COLON & RECTUM:

- 2018 Solid Tumor Rules
- Grade
- SSDIs: CRM and MSI

LSU Health NEW ORLEANS
Louisiana Tumor Registry

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OBJECTIVES

1. To increase understanding of the most current solid tumor rules for colon and rectum
2. To review 2018 grade rules/codes applicable to colon and rectum
3. To increase coding accuracy of certain problematic colorectal-specific SSDI's.

2018 Solid Tumor Rules

IMPORTANT GENERAL RULE REMINDERS

- Used for cases dxd 1/1/2018 forward to
  - **DETERMINE MULTIPLE PRIMARIES AND HISTOLOGY ONLY**
- KEEP IN MIND:
  - If original tumor is dxd **before** 1/1/2018 **AND** a subsequent tumor dxd 1/1/2018 or later in the **SAME primary site**:
    - **Use the 2018 Solid Tumor Rules.**

STRs are NOT TO BE USED for:

- **Case Reportability**
  - Follow SEER, CoC & LTR Case Reportability guidelines
- **Casefinding**
  - Follow SEER & LTR Casefinding guidelines
- **Stage**
  - Use SEER EOD & SS 2018 e-manuals; SEER RSA
  - Use AJCC 8th Edition Cancer Staging Manual
- **Tumor Grade**
  - Use SEER Grade e-manuals; SEER RSA

STRs are NOT TO BE USED for:

- **Tumor(s) ONLY described as METASTASES**
  - Either clinically OR found pathologically c/w particular primary site being abstracted via IHC stains, etc.
  - Pt has PRIOR hx of that particular primary **AND**
  - No NEW primary site tumor is found
  - **EXAMPLE:** Pt dxd w/colon cancer in 2016. S/P surgical resxn. Presents 2018 w/abdominal pain. CT abd/plv revealed only enlarged mesenteric LNs c/w met dz. C-scope was neg.
    R/C only; not new occult primary

METASTATIC Colorectal Tumor(s) include:

- **Discontinuous soft tissue** lesions adjacent to primary site
- **Regional OR distant LN(s)** involvement for primary site abstracted as identified in the 2018 Summary Stage Manual
- **Brain; Liver; and/or Lung**
- **Peritoneum**
- **Spinal Cord (less frequent)**

HIGH GRADE (SEVERE) DYSPLASIA

- **New ICD-O-3 UPDATE VERSION 3.1 assigns these an IN-SITU (/2) BEHAVIOR**
  - Pathologists frequently use "high grade" or "severe" dysplasia in place of carcinoma in-situ
- Despite this behavior assignment, **these cases are *NOT REPORTABLE* in the United States unless…**
  - ***Pathologist specifically states "carcinoma in-situ" or "CIS"***
  - *EXAMPLES:*
    - Colon polyp bx- high grade dysplasia NOS—Not Reportable
    - Rectal polyp bx- severe dysplasia (CIS) --REPORTABLE

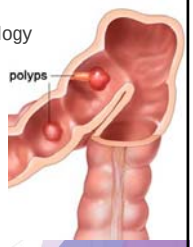
Histologies NOT Reportable for Colon, Rectosigmoid and Rectum

- **SEE TABLE 2: STR pg61**

Specific or NOS Term and Code	Synonyms	Subtype/Variant of NOS with Histology Code	Reason not reportable
Adenoma 8140/0 *Note*: No malignancy in polyps	Adenoma NOS	• Tubular adenoma **8211/0** • Tubulovillous adenoma **8263/0** • Villous adenoma **8261/0**	Non-malignant
Dysplasia, high grade 8148/2 *Note:* **Colorectal primaries only (C180-C189, C199 and C209)**	• High-grade dysplasia • Intraepithelial neoplasia, high grade		**CURRENTLY NOT REPORTABLE**

COLON POLYPS

- Polyps are NOW DISREGARDED when coding histology
  - Colon polyp bx: adenocarcinoma NOW codes as **8140/3**
- *MULTIPLE PRIMARY DETERMINATION*
  - Pre-2018 colon tumors originally coded as **adenocarcinoma in a polyp (8120/3)** should be treated as adenocarcinoma 8140/3



Multiple Primary (M-Rules)

AT THE FIRST RULE WHICH APPLIES

Unknown if Single or Multiple Tumors

RULE M1: Abstract a **single primary** when it is **not possible** to determine if there is a **single** tumor or **multiple** tumors.

- Should rarely be used
- Information LIMITED to pathology report only:
  - Outpatient biopsy w/no follow-up info
  - Multiple pathology reports which do not specify whether a single OR multiple tumors have been biopsied and/or resected

SINGLE Tumor

RULE M2: Abstract a **single primary** when there is a **single** tumor

- Single tumor may:
  - **Overlap** onto/extend into adj/contiguous site
  - **Contain:**
    - IN-SITU AND INVASIVE COMPONENTS **OR**
    - TWO OR MORE HISTOLOGICAL COMPONENTS

MULTIPLE Tumors

RULE M3: Abstract a **single primary** when there is adenoca in-situ &/or invasive in at least one polyp **AND**:

- There is a **clinical diagnosis** of familial polyposis (FAP) **OR**
- Greater than 100 polyps are documented (no diagnosis of FAP)

Code **Primary Site** for **FAP** as follows when present in:

- **More than one segment of colon:**
  - **C189** colon, NOS
- Colon and rectosigmoid **OR** colon and rectum:
  - **C199** rectosigmoid junction
- Colon and small intestine:
  - **C260** intestinal tract, NOS

(there is no code for large and small bowel)

Examples of Coding Primary Site for FAP

CASE1: Ascending colon bx: adenoca arising in bowel mucosa invading the muscularis propria. Transverse colon bx: adenoca invading polyp stalk. Polyps noted in rectosigmoid. Clinical diagnosis of FAP.

Code PRIMARY SITE to C189: malignancies present in more than one segment of colon (Note 5 Bullet 1)

CASE 2: Rectal polypectomy: adenocarcinoma in situ in an adenomatous polyp. Sigmoid colon bx: adenoca, invasive. Polyps noted throughout remainder of large bowel and small bowel. Clinical diagnosis of FAP.

Code PRIMARY SITE to C199: malignancies present in colon and rectum (Note 5 Bullet 2)

RULE M4: Abstract **multiple** primaries when there are **separate/non-contiguous** tumors in sites with ICD-O site codes differing at second C**X**xx and/or third Cx**X**x character.

- **Separate/non-contiguous tumors**: at least two malignancies which **do not overlap/merge**.
- M4 **DOES NOT APPLY** to a **single** *overlapping* colon & rectum malignancy

Example 1: Rectosigmoid C1**9**9 and colon C1**8**x

Example 2: Colon C**18**x and rectum C**20**9
does not include FAP- see earlier rules

RULE M5: Abstract **multiple** primaries when **separate/non-contiguous** tumors are two or more *different* **subtypes/variants** in **Column 3**, **Table 1** in the Equivalent Terms and Definitions. **Timing is irrelevant.**

- Tumors may be **subtypes/variants** of the **SAME or DIFFERENT NOS histologies**

Example: two separate tumors in the rectosigmoid.
Pathology:
Tumor 1: Undifferentiated carcinoma.
Tumor 2: Adenoid cystic carcinoma

TABLE 1: How to Identify Different Subtypes/Variants

Specific and NOS Term and Code	Subtypes/Variants (Column 3)
Adenocarcinoma **8140**	Adenoid cystic carcinoma **8200** ← Cribriform comedo-type carcinoma/ adenocarcinoma, cribriform comedo-type **8201*** Diffuse adenocarcinoma/carcinoma **8145** Linitis plastica **8142/3** Medullary adenocarcinoma/carcinoma **8510** Micropapillary carcinoma **8265*** Mucinous/colloid adenocarcinoma/carcinoma **8480** Mucoepidermoid carcinoma **8430** Serrated adenocarcinoma **8213*** Signet ring cell/poorly cohesive adenocarcinoma/carcinoma 8490 Superficial spreading adenocarcinoma 8143 Tubulopapillary carcinoma 8263 Undifferentiated adenocarcinoma/carcinoma 8020 ←

RULE M6: Abstract **multiple primaries** when **separate/non-contiguous** tumors are on *different ROWS* in Table 1 in the Equivalent Terms and Definitions. **Timing is irrelevant.**

- Each **ROW** in the table is a **distinctly DIFFERENT histology.**

Example: two separate colon tumors--
Tumor 1: Small cell neuroendocrine ca
Tumor 2: Goblet cell carcinoid

TABLE 1: How to Identify Different Histologies

Specific and NOS Term and Code	Synonyms	Subtypes/Variants
Mixed adenoneuroendocrine carcinoma 8244	Adenocarcinoma mixed with high-grade large cell neuroendocrine carcinoma Adenocarcinoma mixed with high-grade small cell neuroendocrine carcinoma Any carcinoid mixed with neuroendocrine carcinoma MANEC	Goblet cell carcinoid 8243
Neuroendocrine carcinoma 8246	NEC	Large cell NEC 8013 Small cell NEC 8041

ROW1

ROW 2

Multiple tumors:
Two **SUBTYPES** OR two **HISTOLOGIES** =
Multiple Primaries

Anastomotic R/C Guidance: Rules M7 & M8

RULE M7: Abstract *MULTIPLE* **primaries** when a subseq tumor arises at the **anastomotic site AND**:

- One tumor is a **NOS** & other tumor is a *subtype/variant of that NOS* **histology OR**
- The subseq tumor occurs *greater than 24 months* after original tumor resection **OR**
- The **subsequent** tumor *arises in the mucosa*

This does not apply to GIST. GIST only starts in the wall; never in the mucosa.

RULE M8: Abstract a *SINGLE* **primary** when a subseq tumor arises at the **anastomotic site AND**:

- Subsequent tumor occurs *less than or equal to 24 months* after original tumor resection **OR**
- Tumor *arises* in **colon/rectal wall** and/or surrounding tissue; there is **no involvement** of the **mucosa** **OR**
- *Pathologist or clinician documents an anastomotic recurrence*

RULE M9: Abstract **multiple primaries** when there are **separate, non-contiguous** tumors in sites with ICD-O site codes that *differ at the fourth characters C18X (DIFFERENT COLON SEGMENTS)*

- **NOT used for colon NOS C189 (which should RARELY be used)**

EXAMPLE: Pt has two colon tumors:

Tumor 1: Sigmoid C187 adenocarcinoma in situ

Tumor 2: Transverse C184 mucinous adenoca

Code **two** primaries, one for the sigmoid and another for the transverse colon.

RULE M10: Abstract **multiple primaries** when patient has subseq tumor after being *clinically disease-free for greater than one year* after the original diagnosis (following 1st course TX w/ polypectomy; colectomy OR A&P resection, etc.) OR last recurrence.

- **Clinically** disease-free means that there was **no evidence** of recurrence on follow-up:
  - Colonoscopies are NED
  - Scans are NED

RULE M10 (cont.)

- When it is **unknown/not documented** whether the patient had a recurrence, default to **date of diagnosis** to compute the time interval.
- The physician may state this is a **recurrence,** meaning the patient had a previous colon tumor and now has another colon tumor.
  Follow the rules; do not attempt to interpret the physician's statement.

RULE M11: Abstract a **SINGLE primary** when **synchronous, separate/non-contiguous** tumors are on **the SAME row in Table 1** in the Equivalent Terms and Definitions.

- The **SAME ROW** means the tumors are:
  - **Same histology** (same four-digit ICD-O code) **OR**
  - One is the **preferred term** (column 1) and the other is a **synonym** for the preferred term (column 2) **OR**
  - A **NOS** (column 1/column 2) and the other is a **subtype/variant** of that NOS (column 3)

Table 1 Example

Specific and NOS Term and Code	Synonyms	Subtypes/Variants
Neuroendocrine tumor Grade 1 (G1) 8240	Carcinoid NOS Low-grade neuroendocrine tumor NET Grade 1 (G1) Well differentiated neuroendocrine tumor	EC cell serotonin-producing NET/enterochromaffin cell carcinoid **8241** Neuroendocrine tumor (NET) Grade 2 (G2) **8249** Somatostatin-producing NET **8156**

RULE M12: Abstract a **SINGLE INVASIVE primary** when an **in situ tumor** is *diagnosed after* an **invasive tumor**.

- The tumors may be a NOS and a subtype/variant of that NOS.
- The in situ would be recorded as a recurrence OR abstracted as a Class 3x case *if original primary is not in the LTR database*

RULE M13: Abstract a **SINGLE INVASIVE primary** when an **invasive tumor** is **diagnosed** *less than or equal to 60 days after* an **in situ tumor**.

- **Reminder:** the dx date would still be the date the in situ tumor was diagnosed

RULE M14: Abstract a **MULTIPLE primaries** when an **invasive tumor** occurs *more than 60 days after* an **in situ tumor**.

Histology (H-Rules)

AT THE FIRST RULE WHICH APPLIES

Priority Order for Using EMR Source Documentation to Code Histology

IMPORTANT NOTES:

- ALWAYS code the histology diagnosed *prior to neoadjuvant treatment*
- Code the **histology assigned by the physician**.
  - *NEVER change histology in order to make the case applicable to staging.*

- Code the "**most specific" pathology/tissue** from either **resection OR biopsy**.
  - **"Most specific"** usually refers to a **subtype/variant**
  - Code **invasive** histology when there are *in situ and invasive components* **in a single tumor.**
  - Code histology from the **most representative specimen** *(the greater amount of tumor)* when there is a *discrepancy* **between the biopsy and resection** *(two distinctly different histologies/different rows)*

Hierarchical List of Source Documentation

1. **Tissue or pathology report from Primary Site** *(in priority order)*
   - Addendum(s) and/or comment(s)
   - Final dx/synoptic report as required by CAP
   - CAP protocol
2. Tissue/pathology from a **metastatic** site
3. Scans, listed in **priority order**:
   - CT
   - PET
   - MRI

4. Histology **documented** *by the physician* when none of the above are available, in the *following priority order*:

- Treatment plan
- Tumor Board documentation
- EMR documentation *referring to original pathology, cytology, or scan(s)*
- Physician's **reference** to type of cancer (**histology**) in EMR:
  - Code the *specific histology when documented*
  - Code the **histology to 8000** (cancer/malig neoplasm, NOS) OR as stated by the physician when nothing more specific is documented

5. **Cytology** (seldom used for colon, rectosigmoid and rectum)

General Histology Coding Guidance

ALWAYS code the "**most specific"** histology *regardless of whether it's from the majority/predominant, minority OR a component of the tumor* when:

- Diagnosis is exactly that histology
- Histology *described as:*
  - **Subtype/type/variant**
  - D**ifferentiation** or **features ONLY WHEN** there is a specific **ICD-O code** for the **NOS with _____ differentiation or features**

Code histology described by **ambiguous terminology ONLY when:**

- Histology is **clinically confirmed by physician OR**
- **Treatment**/treatment plan **based on histology** *described by ambiguous term*
- Case is *reportable based on ambiguous terminology* **AND** no other histological information is available

NEVER Code Histology Described as:

- Architecture
- Foci, focus, focal
- Pattern

Histology Codes: Single Tumor

RULE H1: Code **adenocarcinoma with neuroendocrine differentiation 8574** when the *final diagnosis* is **exactly** *"adenocarcinoma with neuroendocrine differentiation."*

DO NOT use code 8574 when:

- The diagnosis is any *subtype/variant* of **adenoca with neuroendocrine differentiation**.
- Any **modifier other than "differentiation"** is used, i.e. adenocarcinoma with neuroendocrine **features**.

RULE H2: Code the **histology** and **ignore the polyp** when a *carcinoma originates in the polyp*.

RULE H3: Code **combined small cell carcinoma 8045** when the *final diagnosis* is **small cell** carcinoma **AND ANY OTHER carcinoma**.

EXAMPLES:

- Small cell ca **8041** & neuroendocrine ca **8246: code 8045**
- Small cell ca **8041** & adenoca **8140: code 8045**

RULE H4: Code **MIXED mucinous and signet ring cell** as follows:

- **Adenoca w/mucinous and signet ring features:** code **adenoca 8140**
- **>50% Mucinous carcinoma:** code **mucinous carcinoma 8480**
- **>50% Signet ring cell carcinoma:** code **signet ring cell carcinoma 8490**
- **UNKNOWN % of mucinous ca & signet ring cell ca:** code **adenoca mixed subtypes 8255**

RULE H5: Code invasive **mucinous** adenoca **8480** when the diagnosis is any of the following:

- **Exactly** "**mucinous** adenocarcinoma" (no modifiers)
- **Two histologies** and **mucinous is >50%** of the tumor
- **High-grade, Invasive OR Malignant pseudomyxoma peritonei**
  - **Pseudomyxoma peritonei**
    - Accumulation of mucin-secreting tumor cells in the abdominal or pelvic cavity
    - Correct primary site determination can be problematic:
      - ✓ Almost all pseudomyxoma peritonei **originate** in the **appendix C181**
      - ✓ Can also be **metastatic** from bowel, ovary or bladder
      - ✓ *CODE PRIMARY SITE as designated by a physician*

RULE H6: Code **adenocarcinoma NOS 8140** when the *final diagnosis* is:

- Two Histologies:
  - **Adenoca and mucinous carcinoma**
    - Mucinous stated as **<50%** of tumor OR **% unknown**
  - **Adenoca and signet ring cell carcinoma**
    - Signet ring cell stated as **<50%** of tumor OR % **unknown**
- Exactly adenocarcinoma **OR**
- Intestinal type adenoca **OR** adenoca intestinal type *(no modifiers or additional histologic terms)*

RULE H7: Code the **histology** when **only one histology is present.**

- **FIRST use Table 1 to code histology:**
  - Includes NEW codes, terms, and synonyms
  - *Coding errors may occur if the table is not used*
- **SECOND use ICD-O & all updates** *when histology is NOT listed in Table 1*
- **THIRD submit question to Ask a SEER Registrar** *when histology is NOT found in Table 1, ICD-O OR updates*

RULE H8: Code **INVASIVE histology** when **in situ & invasive histologies** are *present in the same tumor*

RULE H9: Code the **subtype/variant** when there is a **NOS** AND a **single subtype/variant** of that NOS such as the following:

- **Adenoca** AND *Adenoid cystic ca (subtype/variant of Adenoca)*
  - *Code Adenoid cystic ca 8200/3*
- **Mixed adenoneuroendocrine ca** AND *Goblet cell ca (subtype/variant of mixed adenoneuroendocrine ca)*
  - *Code Goblet cell ca 8243/3*
- Sarcoma AND *Leiomyosarcoma (subtype/variant of sarcoma)*
  - *Code Leiomyosarcoma 8890/3*

Table 1 Example

Specific and NOS Term and Code	Synonyms	Subtypes/Variants
Neuroendocrine tumor Grade 1 (G1) 8240	Carcinoid NOS Low-grade neuroendocrine tumor NET Grade 1 (G1) Well differentiated neuroendocrine tumor	EC cell serotonin-producing NET/enterochromaffin cell carcinoid **8241** Neuroendocrine tumor (NET) Grade 2 (G2) **8249** Somatostatin-producing NET **8156**

2018 Grade

Major Grade Changes

1. **Schema/site specific grade codes** based on AJCC 8th ed
2. **Grade now captured at different points of patient care**
   Similar to AJCC TNM "time frames"
   - **Grade Clinical** (pre-treatment grade)
     - from diagnostic workup *prior* **to treatment**
   - **Grade Pathological** (post-surgical grade)
     - from **surgical resection of primary** tumor or organ; **OR**
     - grade from *clinical* workup **if higher** than surg resection grade
       - all info from DX workup through surgical resection is used for Pathological Grade
   - **Grade Post-therapy** (surgical grade post-neoadjuvant Treatment)
     - from **surgical resection of primary** tumor or organ ***after*** **neoadjuvant therapy**
       - clinical grade would never be used for post-therapy grade

Colon & Rectum: Grade Table 02

Schema ID#	Schema ID Name	AJCC Chapter
00111	Oropharynx (p16-)	11.1 Oropharynx (p16-)
00112	Hypopharynx	11.2 Hypopharynx
00150	Cutaneous Carcinoma of Head and Neck	15 Cutaneous Carcinoma of the Head and Neck
00180	Small Intestine	18 Small Intestine
00200	**Colon and Rectum**	**20 Colon and Rectum**
00220	Liver	22 Liver
00360	Lung	36 Lung
00370	Pleura	37 Malignant Pleural Mesothelioma
00640	Skin of Eyelid	64 Eyelid Carcinoma
00650	Conjunctiva	65 Conjunctival Carcinoma

Grade Clinical Instructions

- Recorded from **histological exam**—including FNA, core bx etc
- Must **not be blank**
- Assign the **HIGHEST grade** from the primary tumor assessed during the clinical time frame
- **Code 9 when:**
  - **Grade from primary site is NOT documented OR**
  - **Clinical workup is NOT done** *(for example, cancer is an incidental finding during surgery for another condition)*
  - **Grade checked "NOT applicable" on CAP Protocol** (if available) and NO other grade information is available

Grade Clinical Instructions (Cont.)

- If **only ONE grade** documented & **unknown** if it refers to **clinical OR pathological** grade:
  - **Assume it's clinical grade** & code per site-specific clinical grade categories **AND**
  - Code **pathological grade as unknown** (code 9) **AND**
  - Code **BLANK** for post therapy grade

IMPORTANT: See individual site-specific Grade Clinical tables for additional notes

Grade Pathological Instructions

- Recorded from surgical resection
- Must not be blank
- Assign the **HIGHEST grade** from the **primary** tumor:
  - If **clinical** grade is the **highest grade identified**, **use** grade identified during the clinical time frame **for BOTH clinical** grade AND **pathological** grade
  - Use grade from **CLINICAL WORKUP** when resection of primary tumor was performed and either:
    - NO grade documented from the surgical resection **OR**
    - NO residual cancer found

Grade Pathological Instructions (Cont.)

- **Code 9** when:
  - Grade from primary site is NOT documented
  - **NO resection of the primary site**
  - **Neo-adjuvant therapy is followed by a resection** *(see Post Therapy Grade)*
  - Clinical case only *(see Clinical Grade)*
  - Only **one grade available** & it cannot be determined if it is clinical, pathological, or after neo-adj Tx
  - **Grade checked "NOT applicable" on CAP Protocol** (if available) and NO other grade information is available

IMPORTANT: See individual site-specific Grade Pathological tables for additional notes

COLON & RECTUM
Grade Clinical & Pathological

Code	Grade Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated **G4 also includes ANAPLASTIC**
9	Grade cannot be assessed (GX); Unknown

Grade Post Therapy Instructions

- Leave post therapy grade **BLANK** when:
  - NO neoadjuvant therapy
  - Clinical OR pathological case only
  - There is only one grade available and it cannot be determined if it is clinical, pathological or Post Therapy
- Assign HIGHEST grade from resected primary tumor assessed **AFTER** the completion of **neoadjuvant therapy**.

Grade Post Therapy Instructions (Cont.)

- Code 9 when:
  - Surgical resection is done **AFTER** neoadjuvant therapy and:
    - **GRADE** from **primary site** is **NOT documented OR**
    - There is **NO residual cancer**
  - **Grade checked "NOT applicable" on CAP Protocol** (if available) and NO other grade information is available

IMPORTANT: See individual site-specific Grade Post Therapy tables for additional notes

COLON & RECTUM Grade Post Therapy Codes

Code	Grade Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated **G4 also includes ANAPLASTIC**
9	Grade cannot be assessed (GX); Unknown
Blank	• No neoadjuvant therapy • Clinical or Pathological case only • There is only one grade available and it cannot be determined if it is clinical, pathological or post therapy

Case 1

- Colonoscopy revealed a lesion in the rectum that was biopsied.
  - Final DX: *Moderately differentiated* adenocarcinoma.
- Patient underwent hemicolectomy:
  - Final pathologic diagnosis: *Poorly differentiated* adenocarcinoma with invasion through serosa.
- Grade Clinical: 2
- Grade Pathological: 3
- Grade Post-Therapy: Blank

Code	Grade Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown
Blank	No neoadjuvant therapy Clinical or Pathological case only

Case 2

- Colonoscopy revealed a lesion in the rectum that was biopsied.
  - Final DX: *Poorly differentiated* adenocarcinoma.
- Patient underwent hemicolectomy:
  - Final pathologic diagnosis: *Moderately differentiated* adenocarcinoma with invasion through serosa.

- Grade Clinical: 3
- Grade Pathological: 3
- Grade Post-Therapy: Blank

Code	Grade Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown
Blank	No neoadjuvant therapy Clinical or Pathological case only

Case 3

- Colonoscopy revealed a lesion in the rectum that was biopsied.
  - Final DX: *Moderately differentiated* adenocarcinoma.
- **The patient was treated with neoadjuvant chemotherapy & radiation**.
- Patient underwent hemicolectomy:
  - Final pathologic diagnosis: *Poorly differentiated* adenocarcinoma with invasion through serosa.

- Grade Clinical: 2
- Grade Pathological: 9
- Grade Post-Therapy 3

Code	Grade Description
1	G1: Well differentiated
2	G2: Moderately differentiated
3	G3: Poorly differentiated
4	G4: Undifferentiated
9	Grade cannot be assessed (GX); Unknown
Blank	No neoadjuvant therapy Clinical or Pathological case only

SSDI's:

- **Circumferential Resection Margin (CRM)**
- **Microsatellite Instability (MSI)**

Circumferential Resection Margin (CRM)

- AKA **Radial or Mesenteric** Margin
- Records the **distance btw** the leading edge of the **tumor AND** the nearest edge of the **surgically dissected margin**
- Recorded to the nearest **TENTH in MM** as documented on the pathology report
- **May be documented ANYWHERE on the pathology report**
  - Gross section; Synoptic Report, etc.
- MD statement of Circumferential or Radial Resection Margin may be used to code when **no other information is available**

Code	Description
0.0	• CRM is **POSITIVE** • **Margin IS involved with tumor** • Described as "**less than 0.1 millimeter (mm)**"
0.1-99.9	Distance of tumor from margin: 0.1- 99.9 mm (Exact size to nearest tenth of millimeter)
XX.0	100 mm or greater
XX.1	• Margins clear, distance from tumor not stated • **CRM NEGATIVE, NOS** • **No residual tumor identified on specimen**
XX.2	Margins cannot be assessed

NOTE: Exact measurement takes precedence over codes beginning with XX

Code	Description
XX.3	Described as "**at least**" 1 mm
XX.4	Described as "**at least**" 2 mm
XX.5	Described as "**at least**" 3 mm
XX.6	Described as "**GREATER** than" 3 mm

Code	Description
XX.7	• **No resection of primary site OR** • Surgical procedure did not remove enough tissue to measure CRM --*examples: polypectomy only, endoscopic mucosal resection (EMR), excisional biopsy only, transanal disk excision*
XX.8	Not applicable: Information not collected for this case ---NEVER USE THIS CODE
XX.9	Not documented in medical record CRM not assessed or unknown if assessed

Microsatellite Instability (MSI)

- Describes cancer cells that have a greater than normal number of genetic markers called microsatellites.
  - DNA mismatch repair (MMR) is a system for repairing DNA.
  - The presence of MSI indicates the MMR is not functioning normally.
- High MSI, is found in about **15%** of colorectal carcinomas.
  - Predicts poor response to 5-FU chemotherapy.
  - May respond well to targeted immunotherapy.
- Patients with high MSI should be tested for hereditary nonpolyposis colorectal carcinoma, also known as Lynch syndrome.

Mismatch Repair (MMR)

- MMR Genes
  - MLH1
  - MSH2
  - MSH6
  - PMS2
- MMR Proficient (MMR-P)
- MMR Deficient (MMR-D) or loss nuclear expression of one or more on of indicates the MMR is not working correctly

Coding MSI

Code	Description
0	Microsatellite instability (MSI) stable; microsatellite stable (MSS); negative, NOS AND/OR Mismatch repair (MMR) intact, no loss of nuclear expression of MMR proteins
1	MSI unstable low (MSI-L)
2	MSI unstable high (MSI-H) AND/OR MMR-D (loss of nuclear expression of one or more MMR proteins, MMR protein deficient)

8	**Not applicable: Information not collected for this case (If this information is required by your standard setter, use of code 8 may result in an edit error.)**
9	Not documented in medical record MSI-indeterminate Microsatellite instability not assessed or unknown if assessed

Examples of MSI Negative from Path Reports

Report 1: Immunohistochemical stains for MLH1, MSH2, MSH6 \T\ PMS2 reveal distinct nuclear staining for all markers. These findings indicate an **intact mismatch repair** (MMR) gene function without evidence of significant microsatellite instability (MSI).

Code 0: Microsatellite instability (MSI) stable; microsatellite stable (MSS); negative, NOS AND/OR Mismatch repair (MMR) intact, no loss of nuclear expression of MMR proteins

Report 2: Supplemental Microsatellite Instability, Tumor:
Result Summary: MSS/MSI-L RESULT: MSI: MSS/MSI-L (instability observed in 0 of 4 informative markers).
Interpretation: An MSS/MSI-L phenotype suggests the presence of **normal DNA mismatch repair** function within the tumor.

Code 0: Microsatellite instability (MSI) stable; microsatellite stable (MSS); negative, NOS AND/OR Mismatch repair (MMR) intact, no loss of nuclear expression of MMR proteins

Report 3: Addendum for Mismatch Repair Protein IHC stain results:
Immunohistochemistry (IHC) Testing for Mismatch Repair (MMR) Proteins:
Staining performed upon sections from Block 1E
- MLH1: Intact nuclear expression.
- MSH2: Intact nuclear expression.
- MSH6: Intact nuclear expression.
- PMS2: Intact nuclear expression.

Background nonneoplastic tissue/internal control and external controls with intact nuclear expression.
IHC Interpretation: **No loss of nuclear expression of MMR proteins**: low probability of microsatellite instability-high (MSI-H).

Code 0: Microsatellite instability (MSI) stable; microsatellite stable (MSS); negative, NOS AND/OR Mismatch repair (MMR) intact, no loss of nuclear expression of MMR proteins

Examples of MSI Positive from Path Reports

Report 1: Addendum Report: **Complete loss of expression of MSH6 in tumor cells** and preserved (intact) expression of MLH1, MSH2 AND PMS2 in tumor cells. This result is strongly suggestive of a germline related mutation as would be seen in Lynch Syndrome. Genetic counseling is recommended followed by germline sequencing analysis of MSH6 to identify a pathogenic mutation indicative of Lynch Syndrome.

Code 2: MSI unstable high (MSI-H) AND/OR MMR-D (loss of nuclear expression of one or more MMR proteins, MMR protein deficient)

Report 2: Special stains for microsatellite instability: **stains are consistent with Lynch Syndrome** with negative staining for heterodimeric partners MSH2-MSH6. Addendum microscopic: Battery of immunohistochemical stains for microsatellite instability of Lynch syndrome show **positive staining for the couplet PMS2 and MLH1**. The couplet MSH2-MSH6, however, both stain negative. This is evidence of **non-functioning** due to **loss of heterozygosity** with resulting **microsatellite instability** with essentially a 100% chance of a deleterious mutation in the MSH2 gene consistent with Heridatary Nonpolyposis Colorectal Cancer Syndrome - Lynch syndrome.

Code 2: MSI unstable high (MSI-H) AND/OR MMR-D (loss of nuclear expression of one or more MMR proteins, MMR protein deficient)

Report 3: Comment: Immunohistochemical stains for MLH-1, MSH-2, MSH-6 and PMS-2 reveal **distinct nuclear staining for MSH-2 and MSH-6** but no apparent staining with MLH-1 or PMS-2. These findings suggest an **abnormal mismatch repair gene function** with possible high microsatellite instability (MSI-H).

Code 2: MSI unstable high (MSI-H) AND/OR MMR-D (loss of nuclear expression of one or more MMR proteins, MMR protein deficient)

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