Instructions for Coding Grade for 2014+

GRADE, DIFFERENTIATION OR CELL INDICATOR
Item Length: 1
NAACCR Item #: 440
NAACCR Name: Grade
Grade, Differentiation for solid tumors (Codes 1, 2, 3, 4, 9) and Cell Indicator for Lymphoid Neoplasms (Codes 5, 6, 7, 8, 9)
Note: These instructions pertain to the data item Grade, Differentiation or Cell Indicator.

These are coding instructions for **cases diagnosed 1/1/2014** and forward.

Hematopoietic and Lymphoid Neoplasms

Cell Indicator (Codes 5, 6, 7, 8, 9)

Cell Indicator (Codes 5, 6, 7, 8) describes the lineage or phenotype of the cell. Codes 5, 6, 7, and 8 are used only for hematopoietic and lymphoid neoplasms. Code 9 indicates cell type not determined, not stated, or not applicable.

Coding Grade for Hematopoietic and Lymphoid Neoplasms

1. Determine the histology based on the current Hematopoietic and Lymphoid Neoplasm Manual [http://seer.cancer.gov/tools/heme/Hematopoietic_Instructions_and_Rules/].

2. Determine the Cell Indicator by applying the "Grade of Tumor Rules" within the current Hematopoietic and Lymphoid Neoplasm Manual [http://seer.cancer.gov/tools/heme/Hematopoietic_Instructions_and_Rules/] to code the grade.

   Grade codes for hematopoietic and lymphoid neoplasms

Terminology	Grade Code
T-cell; T-precursor	5
B-Cell; Pre-B; B-precursor	6
Null cell; Non T-non B	7
NK cell (natural killer cell)	8
Grade unknown, not stated, or not applicable	9

Solid tumors

Grade, Differentiation (Codes 1, 2, 3, 4, 9)

Pathologic examination determines the grade, or degree of differentiation, of the tumor. For these cancers, the grade is a measurement of how closely the tumor cells resemble the parent tissue (organ of origin). Well-differentiated tumor cells closely resemble the tissue from the organ of origin. Poorly differentiated and undifferentiated tumor cells are disorganized and abnormal looking; they bear little

(poorly differentiated) or no (undifferentiated) resemblance to the tissue from the organ of origin. These similarities/differences may be based on pattern (architecture), cytology, nuclear (or nucleolar) features, or a combination of these elements, depending upon the grading system that is used. Some grading systems use only pattern, for example Gleason grading in prostate. Others use only a nuclear grade (usually size, amount of chromatin, degree of irregularity, and mitotic activity). Fuhrman's grade for kidney is based only on nuclear features. Most systems use a combination of pattern and cytologic and nuclear features; for example Nottingham's for breast combines numbers for pattern, nuclear size and shape, and mitotic activity. The information from this data item is useful for determining prognosis and treatment.

Pathologists describe the tumor grade using three systems or formats:

1. Two levels of similarity; also called a two-grade system
2. Three levels of similarity; also called a three-grade system (code according to "Coding for solid tumors."
    a. Grade I, well
    b. Grade II, moderately
    c. Grade III, poorly (undifferentiated carcinoma is usually separated from this system, since "poorly" bears some, albeit little, similarity to the host tissue, while "undifferentiated" has none, e.g. Undifferentiated carcinoma).
3. Four levels of similarity; also called a four-grade system. The four-grade system describes the tumor as
    a. Grade I; also called well-differentiated
    b. Grade II; also called moderately differentiated
    c. Grade III; also called poorly differentiated
    d. Grade IV; also called undifferentiated or anaplastic

Breast and prostate grades may convert differently than other sites. These exceptions are noted in "Coding for Solid Tumors", #7-8 below.

Coding for Solid Tumors

1. Systemic treatment and radiation can alter a tumor's grade. Therefore, it is important to code grade based on information prior to neoadjuvant therapy even if grade is unknown.

2. Code the grade from the primary tumor only.
    a. Do NOT code grade based on metastatic tumor or recurrence. In the rare instance that tumor tissue extends contiguously to an adjacent site and tissue from the primary site is not available, code grade from the contiguous site.
    b. If primary site is unknown, code grade to 9.

3. Code the grade shown below (6th digit) for specific histologic terms that imply a grade.
    Carcinoma, undifferentiated (8020/34)
    Carcinoma, anaplastic (8021/34)
    Follicular adenocarcinoma, well differentiated (8331/31)
    Thymic carcinoma, well differentiated (8585/31)
    Sertoli-Leydig cell tumor, poorly differentiated (8631/33)
    Sertoli-Leydig cell tumor, poorly differentiated with heterologous elements (8634/33)
    Undifferentiated sarcoma (8805/34)

Liposarcoma, well differentiated (8851/31)
Seminoma, anaplastic (9062/34)
Malignant teratoma, undifferentiated (9082/34)
Malignant teratoma, intermediate type (9083/32)
Intraosseous osteosarcoma, well differentiated (9187/31)
Astrocytoma, anaplastic (9401/34)
Oligodendroglioma, anaplastic (9451/34)
Retinoblastoma, differentiated (9511/31)
Retinoblastoma, undifferentiated (9512/34)

4. In situ and/or combined in situ/invasive components:
   a. If a grade is given for an in situ tumor, code it. Do NOT code grade for dysplasia such as high grade dysplasia.
   b. If there are both in situ and invasive components, code only the grade for the invasive portion even if its grade is unknown.

5. If there is more than one grade, code the highest grade within the applicable system. Code the highest grade even if it is only a focus. Code grade in the following priority order using the first applicable system:
   a. special grade systems for the sites listed in Coding for Solid Tumors #6
   b. differentiation: use Coding for Solid Tumors #7: 2-, 3-, or 4- grade system
   c. nuclear grade: use Coding for Solid Tumors #7: 2-, 3-, or 4- grade system
   d. If it isn't clear whether it is a differentiation or nuclear grade and a 2-, 3-, or 4- grade system was used, code it.
   e. Terminology (use Coding for Solid Tumors #8)

6. Use the information from the special grade systems first. If no special grade can be coded, continue with Coding for Solid Tumors #7-9.

Special grade systems for solid tumors

Grade information based on CS Site-specific factors for breast, prostate, heart, mediastinum, peritoneum, retroperitoneum, soft tissue, and kidney parenchyma is used to code grade. See **Special Grade System Rules** section below for details on how to use this information to code grade.

CS Schema	Special grade system
Breast	Nottingham or Bloom-Richardson (BR) Score/Grade (SSF7)
Prostate	Gleason's Score on Needle Core Biopsy/Transurethral Resection of Prostate (TURP) (SSF 8)
Prostate	Gleason's Score on Prostatectomy/Autopsy (SSF 10)
Heart, Mediastinum	Grade for Sarcomas (SSF 1)
Peritoneum	Grade for Sarcomas (SSF 1)
Retroperitoneum	Grade for Sarcomas (SSF 1)
Soft Tissue	Grade for Sarcomas (SSF 1)
Kidney Parenchyma	Fuhrman Nuclear Grade (SSF 6)

Do not use these tables to code grade for any other groups including WHO (CNS tumors), WHO/ISUP (bladder, renal pelvis), or FIGO (female gynecologic sites) grades.

7. Use the Two-, Three- or Four-grade system information

a. Two-grade system

Term	Description	Grade Code	Exception for Breast and Prostate Grade Code
1/2, I/II	Low grade	2	1
2/2, II/II	High grade	4	3

In transitional cell carcinoma for bladder, the terminology high grade TCC and low grade TCC are coded in the two-grade system.

b. Three-grade system

Term	Description	Grade Code	Exception for Breast and Prostate Grade Code
1/3	Low grade	2	1
2/3	Intermediate grade	3	2
3/3	High grade	4	3

c. Four-grade system: Any four-grade system including Edmondson and Steiner grade for liver.

Term	Description	Grade Code
1/4	Grade I; Well differentiated	1
2/4	Grade II; Moderately differentiated	2
3/4	Grade III; Poorly differentiated	3
4/4	Grade IV; Undifferentiated	4

8. Terminology: use the 'Description' column or the 'Grade' column to code grade. Breast & Prostate use the same grade code with a few noted exceptions.

Description	Grade	Assign Grade Code	Exception for Breast and Prostate Grade Code
Differentiated, NOS	I	1	
Well differentiated	I	1	
Only stated as 'Grade I'	I	1	
Fairly well differentiated	II	2	
Intermediate differentiation	II	2	
Low grade	I-II	2	1
Mid differentiated	II	2	
Moderately differentiated	II	2	
Moderately well differentiated	II	2	
Partially differentiated	II	2	
Partially well differentiated	I-II	2	1
Relatively or generally well differentiated	II	2	
Only stated as 'Grade II'	II	2	

Description	Grade	Assign Grade Code	Exception for Breast and Prostate Grade Code
Medium grade, intermediate grade	II-III	3	2
Moderately poorly differentiated	III	3	
Moderately undifferentiated	III	3	
Poorly differentiated	III	3	
Relatively poorly differentiated	III	3	
Relatively undifferentiated	III	3	
Slightly differentiated	III	3	
Dedifferentiated	III	3	
Only stated as 'Grade III'	III	3	
High grade	III-IV	4	3
Undifferentiated, anaplastic, not differentiated	IV	4	
Only stated as 'Grade IV'	IV	4	
Non-high grade		9	

9. If no description fits or grade is unknown prior to neoadjuvant therapy, code as a 9 (unknown).

SPECIAL GRADE SYSTEMS RULES

Breast (site: breast excluding lymphomas; CS schema: breast)

Use Bloom Richardson (BR) or Nottingham score/grade to code grade based on CSv2 site-specific factor 7 (SSF) as stated below. If your registry does not collect this SSF, use the description in the table below to determine grade. If you collect this SSF, codes 030-130 could be automatically converted into the grade field.

BR could also be referred to as: Bloom-Richardson, modified Bloom-Richardson, BR, BR grading, Scarff-Bloom-Richardson, SBR grading, Elston-Ellis modification of Bloom-Richardson score, Nottingham modification of Bloom-Richardson score, Nottingham modification of Scarff-Bloom-Richardson, Nottingham-Tenovus grade, or Nottingham grade.

Code the tumor grade using the following priority order

a. BR scores 3-9
b. BR grade (low, intermediate, high)

BR score may be expressed as a range, 3-9. The score is based on three morphologic features: degree of tubule formation/histologic grade, mitotic activity, nuclear pleomorphism/nuclear grade of tumor cells. If a report uses words such as low, intermediate, or high rather than numbers, use the table below to code grade.

If only a grade of 1 through 4 is given with no information on the score and it is unclear if it is a Nottingham or BR Grade, do not use the table below. Continue with the next priority according to "Coding for Solid Tumors" #7 above.

Code the highest score if multiple scores are reported (exclude scores from tests after neoadjuvant therapy began). Examples: different scores may be reported on multiple pathology reports for the same primary cancer; different scores may be reported for multiple tumors assigned to the same primary cancer.

CS Site-Specific Factor 7
Nottingham or Bloom-Richardson (BR) Score/Grade

Description	CS Code	Grade Code
Score of 3	030	1
Score of 4	040	1
Score of 5	050	1
Score of 6	060	2
Score of 7	070	2
Score of 8	080	3
Score of 9	090	3
Low Grade, Bloom-Richardson (BR) grade 1, score not given	110	1
Medium (Intermediate) Grade, BR grade 2, score not given	120	2
High Grade, BR grade 3, score not given	130	3

Kidney Parenchyma (Site: kidney parenchyma excluding lymphomas; CS schema: KidneyParenchyma): Fuhrman Nuclear Grade

The Fuhrman Nuclear Grade should be used to code grade for kidney parenchyma only based on CSv2 SSF 6 as stated below. Do not use for kidney renal pelvis. If your registry does not collect this SSF, use the description in the table to determine grade. If you collect this SSF, the information could be automatically converted into the grade field if it is coded 010-040. Fuhrman nuclear grade is a four-grade system based on nuclear diameter and shape, the prominence of nucleoli, and the presence of chromatin clumping in the highest grade.

Description	CS Code	Grade Code
Grade 1	010	1
Grade 2	020	2
Grade 3	030	3
Grade 4	040	4

SoftTissue (sites excluding lymphomas: soft tissue, heart, mediastinum, peritoneum, and retroperitoneum; for CS users: SoftTissue, HeartMediastinum, Peritoneum, Retroperitoneum schemas): Grade for Sarcomas

The Grade for Sarcomas should be used to code grade based on CSv2 SSF 1 as stated below. If your registry does not collect this SSF, use the description in the table to determine grade. If you collect this SSF, the information could be automatically converted into the grade field if it is coded 010-200. The grading system of the French Federation of Cancer Centers Sarcoma Group (FNCLCC) is the preferred system.

Record the grade from any three-grade sarcoma grading system the pathologist uses. For terms such as "well differentiated" or "poorly differentiated," go to Coding for Solid Tumors #8.

In some cases, especially for needle biopsies, grade may be specified only as "low grade" or "high grade." The numeric grade takes precedence over “low grade” or “high grade.”

Description	CS Code	Grade Code
Specified as Grade 1 [of 3]	010	2
Specified as Grade 2 [of 3]	020	3
Specified as Grade 3 [of 3]	030	4
Grade stated as low grade, NOS	100	2
Grade stated as high grade, NOS	200	4

Prostate (site: prostate excluding lymphomas; CS schema: prostate)

Use the highest Gleason score from the biopsy/TURP or prostatectomy/autopsy. Use a known value over an unknown value. Exclude results from tests performed after neoadjuvant therapy began. This information is collected in CSv2 SSF 8 (Gleason score from biopsy/TURP) and SSF 10 (Gleason score from prostatectomy/autopsy) as stated below. Use the table below to determine grade even if your registry does not collect these SSFs. If you collect these SSFs, the information could be converted into the grade field automatically.

Usually prostate cancers are graded using Gleason score or pattern. Gleason grading for prostate primaries is based on a 5-component system (5 histologic patterns). Prostatic cancer generally shows two main histologic patterns. The primary pattern, the pattern occupying greater than 50% of the cancer, is usually indicated by the first number of the Gleason grade, and the secondary pattern is usually indicated by the second number. These two numbers are added together to create a pattern score, ranging from 2 to 10. If there are two numbers, assume that they refer to two patterns (the first number being the primary pattern and the second number the secondary pattern), and sum them to obtain the score. If only one number is given on a particular test and it is less than or equal to 5 and not specified as a score, do not use the information because it could refer to either a score or a grade. If only one number is given and it is greater than 5, assume that it is a score and use it. If the pathology report specifies a specific number out of a total of 10, the first number given is the score. Example: The pathology report says Gleason 3/10. The Gleason score would be 3.

Historic Perspective

Gleason score	Description					
	CS Code	Grade Code	AJCC 7th	SEER 2003-2013	AJCC 6th	SEER prior 2003
2	002	1	G1	G1	G1	G1
3	003	1	G1	G1	G1	G1
4	004	1	G1	G1	G1	G1
5	005	1	G1	G2	G2	G2
6	006	1	G1	G2	G2	G2
7	007	2	G2	G3	G3	G2
8	008	3	G3	G3	G3	G3
9	009	3	G3	G3	G3	G3
10	010	3	G3	G3	G3	G3

Historical perspective on long term trends in prostate grade: The relationship of Gleason score to grade changed for 1/1/2014+ diagnoses in order to have the grade field in sync with AJCC 7th ed. Analysis of prostate grade before 2014 based solely on the grade field is not recommended. In Collaborative Stage (CS), Gleason score was originally coded in CSv1 in one field (SSF 6) and then it was split into two fields in CSv2 based on the tissue used for the test: needle biopsy/TURP (SSF 8) and prostatectomy/autopsy (SSF 10). For trends using data back to 2004, if one collected the various CS Gleason scores, one could design a recode to have the same criteria as the data collected 2014+. The original grade field would NOT be changed, but for analyses this recode could be based on the CS SSFs and the original grade code.

Computer algorithm to derive grade for prostate based on SSF 8 and SSF 10: if SSF 8 or SSF 10 has known values for Gleason's, the information could be used to automatically derive the grade field.

SSF 8 Code	SSF 10 Grade Code											
	002	003	004	005	006	007	008	009	010	988	998	999
002	1	1	1	1	1	2	3	3	3	*	1	1
003	1	1	1	1	1	2	3	3	3	*	1	1
004	1	1	1	1	1	2	3	3	3	*	1	1
005	1	1	1	1	1	2	3	3	3	*	1	1
006	1	1	1	1	1	2	3	3	3	*	1	1
007	2	2	2	2	2	2	3	3	3	*	2	2
008	3	3	3	3	3	3	3	3	3	*	3	3
009	3	3	3	3	3	3	3	3	3	*	3	3
010	3	3	3	3	3	3	3	3	3	*	3	3
988	*	*	*	*	*	*	*	*	*	*	*	*
998	1	1	1	1	1	2	3	3	3	*	*	*
999	1	1	1	1	1	2	3	3	3	*	*	*

* Grade can't be automatically calculated based on SSF 8 and SSF 10; Go to Step 7