2	1 Positive

Site-Specific Factor 21 – Response to Neoadjuvant Therapy

Neoadjuvant therapy is defined as systemic or radiation treatment administered prior to surgery in an attempt to shrink the tumor or destroy regional metastases. This site-specific factor documents whether that neoadjuvant therapy was successful.

1. Code the clinician’s statement regarding response to neoadjuvant therapy in the range 010 to 030. Do not try to interpret or infer a response based on the medical record. As a guide for the clinician, the definitions below are from the *AJCC Cancer Staging Manual, seventh edition*. The registrar should not use these definitions to code this field.
 - a. Complete Response (CR) – absence of invasive carcinoma in breast and lymph nodes; must be determined by microscopic evaluation of tissues
 - b. Partial Response (PR) – a decrease in T and/or N category compared to pretreatment value and no increase, using same method of evaluation as baseline value; residual in situ cancer at primary site; residual tumor in lymph nodes of any size
 - c. No Response (NR) – no apparent change in the T or N category compared to pretreatment value or an increase in T or N value at time of y pathologic examination

2. Use code 987 when no neoadjuvant therapy was given. This code also includes cases that no neoadjuvant therapy but systemic therapy was given after surgery.
3. Use code 999 when there is no statement of complete, partial or no response by the clinician or when the response is not documented in the medical record.

Site-Specific Factor 22 – Multigene Signature Method

Source documents: specialty reference laboratories (private companies with proprietary testing methods); the actual report may be included in the medical record or may be referenced by the clinician.

Other names: genomic profiling, Oncotype Dx, MammaPrint, multigene testing, multigene assay, microarray assay, molecular diagnostics for treatment planning

Multigene testing is usually done for node-negative patients to predict risk of recurrence within a specified time period or to predict the likelihood that the patient will respond to specific types of chemotherapy. Multigene testing helps tailor treatment for the woman's specific cancer characteristics. Recent studies indicate that these tests may also be helpful in planning treatment and predicting recurrence in node positive women with small tumors. Some types of tests may be specific to ER positive or negative patients or women in a certain age range. Many different types of genetic testing are available, including IHC-, FISH-, RT-PCR-, and genomic microarray-based multigene predictors.

This field codes the type of multigene signature test that was performed. Site-specific factor 23 codes the result of the multigene signature test. Both fields should be coded from the same test, which may not be available at the time of diagnosis. The most common and best known multigene test method is the Oncotype DX Breast Cancer Assay (code 010). This test is for women with Stage I or II node negative and ER positive breast cancer. It is an RT-PCR based assay for 21 genes (16 cancer related genes and 5 control genes), including ER, PR, and HER2/neu. A recurrence score is generated that predicts the risk of recurrence at 10 years for women treated with tamoxifen. Women who have carcinomas with high recurrence scores may benefit most from the addition of CMF (cyclophosphamide, methotrexate, and 5-FU) chemotherapy, whereas women with low recurrence scores may be less likely to have a benefit.

MammaPrint (code 020) is a microarray assay performed only on fresh tissue containing at least 30% tumor cells and using a 70-gene RNA profile to identify a poor prognosis signature and a good prognosis signature. This test is for node-negative women under the age of 61 with ER positive or ER negative carcinomas. This tissue must be collected in a kit and received by the company within 5 days from excision.

Other (code 030) includes the various IHC-based, FISH-based, and other types of tests, including the Breast Cancer Gene Expression Ratio Assay (BCGERA), also called the H:I Ratio Test, and the Rotterdam Signature test. BCGERA is an RT-PCR assay of 6 genes intended for patients with ER positive, lymph node negative carcinomas, and separates carcinomas into high-risk and low-risk groups. The Rotterdam Signature is a

76-gene microarray assay for women with node negative carcinomas that are either ER negative or ER positive. It does not overlap with the Oncotype DX or MammaPrint assays.

Note: Both SSF22 and SSF23 may not be available in the facility medical record. Contact the physician's office to determine whether the test was performed and obtain the results.

Site-Specific Factor 23 – Multigene Signature Results

This site-specific factor reports the outcome of the multigene signature test coded in SSF22. Both fields should be coded from the same test. Record the actual multigene signature score if given.

1. Oncotype Dx reports provide a score ranging from 1 to 100 on the front page of the report. This gives an “average rate of distant recurrence at 10 years.” If any tests results in a score of 100 or higher, code as 100.

001-099	Actual score
100	100 or more

2. Results of the MammaPrint and Breast Cancer Gene Expression Ratio Assay tests are reported as either Low, Intermediate, or High Risk (meaning the likelihood of developing distant recurrence) but may also be stated as good prognosis or poor prognosis.

200	Low risk of recurrence (good prognosis)
300	Intermediate risk of recurrence
400	High risk of recurrence (poor prognosis)

Female Genital Organs

Vulva, CorpusCarcinoma, CorpusAdenosarcoma, CorpusSarcoma, Placenta, PeritoneumFemaleGen

This section covers 10 schemas of the gynecologic organs. The new PeritoneumFemaleGen schema includes a schema discriminator to separate soft tissue sarcomas of the peritoneum from carcinomas of the female peritoneum, which are staged in the TNM system with the ovary schema. In the seventh edition of TNM and therefore in CS version 2, corpus uteri has three histology-specific staging systems: endometrium and carcinosarcomas (CorpusCarcinoma), ICD-O morphology codes 8000-8790, 8980-8981, 9700-9701; leiomyosarcomas and endometrial stromal sarcomas (ESS) (CorpusSarcoma), 8890-8898, 8930-8931; and adenocarcinoma (CorpusAdenosarcoma), 8933 only.

Many of the site-specific factors are the same for multiple primary sites, but the numbering of the site-specific factors differs, as shown in Table I-2-22. These site-specific factors will be discussed generically (without reference to SSF numbers) below.

Site-Specific Factor 11 – Regional Lymph Node Laterality: TCR collects for Vulva.

Source documents: pathology report, imaging, physical exam, other statement in record

This site-specific factor is included in the CS version 2 vulva schema to retain compatibility with AJCC sixth edition for mapping of the N category.

Code the appropriate description of involved regional lymph nodes.

Code the appropriate description of involved regional lymph nodes.

1. Use code 000 when all regional lymph nodes are negative.
2. Use code 010 when
 - a. all positive regional nodes are ipsilateral
 - b. involved lymph nodes are described as unilateral
3. Use code 020 when
 - a. at least one regional lymph node is involved on each side of the pelvis
 - b. involvement is described as bilateral or contralateral
4. Use code 030 when regional lymph node(s) are described as positive but the laterality of the involved nodes is unknown.
5. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
6. Use code 998 when
 - a. lymph nodes were not examined
 - b. lymph nodes were not assessed
7. Use code 999 when
 - a. there is no information in the medical record about regional lymph node involvement
 - b. the status of regional lymph nodes is unknown

Site-Specific Factor 2 – Peritoneal Cytology: TCR collects for Corpus – Carcinoma, Adenosarcoma, Sarcoma

Site-Specific Factor 2 – Peritoneal Cytology (Corpus – Carcinoma, Adenosarcoma, Sarcoma)

Source documents: cytology reports (look for multiple reports), pathology report

Other names: peritoneal washings, peritoneal lavage, possibly paracentesis (if no surgery)

Peritoneal cytology looks for malignant cells in the fluid in the pelvic and peritoneal cavities. Excess natural fluid accumulation is called ascites. If at laparotomy an analyzable amount of ascites is not present, the surgeon may flood the pelvis and abdomen with saline solution then suction it out and send the fluid for cytology. Prior to the seventh edition of TNM, positive peritoneal cytology was coded in CS extension. In CS version 2 peritoneal cytology is reported separately but does not change the FIGO or seventh edition TNM stage.

1. Use code 000 when the peritoneal cytology is reported as positive.
2. Use code 010 when the peritoneal cytology is reported as negative or normal.
3. Use code 020 when the peritoneal cytology test was done and the results were
 - a. reported as suspicious
 - b. undetermined if negative or positive
4. Code 988 should not be used by any US or Canadian registry, as this field is required by all standards setters.
5. Use code 997 when the peritoneal cytology test was ordered but the results are not in the medical record.
6. Use code 998 when
 - a. there is a statement in the medical record that the test was not done, not ordered and/or not performed
 - b. no pathologic specimen is available
7. Use code 999 when
 - a. there is no information in the medical record about the AFP test
 - b. it is unknown whether the AFP test was performed

Site-Specific Factor 1 – Prognostic Scoring Index: TCR collects for Placenta

The Prognostic Index is a non-anatomic risk factor scoring system that adds a fourth dimension to the stage grouping of gestational trophoblastic tumors (GTT) of the placenta. The score subcategorizes GTTs into low risk or high risk based on a point system. The eight risk factors and their point scores are shown in Table I-2-25, which lays out in table format the wording in the note for this site-specific factor.

Code the clinician's statement of the total point value for the Prognostic Index in priority over the clinician's statement of risk.

1. Use code 000 if the clinician states no risk factors.
2. Use code 010 if the point value is between 1 and 6.
3. Use code 110 if the point value is 7 or more.

4. If there is no statement of point value, look for a statement of low risk (code 010) or high risk (code 110), or a statement of Substage A (code 050) or Substage B (code 150).
5. Use code 200 if the clinician indicates that risk factors are present but does not state whether they are low or high risk.
6. If none of these clinician statements is available, the registrar may attempt to determine the point value and risk. If any one of the factors is unknown, stop trying to assign score, unless the risk category—low or high—has already been determined with the known factors.
7. Use code 999 if risk factors are not assessed or are not documented in the medical record.

Prognostic Scoring Index				
	Score			
Risk Factor	0	1	2	4
Age	<40	≥ 40		
Antecedent pregnancy	Hydatidiform mole	Abortion	Term pregnancy	
Months from Index pregnancy	<4	4 to <7	7-12	>12
Pretreatment HCG (IU/ml)	<1,000	1000 to <10,000	10,000 to <100,000	≥100,000
Largest tumor size incl. uterus	<3cm	3 to <5cm	≥5cm	
Sites of mets	Lung only	Spleen, kidney	GI tract	Liver, brain
Number of mets	0	1-4	5-8	>8
Previous failed chemotherapy			Single drug	2 or more drugs

Schema Discriminator: TCR collects for PeritoneumFemaleGen, Site-Specific Factor 25

Source documents: face sheet, other statement of patient gender in medical record

Both sarcomas and carcinomas of the peritoneum can be staged. For Peritoneum and PeritoneumFemaleGen, a schema discriminator is necessary to identify the gender of the patient so that the correct schema can be presented to the abstractor. Carcinomas in the morphology code range 8000-8576, specialized gonadal neoplasms, and mixed complex and stromal neoplasms (except gastrointestinal stromal tumors) are coded with the same staging criteria for female patients as ovarian cancer in the PeritoneumFemaleGen schema.

In this field, code 002, Female, presents the PeritoneumFemaleGen schema to the abstractor. All other categories of gender (codes 001, 003, 004, 009 and 100) present the Peritoneum schema to the abstractor. For males, a carcinoma of the peritoneum will output T NA N NA M NA Stage NA.

Code 981 is new in CS version 0203 and includes non-carcinoma, non-GIST histologies formerly coded as “blank” in CS versions 0200 through 0202.

Male Genital Organs

Prostate, Testis, Penis, Scrotum

Penis

Site-Specific Factor 17 – Extranodal Extension of Regional Lymph Nodes

Source documents: pathology report, imaging reports, physical exam

Other names: ENE, extracapsular extension, ECE

The presence of extranodal extension (ENE) from regional lymph nodes is an important prognostic factor in genitourinary cancers because these patients are rarely cured without some type of systemic chemotherapy or radiation. Extranodal extension is defined as metastatic tumor growing from within the lymph node outward through the lymph node capsule and into surrounding connective tissues. ENE can be detected clinically, on gross examination of dissected lymph nodes, or microscopically.

Code clinical or pathologic statements regarding extranodal extension in involved regional lymph node(s). Pathologic findings indicating absence or presence of ENE take priority over clinical statements. Do not code extranodal extension found in distant lymph nodes.

1. Use code 000 when no nodes are involved.
2. Use code 010 when
 - a. there is a statement that ENE is not present
 - b. there is documentation on imaging or pathology that the nodes are involved but there is no mention of ENE; in other words, there is no ENE documented on available reports
 - c. the involved lymph nodes are described clinically as mobile
3. Use code 020 when
 - a. the pathology report states that ENE is present
 - b. there is a clinical statement of ENE
 - c. the involved lymph nodes are described clinically as fixed or matted
4. Use code 030 when
 - a. there is a reference to involved nodes in the medical record, such as in the patient history, but no mention of ENE; in other words, there are no imaging or pathology reports available to review
 - b. there is a statement that nodes are involved but it is unknown whether ENE is present
5. Use code 999 when
 - a. it is unknown whether regional lymph nodes are involved
 - b. regional lymph nodes cannot be assessed either pathologically or clinically

c. there is no documentation in the medical record about the status of lymph nodes

Prostate

CS Extension – Clinical Extension

The prostate Extension field is unique among CS schemas because it includes only clinical information. The Prostate CS Extension – Clinical Extension field includes many notes that should be read prior to coding clinical extent of tumor. Pathologic information is recorded in Site-Specific Factor 3, CS Extension-Pathologic (see below).

The assessment of tumor extension in the TNM system is subcategorized by whether the tumor is clinically inapparent (T1) or clinically apparent (T2 – 4). A clinically inapparent tumor cannot be palpated nor seen on imaging, although it may be an incidental microscopic finding in one or both lobes. For example, adenocarcinoma of the prostate may be discovered in the specimen from a transurethral resection of the prostate (TURP) in a patient treated for benign prostatic hyperplasia. Alternatively, the patient may have had an elevated Prostate Specific Antigen (PSA), for which needle biopsies were done and showed adenocarcinoma. In either case, the cancer was not clinically apparent at the time the prostate tissue was examined.

The determination of the clinically inapparent T1 category in the TNM system is based on information obtained from digital rectal examination (DRE) and imaging *only*. Information obtained from core needle biopsies of the prostate is specifically excluded from clinical T but is coded in Site-Specific Factors 12 through 15 in CS version 2. The physician may not use the words “clinically inapparent” but a statement of cT1 implies this. This information is captured in the CS Extension – Clinical Extension code range of 100-150. Codes 130 and 140 may be used for surgical procedures other than TURP that do not meet the criteria for pathologic staging (total prostatectomy), such as a partial prostatectomy for benign prostatic hyperplasia. Even though needle biopsies that confirm the diagnosis may indicate tumor in both lobes, this microscopic information should not be used to code the case in the 200 and higher range.

The determination of clinically apparent T2 and higher categories in the TNM system is based on information from physical examination, such as a statement of “mass”, “tumor”, or “nodule”, or physician staging of cT2_. The physical examination may be supplemented by information from imaging, but not from microscopic examination of biopsy specimens. This information about clinically apparent tumor is coded in the range 200 – 240.

It is important to note that the registrar is not to infer clinically inapparent or apparent tumor based on any other terminology in the physical exam (digital rectal exam) or imaging reports. (The registrar may infer clinically apparent tumor from the terms *mass*, *tumor*, or *nodule*.) Use code 300 when the medical record does not provide a clear statement of inapparent or apparent tumor.

Note: Biopsies of extraprostatic sites that document T3 and T4 extent of disease may be included in CS Extension – Clinical Extension, but needle or core biopsies of the prostate itself are not part of the CS Extension – Clinical Extension information.

Site-Specific Factor 1 – Prostate Specific Antigen (PSA) Lab Value: TCR collects for prostate.

Source documents: clinical laboratory report (blood or serum test), history, clinician note, pathology report

Other names: Prostate specific antigen, serum PSA, total PSA

Normal reference range: varies by age and race of patient. The reference range should be shown on the clinical laboratory report. In general, normal findings are 0 – 4.0 nanograms per milliliter (ng/ml). Optimal normal range is 0 – 2.6 ng/ml. Nanograms per milliliter may be reported as micrograms per liter ($\mu\text{g/L}$ or ug/L). The number to be recorded in SSF1 is the same for both measurements.

Serum PSA is the most sensitive tumor marker for monitoring individuals with prostate cancer, including progression of disease and response to therapy. Although originally not intended to be a screening test, this relatively simple blood test has become a very common method of detecting new prostate cancer in its earliest stages. PSA can be totally negative when prostate cancer is found on digital rectal exam. In such cases, PSA will not be helpful in monitoring for recurrence. Serum PSA is not the same as free PSA or precursor PSA—do not record values from either of these tests in this field.

1. Record the highest PSA value prior to, and closest to, diagnostic biopsy of prostate and initiation of treatment in the range 001 to 979. This site-specific factor is a 3 digit field with an implied decimal point between the second and third digits. If the PSA result is between 0 and 0.1 ng/ml, round up and code as 001. Results for SSF1 and SSF2 should be from the same test.

Examples

12.4 – code as 124
4.2 – code as 042
94 – code as 940

Note: If more than one PSA test is given in the three months prior to treatment, record the highest value even if it is not the closest to initiation of treatment. For example, a PSA on January 5, 2010 is 5.8. PSA on January 29 2010 is 5.2. Biopsy February 22, 2010 is positive for adenocarcinoma. *Code the highest PSA (from January 5) as 058.*

2. Use code 980 if the actual value of the test exceeds 98.0.

3. For site-specific factor 1 PSA Lab Value, code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

4. Use code 997 if the PSA was ordered but the results are not in the medical record.

5. Use code 998 if there is a statement in the medical record that the PSA was not done or was not ordered.

6. Use code 999 when there is no information in the medical record about whether a PSA was done.

Site-Specific Factor 3 – CS Extension – Pathologic Extension: TCR collects for Prostate.

Source documents: pathology report

This site-specific factor records information about primary tumor extension based on the prostatectomy or autopsy specimen *only*. Information from core needle biopsies is coded in site-specific factor 14. Codes used in CS version 1 in the range 020 to 099 have been converted to three digits in the range 200 to 750 in CS version 2 to be more comparable with CS Extension-Clinical. The definitions for the same code may not be the same between CS Extension-Clinical and SSF3 CS

Extension-Pathologic. New codes have been added as a result of revisions in AJCC seventh edition. In CS version 0203, code 410 has been made obsolete and the data have been reviewed and recoded into 415 and 483. There are also codes and descriptions in SSF3 that can only be determined microscopically from the prostate specimen. Read the code definitions carefully. Do not rely on memory from CS version 1 or codes from CS Extension- Pathologic to code SSF3.

Note: The seventh edition of TNM is not as specific about the type of prostatectomy as previous editions, which required a total prostateseminalvesiculectomy. Procedures less than radical prostatectomy may be used to code Site-Specific Factor 3 if tumor is confined to the prostate and the margins are negative. However, newer techniques such as “Greenlight” Photoselective Vaporization (PVP) and laser prostatectomy are intended to treat benign prostatic hyperplasia rather than cancer. These procedures vaporize prostate tissue to open the urethra but generally do not reach to the areas of the prostate where cancer is most commonly found.

The following special codes may apply to the timing of the prostatectomy:

960 Unknown if prostatectomy done

970 No prostatectomy performed as part of first course of treatment

980 A prostatectomy was performed but was not considered first course of treatment

Example

Patient initially treated with “watchful waiting.” When obstructive symptoms progressed, patient underwent prostatectomy. *“Watchful waiting” was the first course of treatment. Use code 980 for SSF3 in this situation.*

985 Patient underwent autopsy, but extent of disease unknown

Note: Do not use this code unless autopsy occurred within the timeframe for initial diagnosis and staging.

990 A prostatectomy was performed, but

a. the extent of disease was not stated

b. the primary tumor cannot be assessed

c. the pathologic findings from the procedure are not documented in the medical record

Site-Specific Factor 8-Gleason's Score on Needle Core Biopsy/Transurethral Resection of Prostate (TURP)

Source Documents: pathology reports from needle biopsies or transurethral resection of prostate

The Gleason system for grading prostate cancer is the one recommended by the AJCC and College of American Pathologists. Site-specific factor 8 code information on Gleason score from core needle biopsy or transurethral resection of the prostate (TURP) *only*. This information is used for clinical stage grouping in AJCC seventh edition and in predictive nomograms, such as the Kattan nomograms and the Partin tables, which guide individual treatment decisions. The pathologist determines the Gleason score by looking at prostate tissue under the microscope. He assigns a grade to the most predominant pattern (largest surface area of involvement—more than 50% of the tissue) and a grade for the secondary pattern (second most predominant) based on published Gleason criteria. Gleason grades range from 1 (small, uniform glands) to 5 (lack of glands, sheets of cells). The cancer protocol for prostate published by the College of American Pathologists (CAP checklist or synoptic report) provides specific instructions to the pathologist for describing patterns and score from diagnostic procedures and prostatectomy specimens.

The Gleason score is the sum of the values for the primary and secondary patterns. The score ranges from 2 (1 + 1) to 10 (5 + 5). The SSF8 code is three digits, with the Gleason score in the right-most digit(s) and leading zeros (Table I-2-27).

Table I-2-27. Format for SSF 8 and 10

1 st digit	2 nd and 3rd digits
0	Gleason Score
	02-10

Examples Gleason 3 + 3 Code SSF8 as 006

Gleason 4 + 3 Code SSF8 as 007

Gleason 7 Code SSF8 as 007

Gleason 10/10 Code SSF8 as 010

No needle biopsy or TURP performed: code as 998.

Gleason 4 Code SSF8 as 004 (assume a number in the range 2 to 5 is a primary pattern and that it is the score)

No Gleason information on needle biopsy or TURP: code as 999.

Note: Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

Site Specific Factor 10 - Gleason's Score on Prostatectomy/Autopsy

Source Documents: Pathology report from prostatectomy or autopsy report

Other names: Gleason sum, combined Gleason grade

This site specific factor codes information on Gleason score from prostatectomy or autopsy *only*. This information is used for pathologic stage grouping in AJCC seventh edition. (Information on Gleason score from core needle biopsy or TURP is collected in SSF 8—see above). The pathologist's process for determining the Gleason primary and secondary patterns and Gleason score and examples of the codes are described in SSF 8. The same format is used for prostatectomy or autopsy information.

Note: Do not use Gleason tertiary pattern to code SSF10.

Examples No prostatectomy performed Code *as 998 in SSF 10*.
Diagnosed at autopsy but no Gleason information Code *as 999 in SSF 10*.

Note: Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

Testis

In CS version 1, testis used five site-specific factors. Of these, three have been made obsolete and replaced by other site-specific factors in CS version 2.0. The data in the original site-specific factors 1 through 3 will be retained in the CS data record, but these SSFs are not to be used in CS version 2. The reason for the revised SSFs is that AJCC clarified that the tumor marker values should be captured prior to orchiectomy. This was not clear in CS version 1, so the data in SSFs 1 to 3 are a mix of pre- and post- orchiectomy information. In addition to revising the tumor markers into separate data fields for the lab value and the clinician's interpretation of that lab value, an additional element has been added—persistence of elevated tumor markers—that documents the post-orchiectomy status of the markers for assigning the stage group IS.

The data elements and codes have been modified in CS version 2 to calculate the S value correctly. Any analysis of testis staging over time relying on the tumor marker data collected in CS version 1 might require review of medical records to verify the appropriate preoperative tumor marker values and the presence of persistent tumor markers post-orchiectomy.

Site-Specific Factor 4 – Radical Orchiectomy Performed

Source documents: operative report, pathology report

Other names: transinguinal orchiectomy

This site-specific factor documents whether radical orchiectomy was performed (code 010), not performed (code 000) or unknown (code 999). The information is used to map the T value in AJCC sixth edition.

A radical orchiectomy is defined as complete removal of the testicle, epididymis, and spermatic cord to the level of the internal inguinal ring, either as a diagnostic procedure or as treatment. The

spermatic cord is usually excised with the testicle, although the cord may not be mentioned in the pathology report. Unless the operative report says that the cord was not removed, assume that the procedure was a radical orchiectomy.

1. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

Site-Specific Factor 5 – Size of Metastasis in Lymph Nodes

Source documents: pathology report

In CS version 2, site-specific factor 5 codes incorporate not only size ranges for the metastasis in a regional lymph node mass, but also the absence or presence of extranodal extension and clinician statements of the N category. CS version 1 codes 001 to 003 have been made obsolete and the data converted to codes in the 010 to 030 range. The AJCC definitions for the N category describe “metastasis with a lymph node mass” of a stated size, rather than the size of the metastasis in the lymph node. Extranodal extension is defined as metastatic tumor growing from within the lymph node outward through the lymph node capsule and into surrounding connective tissues. If extranodal extension is not mentioned, assume that it is not present and code as 010.

1. Use code 000 when there are no lymph node metastases (CS Lymph Nodes is 000).
2. Use code 010 when
 - a. the lymph node mass containing metastasis is up to 2 cm in size and there is no pathologic evidence of extranodal extension
 - b. the clinician stages the case as N1 without any further information about lymph nodes
3. Use code 020 when
 - a. the lymph node mass containing metastasis is between 2 and 5 cm in size
 - b. there is a statement of extranodal extension regardless of the size of the lymph node mass
 - c. the clinician stages the case as N2 without any further information about lymph nodes
4. Use code 030 when
 - a. the lymph node mass containing metastasis is more than 5 cm in size
 - b. the clinician stages the case as N3 without any further information about lymph nodes
5. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
6. Use code 999 when
 - a. regional lymph nodes are involved but the size of the mass is not stated
 - b. it is unknown whether regional lymph nodes are involved

c. the status of regional lymph nodes or metastases within regional lymph nodes is not documented in the medical record

Serum Tumor Markers for Testis

Tumor markers for testicular cancer serve several purposes. Pre-orchietomy, they help determine the histologic cell type. Post-orchietomy, they assist in treatment management for patients with germ cell tumors, and provide an extra prognostic dimension (S) to AJCC stage grouping. For the pathologist, elevated levels of the markers alpha fetoprotein (AFP) or beta subunit of human chorionic gonadotropin (beta-hCG) may indicate the need for additional microscopic analysis of resected tissue. The serum lactate dehydrogenase (LDH) helps the clinician assess the patient's metastatic tumor burden. APF, hCG, and LDH information is combined into the S (serum tumor marker) category in the TNM system, although each may be given an individual S value. The value used for stage group IS is calculated on the serum marker values measured post-orchietomy (this is a change in AJCC seventh edition). To determine the S category for other stage groups, lab values for the three markers must be within the ranges below. In CS version 2, the computer algorithm compares the values coded in SSFs 7, 9 and 10 to derive an S value.

S0 All three markers are within normal limits

S1 All three markers are done and all three are no more than minimally elevated

AFP <1000 ng/ml **AND** hCG <5,000 mIU/ml **AND** LDH <1.5 times N* or unknown

S2 **ANY** marker is moderately elevated (not all three have to be done)

AFP 1000-10,000 ng/ml **OR** hCG 5,000-50,000 mIU/ml **OR** LDH 1.5-10 times N* S3 **ANY** marker is highly elevated (not all three have to be done)

AFP > 10,000 ng/ml **OR** hCG >50,000 mIU/ml **OR** LDH >10 times N*

* N = upper limit of normal

Note: According to AJCC, the S category can be determined for both AJCC sixth and seventh editions even if the LDH value is unknown when either the AFP or hCG is moderately or highly elevated.

Major Update CS Version 0203

After the *AJCC Cancer Staging Manual, seventh edition*, was published, the editors of the testis chapter issued a revision to the staging guidelines because of a change in how information regarding serum tumor markers should be collected. The following information was published in the June 2010 issue of the *CoC Flash*, published by the American College of Surgeons Commission on Cancer.

Since the publication of the AJCC seventh edition, important information related to the capture of serum tumor markers has been brought forward to the AJCC chapter authors. There is consensus among the experts in testicular cancer that serum tumor markers should be measured **AFTER** orchietomy to assign the S category in all stages of disease. The experts offer the following

explanation: Since AFP and hCG are cleared from the blood at half-lives of 5-7 days and 1-3 days respectively, post-orchietomy levels of AFP and hCG need to be serially measured until they either return to normal, plateau, or rise. If marker levels before orchietomy were used, then many patients would be misclassified as having greater than S0 disease, when they have actually a lower S stage (even S0) including many who will be misdiagnosed with clinical stage IS disease. Misclassification of Stage IA or IB as IS would mean that the patient would get chemotherapy when they may well need no further intervention of any kind after orchietomy.

An erratum to the testis chapter has been issued as follows:

Serum tumor marker levels should be measured prior to orchietomy, but levels after orchietomy are used for assignment of S category, taking into account the half life of AFP and hCG. Stage grouping classification of Stage IS requires persistent elevation of serum tumor markers following orchietomy.

The Serum Tumor Markers (S) category comprises the following:

1. Alpha fetoprotein (AFP) – half life 5-7 days
2. Human chorionic gonadotropin (hCG) – half life 1-3 days
3. Lactate dehydrogenase (LDH)

Following this announcement, the CS version 0203 Testis schema was modified to include additional site-specific factors to capture post-orchietomy serum tumor marker information. Recommendations were made that registrars should capture the following testis information for all 2010 cases:

1. Continue to enter the pre-orchietomy lab values and interpretations (SSFs 7, 9 and 10).
2. Document in text fields in the abstract the post-orchietomy lab values and interpretations for the corresponding serum tumor markers (if available) using the same values currently listed in SSFs 7, 9 and 10. Regarding serum tumor marker half-lives, if the first post-orchietomy serum tumor marker remains elevated, it may be necessary to locate subsequent tests to see if the marker normalizes. One month post-orchietomy is usually sufficient time in order for normal half-lives to occur but it is also dependent upon other personal medical factors and how high the original test value was.

Example: Feb. 20 Pre-orchietomy AFP 276 ng/ml (normal < 9 ng/ml)
Pre-orchietomy hCG 1934 mIU/ml (normal < 5 mIU/ml) Pre-orchietomy LDH 168 (normal 100-225)
March 26 Orchietomy performed
April 17 Post-orchietomy AFP 14 ng/ml (normal < 9 ng/ml)
Post-orchietomy hCG < 5 mIU/ml (normal < 5 mIU/ml)

Post-orchietomy LDH 134 (normal 100-225)
April 25 2nd post-orchietomy AFP 6 ng/ml (normal < 9 ng/ml)

The serum half-life of AFP is 5 to 7 days; therefore, we should expect the 276 value to

“halve” in that timeframe to approximately 138 or less. Then, in another 5-7 days, we should expect the 138 value to “halve” to approximately 69 or less, etc. Since the post- orchiectomy AFP in the above example was first performed 3 weeks after surgery, it may have been too soon for the level to normalize. Therefore, the second post- orchiectomy AFP value (normal) would be used to assign the “S” category and stage.

1. In addition to the post-orchietomy lab values and interpretations, other items to document in text fields included:

- a. the corresponding date and source of information (lab report, clinician’s note, etc.) that each post-orchietomy serum tumor marker test was performed until normalization, plateau or increase
- b. physician statement about each post-orchietomy serum tumor marker (normalized, remains elevated, plateaued, etc.) and/or physician assignment of “S” category
- c. indication that post-orchietomy serum tumor markers are not in medical record for those cases that this holds true

2. Review the medical records of all testis cases already coded with CS version 2 and follow above procedure.

The following codes and definitions are uniform across site-specific factors 7, 9 and 10; and 13, 15 and 16.

Note: Any lab result between 0 and 1 ng/ml should be rounded up to the next value (001). For numbers above 1, round .1 to .4 down, and round .5 to .9 up.

000	Within normal limits (S0) (SSFs 7, 9, 13, 15)
010	Range 1 (S1) (value varies according to tumor marker) (SSFs 7, 9, 13, 15)
020	Range 2 (S2) (value varies according to tumor marker) (SSFs 7, 9, 13, 15)
030	Range 3 (S3) (value varies according to tumor marker) (SSFs 7, 9, 13, 15)
997	Test ordered, results not in chart
998	Test stated as not done, not ordered and/or not performed
999	No information about test in medical record; information unknown or not documented

Site-Specific Factor 7 – Pre-Orchiectomy Alpha Fetoprotein (AFP) Range

Source documents: clinical laboratory report (blood serum radioimmunoassay or enzyme assay (EIA)); sometimes in history and physical or clinical statement in pathology report

Other names: αFP, aFP, Alpha Fetoprotein, Alpha-fetoprotein, fetoprotein; fetal alpha globulin

Normal Reference Range Adult men and non-pregnant women: 0-15 ng/ml (SI: 0-15 μg/L)

Measurements: micrograms/liter (μg/L or ug/l) is equivalent to nanograms per milliliter (ng/ml)

Alpha-fetoprotein (AFP) is a protein normally made by immature liver cells in the fetus. In adults, high AFP levels (> 500 ng/ml) in the blood occur only in hepatocellular carcinoma (>1000), liver metastases (from a primary elsewhere), and germ cell tumors of the testes and ovaries. Elevated AFP values are found in non-seminomatous malignancies and mixed tumors of the testis. AFP is used with

HCG (SSFs 9) to identify the specific cell type of testicular cancer. AFP is not secreted by pure seminoma or teratoma. If AFP > 500 ng/ml, the underlying condition is unlikely to be benign. If AFP > 10,000 ng/ml at diagnosis, the patient is likely to have a poor prognosis.

AFP is more useful in monitoring response to therapy than making a diagnosis. The half life of AFP is 5 to 7 days. After orchiectomy, the AFP should fall to < 25 ng/ml in 25-35 days. If elevated AFP persists, this is an indication of residual tumor.

AFP Range

The AFP Range is actually a category used to map the S (serum tumor marker) element for stage grouping testicular cancer in the TNM system.

Code the range of the highest value before orchiectomy (this is a change from CS version 1), based on the reference range used by the lab. If the clinician states an S value rather than an AFP test value, use the appropriate code. If there is a discrepancy between the clinician's statement of the range and the actual value on the test, code from the clinician's statement.

000	Within normal limits (S0) – SSF6 code 000 or 001
010	Range 1: above normal but less than 1000 ng/ml (S1) – SSF6 codes 002 to 090
020	Range 2: 1000 – 10,000 ng/ml (S2) – SSF6 codes 100 to 190
030	Range 3: > 10,000 ng/ml (S3) – SSF6 code 200

1. Use code 991 when the pre-orchiectomy AFP lab value is not documented but there is a physician statement that the AFP result was elevated.
2. Use code 992 when the pre-orchiectomy AFP lab value is not documented but there is a physician statement that pre-orchiectomy serum tumor markers (not specified which one) were normal.
3. Use code 993 when the pre-orchiectomy AFP lab value is not documented but there is a physician statement that pre-orchiectomy serum tumor markers (not specified which one) were elevated.
4. Use code 995 for the rare case that is treated prior to orchiectomy. Code the initial AFP range in site-specific factor 13.
5. Use code 996 for the rare case that is not treated by orchiectomy. Code the initial AFP range in site-specific factor 13.
6. See above for other common codes and definitions.

Site-Specific Factor 13 – Post-Orchiectomy Alpha Fetoprotein (AFP) Range

The half life of alpha fetoprotein is 5 to 7 days, but it may take weeks or months for this tumor marker to return to normal. If the first post-orchietomy test remains elevated, continue reviewing subsequent lab work until the AFP returns to normal or plateaus. Use that test to code this field, or code the last test result before adjuvant treatment begins.

1. For the rare case where an orchietomy is not performed or where the patient receives neoadjuvant therapy, code the initial AFP range in SSF13 rather than SSF7.
2. For SSF13 (AFP Range), use code 990 when the post-orchietomy AFP range is unknown but the pre-orchietomy AFP was in the normal range.
3. For Site-Specific Factor 13 Post-Orchietomy AFP Range, code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
4. Use code 991 when the physician or medical record indicates that the post-orchietomy AFP range remains elevated.
5. Use code 992 when the post-orchietomy AFP range is not documented but there is a physician statement that post-orchietomy serum tumor markers (not specified which ones) were normal.
6. Use code 993 when the post-orchietomy AFP range is not documented but there is a physician statement that post-orchietomy serum tumor markers (not specified which ones) remain elevated.
7. Use code 997 when the post-orchietomy AFP test was done but the actual lab result was not stated, for example, when a post-orchietomy AFP test is reported with an interpretation only (see site-specific factor 13).
8. For Post-Orchietomy Alpha Fetoprotein (AFP) Range (Site-Specific Factor 13), code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
9. See above for other common codes and definitions.

Site-Specific Factor 9 – Pre-Orchietomy Human Chorionic Gonadotropin (hCG) Range

Source documents: clinical laboratory report (blood or serum test), sometimes in history and physical or clinical statement in pathology report

Other names: Human chorionic gonadotropin, b-hCG, beta subunit HCG, beta hCG, β hCG

Normal reference range

< 2 ng/ml (SI: < 2 μ g/L or <2 ug/L) 1 ng/ml of HCG is approximately 5 mIU/ml.
< 5 mIU/mL (< 5 IU/L) To record mIU/mL in ng/ml, divide the test result by 5.

Measurements: International Units/liter (IU/L) is equivalent to milli-International Units per milliliter (mIU/ml)

Human chorionic gonadotropin is a hormone produced by the placenta and some germ cell tumors. Two subunits, alpha and beta, can be measured in blood or serum. The alpha subunit is a non-specific marker for pancreatic and pituitary tumors. Beta-hCG levels are never found in normal healthy men. When the presence of beta-hCG is detected in serum, it always indicates a malignancy. Beta-hCG is secreted by some non-seminomatous germ cell tumors and mixed tumors and is used with AFP to identify the specific cell type of testicular cancer. Beta-hCG is also useful in monitoring response to therapy. After orchiectomy, the hCG should be undetectable within 5 to 8 days. If elevated hCG persists, this is an indication of residual tumor.

hCG Range

The hCG Range is actually a category used to map the S (serum tumor marker) element for stage grouping testicular cancer in the TNM system.

Code the range of the highest value before orchiectomy (this is a change from CS version 1), based on the reference range used by the lab. If the clinician states an S value rather than an hCG test value, use the appropriate code. If there is a discrepancy between the clinician's statement of the range and the actual value on the test, code from the clinician's statement.

- 000 Within normal limits (S0) – SSF8 code 000
- 010 Range 1: above normal but less than 5000 mIU/ml (S1) – SSF8 codes 001 to 140
- 020 Range 2: 5000 – 50,000 mIU/ml (S2) – SSF8 codes 150 to 240
- 030 Range 3: > 50,000 mIU/ml (S3) – SSF8 code 250

1. Use code 991 when the pre-orchiectomy hCG lab value is not documented but there is a physician statement that the hCG result was elevated.
2. Use code 992 when the pre-orchiectomy hCG lab value is not documented but there is a physician statement that pre-orchiectomy serum tumor markers (not specified which one) were normal.
3. Use code 993 when the pre-orchiectomy hCG lab value is not documented but there is a physician statement that pre-orchiectomy serum tumor markers (not specified which one) were elevated.
4. Use code 995 for the rare case that is treated prior to orchiectomy. Code the initial hCG range in site-specific factor 15.
5. Use code 996 for the rare case that is not treated by orchiectomy. Code the initial hCG range in site-specific factor 15.
6. See above for other common codes and definitions.

Site-Specific Factor 15 – Post-Orchiectomy Human Chorionic Gonadotropin (hCG) Range

The half life of human chorionic gonadotropin is 1 to 3 days, but it may take much longer for this tumor marker to return to normal. If the first post-orchietomy test remains elevated, continue reviewing subsequent lab work until the hCG returns to normal or plateaus. Use that test to code this field, or code the last test result before adjuvant treatment begins.

1. For the rare case where an orchietomy is not performed or where the patient receives neoadjuvant therapy, code the hCG range in SSF15 rather than SSF9.
2. For SSF15 Post-Orchietomy hCG Range, use code 990 when the post-orchietomy hCG range is unknown but the pre-orchietomy hCG was in the normal range.
3. Use code 991 when the physician or medical record indicates that the post-orchietomy hCG range remains elevated.
4. Use code 992 when the post-orchietomy hCG range is not documented but there is a physician statement that post-orchietomy serum tumor markers (not specified which one) were normal.
5. Use code 993 when the post-orchietomy hCG range is not documented but there is a physician statement that post-orchietomy serum tumor markers (not specified which one) remain elevated.
6. Use code 997 when the post-orchietomy hCG test was done but the actual lab result was not stated, for example, when a post-orchietomy hCG test is reported with an interpretation only (see site-specific factor 15).
7. For Post-Orchietomy Human Chorionic Gonadotropin (hCG) Range (Site-Specific Factor 15), code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
8. See above for other common codes and definitions.

Site-Specific Factor 10 – Pre-Orchietomy LDH Range

See LDH Lab Value, LDH Interpretation, and LDH Upper Limit of Normal in Tumor Markers Section.

For testis, only the LDH Range is coded. The test that is coded in site-specific factor 10 must be done prior to orchietomy. LDH is non-specific for testicular cancer. LDH is not routinely performed unless the patient has evidence of bulky or distant disease.

1. Use code 991 when the pre-orchietomy LDH is not documented but there is a physician statement that the LDH result was elevated.

2. Use code 992 when the pre-orchietomy LDH lab value is not documented but there is a physician statement that pre-orchietomy serum tumor markers (not specified which ones) were normal.
3. Use code 993 when the pre-orchietomy LDH lab value is not documented but there is a physician statement that pre-orchietomy serum tumor markers (not specified which ones) were elevated.
4. Use code 995 for the rare case that is treated prior to orchietomy. Code the initial LDH range in site-specific factor 16.
5. Use code 996 for the rare case that is not treated by orchietomy. Code the initial LDH range in site-specific factor 16.
6. See above for other common codes and definitions.

Site-Specific Factor 16 – Post-Orchietomy LDH Range

See LDH Lab Value, LDH Interpretation, and LDH Upper Limit of Normal in LAB TESTS AND TUMOR MARKERS

For testis, only the LDH Range is coded. The test that is coded in site-specific factor 16 must be done after orchietomy and before any further treatment begins. LDH is non-specific for testicular cancer. Although part of the criteria for the S category in the TNM system, LDH is not routinely performed unless the patient has evidence of bulky or distant disease.

This site-specific factor uses the same code structure as the pre-orchietomy LDH range coded in site-specific factor 10, except that site-specific factor 16 should be taken from a test performed after orchietomy (post-orchietomy) and before any additional treatment begins. See SSF10 for further information about LDH.

If the first post-orchietomy test remains elevated, continue reviewing subsequent lab work until the hCG returns to normal or plateaus. Use that test to code these two fields, or code the last test result before adjuvant treatment begins.

1. For the rare case where an orchietomy is not performed or where the patient receives neoadjuvant therapy, code the initial LDH range in SSF16 rather than SSF10.
2. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
3. Use code 990 when the post-orchietomy LDH range is unknown but the pre-orchietomy LDH was in the normal range.
4. Use code 991 when the physician or medical record indicates that the post-orchietomy LDH range remains elevated.

5. Use code 992 when the post-orchietomy LDH range is not documented but there is a physician statement that post-orchietomy serum tumor markers (not specified which one) were normal.
6. Use code 993 when the post-orchietomy LDH range is not documented but there is a physician statement that post-orchietomy serum tumor markers (not specified which one) remain elevated.
7. See above for other common codes and definitions.

Scrotum

Site-Specific Factor 12 – High Risk Features

See High Risk Features in the SKIN section on page A-112

Site-Specific Factor 16 – Size of Lymph Nodes

See Size of Lymph Nodes in the SKIN section on page A-96

Urinary Tract

Bladder

Site-Specific Factor 2 – Size of Metastasis in Lymph Nodes

Source documents: pathology report, imaging (in that order)

In AJCC sixth and seventh editions, the N category describes the number and location of involved lymph nodes. This site-specific factor adds prognostic information by coding the size of the metastasis within the lymph node.

Code the size in whole millimeters of the largest metastasis in regional lymph nodes as stated in the pathology report in the range 001 to 979. To convert metastasis sizes reported in centimeters to millimeters, multiply by 10. Round up to 1 (code 001) a metastasis reported as less than 1 mm in size. If the size of the metastasis is not stated, code the size of the entire lymph node using pathologic then clinical information in that order. Do not code information about distant lymph nodes in this field.

Examples	Tumor nest 0.20 mm in size	<i>Code as 001 (round up to 1 mm).</i>
	1 mm solitary metastasis	<i>Code as 001.</i>
	Macrometastasis 0.5 cm (5 mm)	<i>Code as 005.</i>
	Metastasis 2.3 cm in node	<i>Code as 023.</i>
	Lymph node metastasis < 2 cm	<i>Code as 992.</i>
	Positive inguinal lymph node	<i>Code as 990.</i>

1. Use code 000 when there is no regional lymph node involvement.
2. Use code 980 when the size of the metastasis is 980 millimeters or larger (98 cm).

3. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.
4. Use code 990 when the size of the metastasis is stated as a microscopic focus or foci only and an exact size is not stated.
5. Use a code in the range 991 to 997 when the size of the metastasis is given in non-specific terms, such as “less than 10 millimeters.
6. Use code 999 when
 - a. regional lymph node(s) are involved but the size of the metastasis is not stated
 - b. it is unknown whether regional lymph nodes are involved
 - c. there is no information about the size of the metastasis in the lymph node in the medical record
 - d. there is no information about the size of the lymph node in the medical record

Central Nervous System

Brain, CNSOther, IntracranialGland

Central nervous system sites include all parts of the brain, meninges, spinal cord, and the pituitary and pineal glands and craniopharyngeal duct. There is no TNM staging for any of these primary sites, but there is a chapter for brain and spinal cord in the seventh edition of the *AJCC Cancer Staging Manual*.

Site-Specific Factor 1 – World Health Organization (WHO) Grade Classification: TCR collects for Brain, CNSOther, and IntracranialGland

Source documents: pathology report

The World Health Organization (WHO) has promoted a histologic grading classification for central nervous system tumors since 1979. The most recent version was published in 2007 as part of the WHO classification of central nervous system tumors. Tumor grade is the most important prognostic indicator for response to therapy and outcomes for brain and spinal cord tumors. According to WHO, the classification is more of a “malignancy scale” than a strict histologic grading system. Therefore, the WHO grade is different from the ICD-O grade/differentiation value that is stored with the morphology code. Do not use WHO grade to code the sixth digit of the ICD-O morphology code. WHO grade ranges from I (low proliferative potential and possibly surgically curable—essentially benign behavior) through IV (cytologically malignant, mitotically active neoplasms that are rapidly fatal). Most CNS tumors are assigned a WHO grade, so there is usually a one-for-one correspondence between the ICD-O morphology code and the WHO grade.

Code the WHO grade as documented in the pathology report: Grade I – code 010; Grade II – code 020; Grade III – code 030; Grade IV – code 040. Do not convert terminology such as well-, moderately-, or poorly differentiated to code this field.

1. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

2. Use code 998 if there was no histologic examination of the primary site (clinical diagnosis).
3. Use code 999 if the WHO grade is unknown, not stated, or not documented in the medical record.

Note: Do not use WHO grade information to code the fields Grade Path Value and Grade Path System.

Lymphoma and Hematopoietic Lymphoma and HemeRetic

Site-Specific Factor 2 – Systemic Symptoms at Diagnosis: TCR collects for Lymphoma

Source documents: patient history, progress notes, consultant notes, other statements in medical record

Other names: B symptoms; Fever: Pel-Ebstein fever, hyperpyrexia, febrile response; sleep hyperhydrosis, nocturnal hyperhydrosis.

The stages of malignant lymphoma can be subclassified as A or B by whether certain specific constitutional symptoms are present at the time of diagnosis. The stage group suffix for a patient without these systemic symptoms is “A,” meaning absence of symptoms or asymptomatic; for example Stage IIA. The stage group suffix for a patient with any of the symptoms listed below is “B,” such as Stage IIIB. The symptoms are carefully defined:

1. Fevers: persistent, cyclic, unexplained; with a temperature over 38 degrees centigrade or 101.5 degrees Fahrenheit. Cyclic means elevated one week and normal or nearly normal the next week.
2. Night sweats: drenching in nature, requiring a change of bed clothes
3. Weight loss: greater than 10% of body weight in the six months prior to diagnosis, not accounted for by changes in diet or exercise.
4. Minor symptoms include pruritus and generalized malaise, but these by themselves are insufficient to be classified as B symptoms. The same is true of alcohol intolerance (painful lymph nodes following consumption of alcohol), fatigue, or a short illness due to a suspected infection with associated fever.

The presence of these symptoms is more important prognostically for Hodgkin lymphoma than for non-Hodgkin lymphoma. Up to 30% of non-Hodgkin lymphoma patients and up to 33% of Hodgkin lymphoma patients will present with one or more of these adverse symptoms.

Code the description of the patient’s systemic symptoms based on statements in the medical record.

1. Use code 000 when there is a statement in the record that
 - a. there are no B symptoms
 - b. the patient is asymptomatic

- c. there is no mention of B symptoms in the history, physical exam, or other clinician notes
2. Use code 010 when the medical record indicates that
 - a. any one or more of the following symptoms as defined above are present: fever, night sweats, weight loss
 - b. the patient has B symptoms
3. Use code 020 when there is a statement that the patient has pruritus *only*. Pruritus is generalized, recurrent, unexplained itching, which is not a B symptom by itself.
4. Use code 030 when pruritus and one or more of the symptoms listed in 010 are present.
5. Code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
6. Use code 999 when
 - a. there is no information about lymphoma-related symptoms in the medical record
 - b. it is unknown whether the patient is asymptomatic or has B symptoms

Site-Specific Factor 1 – JAK2 (also known as Janus Kinase 2 and JAK2 Exon 12): TCR collects for HemeRetic.

Source documents: clinical laboratory test (whole blood), reference laboratory test; anatomic pathology (polymerase chain reaction test on bone marrow)

Other names: Janus kinase 2 gene, JAK2 V617F, JAK2 exon 12, JAK2 exon13

JAK2, a gene found in all humans, is involved in the development of blood cells. If JAK2 has mutated, the person is more susceptible to develop a myeloproliferative disorder (MPD). The JAK2 mutation, which is acquired rather than inherited, is found in as many as 90% of patients with polycythemia vera (PV), about half of patients with essential thrombocythemia (ET), and slightly fewer patients with primary myelofibrosis (also known as agnogenic myeloid metaplasia and other terms). JAK2 is used by clinicians to help classify MPDs. The most common histologies for which JAK-2 is tested are those listed above. Registrars can use JAK2 information to help determine whether the MPD is reportable. JAK2 positivity indicates a malignant (clonal, irreversible) reportable disease, but is not diagnostic of a specific MPD. Additional tests, such as a bone marrow biopsy, are necessary to determine the specific MPD histology. As the use of JAK2 increases and is investigated for other hematopoietic histologies, it also has future potential for development of targeted therapeutics for the MPDs.

The principal JAK2 test looks for a change (mutation) in an amino acid at a specific place on the JAK2 gene called V617F. If the V617F test is negative, other JAK2 mutation tests, such as those in exon 12 or 13 may be ordered to investigate a possible diagnosis of polycythemia vera. (An exon is a segment of a gene that contains instructions for making a protein.)

Code the result of the JAK2 test as documented in a laboratory test or elsewhere in the medical record.

Code this field for any hematopoietic, reticuloendothelial, immunoproliferative, myeloproliferative, or myelodysplastic disease for which JAK2 is tested. For those diseases where JAK2 is not mentioned in the record, or for a HemeRetic schema disease such as leukemia where JAK2 is not normally tested, code as 999. If JAK2 is positive but the specific mutation is not stated, code as 850.

1. Use code 000 when the JAK2 test result is stated as negative.
2. Use code 010 when the JAK2 test was performed and was positive for mutation V617F in exon 14.
3. Use code 020 when the JAK2 test was performed and was positive for mutation of exon 12.
4. Use code 800 when the JAK2 test was performed and was positive for another specified mutation.
5. Use code 810 when the JAK2 test was performed and was positive for more than one mutation.
6. Use code 850 when the JAK2 test was performed and was positive but the specific mutation(s) is not stated (positive, NOS).
7. Use code 997 when there is a statement in the record that the test was ordered but the results are not available.
8. Use code 998 when there is a statement in the medical record that the test was not done, was not ordered and/or was not performed.
9. Use code 999 when
 - a. there is no information in the medical record about JAK2 testing
 - b. the results of JAK2 testing are unknown

Ophthalmic Sites

SkinEyelid, Conjunctiva, MelanomaConjunctiva, MelanomaChoroid, MelanomaCiliaryBody, MelanomaIris, LacrimalGland, LacrimalSac, Retinoblastoma, LymphomaOcularAdnexa, Skin of Eyelid

Site-Specific Factor 6 – Perineural Invasion: TCR collects for Skin of Eyelid

Source documents: pathology report

Other names: PNI, neurotropism

Perineural invasion is infiltration of nerves in the area of the lesion by tumor cells or spread of tumor along the nerve pathway. The presence of perineural invasion has been shown in several studies to be an indicator of poor patient prognosis.

Code whether perineural invasion is present based on the description in the pathology report.

1. Use code 000 when
 - a. perineural invasion is stated as not present
 - b. perineural invasion is not identified
 - c. perineural invasion is not mentioned in the pathology report
2. Use code 010 when
 - a. perineural invasion is stated to be present
 - b. perineural invasion is identified
3. For scrotum, code 988 may be used by any registry, since this field is not required by any of the standards setters.
4. Use code 997 when histologic examination of the primary site was done but the results are unknown or unavailable.
5. Code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
6. Use code 998 when there is no histologic examination of the primary site.
7. Use code 999 when
 - a. it is unknown whether there was a pathology report
 - b. perineural invasion is not documented in the patient record

Eye Structures

The major structures of the eye (globe) are the retina, conjunctiva, and uvea, each of which has one or more schemas in CS version 2. The uvea consists of the iris and ciliary body (C69.4, also called the anterior uvea) and choroid (C69.3, also known as the posterior uvea). The conjunctiva (C69.0) is a clear mucous membrane that covers the white part of the eye (sclera) and lines the inside of the eyelids. The retina (C69.2) is the innermost layer of the eye containing the neurons that result in vision. The orbit (C69.6) is the bony structure surrounding the soft tissues of the eye. The lacrimal gland (C69.5) is located in the orbit superior and lateral to the globe and produces the tears that keep the eye moist.

Schema Discriminators for Ophthalmic Sites

Site-Specific Factor 25 – Schema discriminator: TCR collects for Melanoma Ciliary Body/Melanoma Iris

Iris and ciliary body have the same ICD-O topography code (C69.4). However, for purposes of stage grouping in AJCC seventh edition, iris has its own T category definitions, which were carried over into CS version 2. Ciliary body has a separate schema. Consequently, a schema discriminator is necessary to distinguish between primary sites in the iris and ciliary body so that the appropriate CS tables will be presented to the coder.

1. Use code 020 for originating in the iris.
2. Use code 010 for tumors originating in all other structures included in code C69.4 (ciliary body, lens, sclera, uveal tract) and the general terms intraocular and eyeball.
3. Code 100 is reserved for cases coded to C69.4 in CS version 1 (before these structures were split into separate schemas).

Site-Specific Factor 25 – Schema discriminator: TCR collects for Lacrimal Gland/Lacrimal Sac

The lacrimal (also spelled lachrymal) gland is the only epithelial structure normally present within the orbit. Its composition is the same as epithelial salivary glands and TNM staging parallels that of the major salivary gland classification. Lacrimal gland and lacrimal sac have the same ICD-O topography code (C69.5). However, AJCC seventh edition staging is limited to lacrimal gland. Consequently, a schema discriminator is necessary so that the CS computer algorithm knows whether the primary site is lacrimal gland versus the lacrimal sac and nasolacrimal duct so that the correct derived T values will be assigned by the mapping algorithm. No stage grouping is presently recommended for carcinoma of the lacrimal gland.

Code the specific site of origin for the primary tumor in the lacrimal gland or lacrimal sac. Read the codes and definitions carefully, as some codes were made obsolete in CS version 0203 and the definitions were assigned to other codes.

Code the specific site of origin for the primary tumor in the lacrimal gland or lacrimal sac. Read the codes and definitions carefully, as some codes were made obsolete in CS version 0203 and the definitions were assigned to other codes.

1. Use code 015 when the medical record indicates that
 - a. the primary tumor arose in the lacrimal gland
 - b. the primary site is lacrimal with no further information
2. Use code 025 when the medical record states that
 - a. the primary tumor arose in the lacrimal sac
 - b. the primary tumor arose in the lacrimal duct (also called nasal lacrimal duct or nasolacrimal duct)
3. Code 100 is reserved for cases coded to C69.5 in CS version 1 (before these structures were split into separate schemas).

Site-Specific Factor 1 – Tumor Size: TCR collects for Conjunctiva

Source documents: pathology report, slit lamp examination report

The size of the conjunctival tumor is a predictor of recurrence and helps to determine the type of

treatment. This site-specific factor codes the tumor size on a different scale than CS Tumor Size, which was made obsolete for this schema in CS version 2. Tumor size recorded in SSF1 is used to derive T1 and T2 values for AJCC staging for this schema.

Code the largest tumor dimension in *tenths* of millimeters as documented in the medical record, in the code range 001 to 979. This is a three-digit field with an implied decimal point between the second and third digits.

Examples

Diameter 1.74 mm – code as 017 (round down)

Tumor size 4.86 mm – code as 049 (round up) Lesion 12 mm in diameter – code as 120

Microscopic focus – code as 990

Stated as T1 – code as 991

1. Use code 000 when there is a statement in the medical record
 - a. that no mass was found
 - b. that no tumor was found
2. Use code 980 when the largest dimension of the tumor is stated to be 98.0 millimeters or larger.
3. Code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
4. Use code 990 when the tumor is
 - a. stated to be microinvasive
 - b. described as a microscopic focus or foci only with no size of focus given
5. Use code 991 when
 - a. the tumor size is described as “less than 5 mm”
 - b. the only documentation of tumor size is the clinician’s statement of T1 with no other information on tumor size
6. Use code 992 when
 - a. the tumor size is described as “greater than 5 mm”
 - b. the only documentation of tumor size is the clinician’s statement of T2 with no other information on tumor size
7. Use code 999 when the tumor size is
 - a. unknown
 - b. not stated
 - c. not documented in the medical record

Site-Specific Factor 1 – Measured Thickness (Depth): TCR collects for MelanomaConjunctiva

The thickness of a lesion for melanoma of the conjunctiva is measured in *hundredths* of millimeters and the MelanomaConjunctiva schema contains more codes than the MelanomaSkin schema. Read

the codes and definitions carefully, as some of the codes have been made obsolete in CS version 2 and the definitions were assigned to different codes.

Code the measured thickness or depth of the tumor from the pathology report in *hundredths* of millimeters in the range 001 to 979.

Examples	Thickness .5 mm	<i>Code as 050</i>
	Depth of tumor 1.05 mm	<i>Code as 105</i>
	Breslow thickness 2.3 mm	<i>Code as 230</i>

1. Use code 980 for any tumor 9.8 mm thick or larger.
2. For MelanomaConjunctiva, code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
3. Use code 991 when
 - a. the tumor depth is described as “less than 0.5 mm”
 - b. the tumor was resected and the only documentation of tumor depth is the clinician’s statement of pathologic T1a with no other information on tumor depth
 - c. the tumor was resected and the only documentation of tumor depth is the clinician’s statement of pathologic T2a with no other information on tumor depth
 - d. there is a statement of microinvasion but no depth is given
 - e. there is a description of a microscopic focus or foci but no depth is given
4. Use code 992 when the tumor depth is described as “less than 0.8 mm”.
5. Use code 993 when
 - a. the tumor depth is described as “greater than 0.5 mm”
 - b. the tumor was resected and the only documentation of tumor depth is the clinician’s statement of pathologic T1b with no other information on tumor depth
 - c. the tumor was resected and the only documentation of tumor size is the clinician’s statement of pathologic T2b with no other information on tumor size
6. Use code 994 when the tumor depth is described as “greater than 0.8 mm”.
7. Use code 995 when the tumor depth is described as “less than 1.5 mm”.
8. Use code 996 when
 - a. the tumor depth is described as “greater than 1.5 mm”
 - b. the tumor was resected and the only documentation of tumor depth is the clinician’s statement of pathologic T1c with no other information on tumor depth
 - c. the tumor was resected and the only documentation of tumor depth is the clinician’s statement of pathologic T2c with no other information on tumor depth
9. Use code 998 when there is no resection of the primary site tumor.

10. Use code 999 when

- a. tumor depth or thickness information is unknown, including cases in which the primary tumor is removed but the measurement of thickness cannot be determined from the pathology report
- b. tumor thickness or depth is not documented in the medical record

Site-Specific Factor 2 – Quadrants: TCR collects for MelanomaConjunctiva

Source documents: slit lamp examination report, physical exam (inspection of eye), pathology report, other documentation in medical record

This site-specific factor codes the amount or area of the conjunctiva involved by the melanoma. Since the conjunctiva is essentially round or spherical, the extent of involvement can be described in quadrants. A quadrant is defined by clock position starting at the limbus (border between conjunctiva and cornea) extending from the central cornea to and beyond the eyelid margin. Similar to breast anatomy, the borders of the quadrants are 12, 3, 6, and 9 o'clock. The quadrants are labeled by combinations of the directions superior, inferior, nasal (the side by the nose) and temporal (the side by the ear). Thus the quadrant above and by the nose would be superonasal (superior-nasal) in both eyes, but would be 12:00-3:00 on the left eye and 9:00-12:00 on the right.

Code how many quadrants are clinically involved by the conjunctival melanoma as documented in the medical record. There are two groups of codes in this site-specific factor: quadrants and statements of the clinical T value. If there is a conflict between the number of quadrants stated and the T value given by the clinician, the number of quadrants takes priority. If the number of quadrants is stated, use one of the following codes:

010	≤ 1 quadrant
020	> 1 and ≤ 2 quadrants
030	> 2 and ≤ 3 quadrants
040	> 3 quadrants

If the number of quadrants is not stated but the clinician assigns a clinical T, select from codes 015, 025, 035, and 045.

1. Use code 015 when there is no other information on the quadrants involved AND

- a. a statement of clinical T1a
- b. a statement of clinical T2a
- c. a statement of clinical T2c

2. Use code 025 when there is no other information on the quadrants involved AND

- a. a statement of clinical T1b
- b. a statement of clinical T2b
- c. a statement of clinical T2d

3. Use code 035 when there is no other information on the quadrants involved AND a statement of

clinical T1c.

4. Use code 045 when there is no other information on the quadrants involved AND a statement of clinical T1d.

5. Use code 045 when there is no other information on the quadrants involved AND a statement of clinical T1d.

6. For MelanomaConjunctiva, code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.

7. Use code 999 when

a. there is no information in the medical record about the number of quadrants involved

b. there is no statement of T category in the medical record

Site-Specific Factor 2 – Measured Basal Diameter: TCR collects for MelanomaChoroid and MelanomaCiliaryBody

Source documents: pathology report, ultrasound report, wide-angle fundus camera measurement, clinician report or other documentation in medical record

Other names: largest tumor diameter (LTD), tumor basal size; do not code tumor basal area (measured in square millimeters)

Clinical research has shown that as a uveal tumor becomes larger, the risk of hematogenous metastases and death increases. In addition, knowing the size of the melanoma is important for treatment planning.

The basal diameter is the width (horizontal measurement) of the melanoma at its base (in contact with sclera). This is not the same as the depth of invasion (see site-specific factor 3, Measured Thickness).

Code the actual tumor diameter in *tenths* of millimeters as documented in the medical record, in the code range 001 to 979. This is a three-digit field with an implied decimal point between the second and third digits. If surgery was performed and the basal diameter is available from the pathology report, use that measurement as priority.

Examples	Basal diameter 0.74 mm	<i>Code as 007</i>
	Lesion 1 mm in diameter	<i>Code as 010</i>
	Largest tumor dimension 2.7 mm	<i>Code as 027</i>
	Basal size 13.6 mm	<i>Code as 136</i>

1. Use code 980 for a basal diameter of 98.0 mm or larger.

2. Code 988 should not be used by any registry in the US or Canada for MelanomaChoroid or

MelanomaCiliaryBody, as all standards setters require this field.

1. Use a code in the 991 to 997 range when
 - a. the tumor is described in a range
 - b. to describe size ranges associated with the “tumor size categories” that comprise the T1 – T4 categories in the AJCC seventh edition.

991	Described as “≤ 3 mm”
992	Described as “> 3 mm” or “≤ 6 mm”
993	Described as “> 6 mm” or “≤ 9 mm”
994	Described as “> 9 mm” or “≤ 12 mm”
995	Described as “> 12 mm” or “≤ 15 mm”
996	Described as “> 15 mm” or “≤ 18 mm”
997	Described as “> 18 mm”

2. Use code 999 when
 - a. there is no information in the medical record about the measured basal diameter
 - b. the measured basal diameter is unknown

Site-Specific Factor 3 – Measured Thickness (Depth): TCR collects for MelanomaChoroid and MelanomaCiliaryBody

Source document: pathology report

Other names: maximum tumor thickness, depth of invasion; perpendicular tumor diameter (PTD); tumor height

This site-specific factor measures tumor thickness or depth (vertical dimension), rather than size (lateral dimension). The depth of invasion or tumor thickness measurement for melanomas of the choroid, ciliary body, and iris is collected in *tenths* of millimeters as stated in the pathology report for the resected specimen. (This is similar to, but not the same as, Breslow depth of invasion, which is measured in hundredths of millimeters.) The thickness measurement should only be taken from a pathology specimen, not from a radiology report or other clinical measurement. Code a measurement specifically labeled as “thickness” or “depth” in the pathology. In the absence of this label, a measurement described as taken from the cut surface of the specimen can be coded. And in the absence of either of these labels, the third dimension in a statement of tumor size (length x width x depth) can be used by the registrar to code this field.

Code the actual tumor thickness or tumor depth in *tenths* of millimeters as stated in the pathology report, in the code range 001 to 979. Because the thickness table is similar to many other tables that collect a measurement, it is important to identify the correct unit of measurement. This is a three-digit field with an implied decimal point between the second and third digits.

Examples	Tumor thickness 0.1 mm	<i>Code as 001</i>
	Depth 0.74 mm	<i>Code as 007</i>

Lesion 1 mm thick	<i>Code as 010</i>
Thickness 2.7 mm	<i>Code as 027</i>
Depth 10.6 mm	<i>Code as 106</i>

1. Use code 980 for any tumor 98.0 mm thick or larger.
2. Code 988 should not be used by any registry in the US or Canada for MelanomaChoroid or MelanomaCiliaryBody, as all standards setters require this field.
3. Use code 990 when
 - a. there is a statement of microinvasion but no depth is given
 - b. there is a description of a microscopic focus or foci but no depth is given
4. Use a code in the 991 to 996 range to describe size ranges associated with the “tumor size categories” that comprise the T1 – T4 categories in the AJCC seventh edition.

991	Described as “ ≤ 3 mm”
992	Described as “ > 3 mm” or “ ≤ 6 mm”
993	Described as “ > 6 mm” or “ ≤ 9 mm”
994	Described as “ > 9 mm” or “ ≤ 12 mm”
995	Described as “ > 12 mm” or “ ≤ 15 mm”
996	Described as “ > 15 mm”

5. Use code 999 when
 - a. tumor depth or thickness information is unknown, including cases in which the primary tumor is removed but the measurement of thickness cannot be determined from the pathology report
 - b. tumor thickness or depth is not documented in the medical record

Site-Specific Factor 4 – Size of Largest Metastasis: TCR collects for MelanomaChoroid, MelanomaCiliaryBody, and MelanomaIris

Source document: pathology report, imaging, other documentation in medical record

The liver is the most common site of distant metastases for uveal melanoma, but hematogenous spread can occur to any solid organ. This site-specific factor documents the size of the largest metastasis in any site except in regional lymph nodes. This information is needed for mapping to the M1 subcategories.

Code the diameter of the largest metastasis in a distant lymph node or distant site in whole millimeters in the range 001 to 979. The measurement can be clinical or pathologic.

1. Use code 000 when there is no metastatic disease (CS Mets at DX code 00).
2. Use code 980 for any metastasis larger than 980 millimeters.

3. Code 988 should not be used by any registry in the US or Canada, as all standards setters require this field.
4. Use a code in the range 991 to 993 if an exact size is not stated, but the size of the largest metastasis is described in one of the code ranges corresponding to the M1 subcategories.
 - a. “less than 3 cm” – maps to M1a
 - b. “less than 8 cm,” or “greater than 3 cm,” or “between 3 cm and 8 cm” – maps to M1b
 - c. “greater than 8 cm” – maps to M1c
5. Use code 999 when
 - a. the size of the largest metastasis is not stated in the medical record
 - b. it is unknown whether distant metastases are present at the time of diagnosis.

Retinoblastoma

Site-Specific Factor 1 – Extension Evaluated at Enucleation: TCR collects for Retinoblastoma

Source documents: pathology report

Enucleation (removal of the eyeball or globe) is necessary for pathologic staging of retinoblastoma to determine the amount of choroidal involvement. This site-specific factor must be coded whether or not an enucleation was performed in order to be used with CS Extension to generate the T value in both sixth and seventh editions of TNM. Retinoblastoma site-specific factor 1 has been completely revised for CS version 2. Codes 000 to 100 have been made obsolete and converted to higher codes. If displayed in abstracting software and used, these codes will generate an error in the mapping to the T category.

Involvement of the choroid (the vascular layer between the sclera and retina) differentiates T2 and T3 lesions in the TNM system. True invasion of the choroid is defined as one or more solid nests of tumor cells that fills or replaces the choroid and has pushing borders. This is different than the presence of groups of tumor cells in the open spaces between intraocular structures, extraocular tissues, and/or subarachnoid space. Focal choroidal invasion (T2) is a solid nest of tumor measuring less than 3mm in maximum diameter. Massive choroidal invasion (T3) is a solid tumor nest 3 mm or more in maximum diameter.

Codes 300 to 950 are pathologic extension codes that describe involvement of various structures within the eye. For example, focal choroidal invasion is described in codes 460, 470 and 490; massive choroidal invasion is described in codes 550, 560, 570, and 590.

Code the description of extent of primary tumor from the enucleation pathology report *only* in this site-specific factor. Do not use enucleation information to code the CS Extension field.

1. Use code 960 if it is unknown whether enucleation was performed.
2. Use code 970 if no enucleation was performed.

3. Code 988 should not be used by any registry in the US or Canada, as this field is required by all standards setters.

4. Use code 999 if enucleation was performed but the pathologic extension is unknown.

Site-Specific Factor 2 – Systemic Symptoms at Diagnosis: TCR collects for Ocular Adnexal Lymphoma

See Systemic Symptoms at Diagnosis under Lymphoma and Hematopoietic section on page A-152.