NAACCR Administers NPCR-Education Contract for the Centers for Disease Control and Prevention (CDC)

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Anatomy of the Colon and Rectum
There are interesting things to be found when researching information on the Internet to include in a presentation. The Colossal Colon is a replica of the human colon that is four feet wide. It was modeled from colonoscopy footage. It has traveled across the U.S. to inform the public about colon health. People can crawl through the colon or view through windows on the outside. It shows healthy colon tissue as well as diseased tissue including polyps and colon cancer. This picture was taken at a mall near the Creighton University Medical Center. It’s a fun way to spread information about colon health.
Shown here is a diagram of the colon and rectum including ICD-O-3 topography codes. The appendix is a wormlike pouch that protrudes from the cecum. Tumors found in the appendix are most often non-reportable carcinoid tumors. The right colon extends up on the right side of the body and includes the cecum and ascending colon. The cecum attaches to the small intestine at the ileocecal junction. The hepatic flexure is at the bend between the ascending colon and transverse colon. The transverse or middle colon crosses the body from right to left. The splenic flexure is at the bend of the transverse colon and descending colon. The descending colon travels down on the left side of the body. The sigmoid colon is a loop of s-shaped intestine. The rectosigmoid junction is between the sigmoid colon and rectum and 15 to 17 cm from the anal verge. The rectum is approximately 12 cm long and 4 to 16 cm from the anal verge. Rectal tumors are less than 16 cm from the anal verge and located at least partially within the supply of the superior rectal artery. When trying to determine the appropriate site for rectosigmoid and rectum tumors, you cannot always rely on distance from the anal verge alone. Practitioners measure differently. If all documentation indicates that the tumor originated in the rectum, but it is stated to be 18 cm from the anal verge, assign the primary site to the rectum. A single tumor that crosses the border of two colon subsites is coded C18.8, overlapping lesion of colon, if the subsite of origin cannot be determined. When a specific subsite of the colon cannot be determined, code topography to C18.9, colon, NOS.
Serosa is a serous membrane that lines the exterior walls of a body cavity. Peritoneum is serosa covering portions of the colon and rectum. The parietal peritoneum lines the abdominal and pelvic walls. The visceral peritoneum covers abdominal organs including segments of colon and rectum. The space between the visceral and parietal peritoneum is the peritoneal cavity.
Omentum is a peritoneal fold. The greater omentum extends from the stomach to the anterior surface of the transverse colon. The mesentary is a peritoneal fold connecting the colon to the abdominal wall.
Colon/Rectum and Peritoneum

- Colon/Rectum covered by serosa
  - Cecum
  - Transverse
  - Sigmoid
  - Anterior descending
  - Anterior ascending
  - Rectosigmoid
  - Upper third and anterior wall of middle third of rectum

- Colon/Rectum without serosa
  - Posterior ascending
  - Posterior descending
  - Lower third of rectum (rectal ampulla)

When determining tumor involvement and stage of disease, it is important to know which colon/rectum subsites are covered by serosa or peritoneum and which are not covered by peritoneum. Parts of the colon and rectum covered by serosa are also described as intraperitoneal. Intraperitoneal subsites include the cecum, transverse colon, sigmoid colon, the anterior portion of the descending colon, the anterior portion of the ascending colon, the rectosigmoid junction, and the upper third and anterior wall of the middle third of the rectum. Those subsites must invade the serosa before spreading to adjacent tissues and/or organs. Subsites that are not covered by peritoneum include the posterior ascending colon, the posterior descending colon, and the lower third of the rectum, also known as the rectal ampulla. Invasion into adjacent organs and tissues occurs without peritoneal involvement because the sites do not include serosa.
An understanding of the make-up of the colon wall is also needed when trying to determine tumor involvement and stage of disease. The wall of the colon includes several layers. The first layer is the mucosa. The mucosa of the colon includes epithelium, lamina propria, and muscular mucosa. The submucosa is a layer of loose connective tissue. The muscularis propria is a layer of muscle tissue. The subserosa is the last layer of tissue before the serosa or peritoneum.
Colon Wall Anatomy

- Non-invasive tumors
  - Intraepithelial tumors do not extend beyond the epithelium of the mucosa

- Invasive tumors confined to the mucosa
  - Intramucosal tumors invade the lamina propria but not beyond

- Locally invasive tumors
  - Through the lamina propria into the muscularis mucosa
  - Through the wall indicates involvement of subserosa

There are many different terms used to describe the involvement or non-involvement by tumor of the layers of the colon wall. Intraepithelial describes a tumor that does not extend beyond the epithelium of the mucosal layer of the wall. Intraepithelial tumors are in situ (non-invasive). Intramucosal tumors invade the mucosa but do not go beyond the lamina propria. These are classified as Tis in AJCC TNM stage, but they are classified as local summary stage. Those tumors that spread through the lamina propria into the muscularis mucosa are locally invasive. When documentation indicates invasion to, into, or through the colon wall without any other descriptors of the wall, the tumor extends into the subserosa. Tumors into the subserosa are locally invasive and defined as AJCC T3 lesions.
Colon Wall Anatomy

- Terms defining invasion through serosa
  - To, into, or through serosa
  - Invasion of or through serosa
  - Extensively involving serosa
  - Tumor on serosal surface

When a tumor is to, into, or through the serosa or peritoneum, it has spread beyond the organ of origin into adjacent tissues and/or organs. These are AJCC T4 lesions. Other descriptions for invasion beyond the organ of origin and into the serosa or peritoneum include invasion of serosa, invasion through serosa, extensively involving serosa, and tumor on serosal surface.
The adenomatous polyp or polypoid adenoma is the precursor to adenocarcinoma of the colon. 85% of adenocarcinomas of the colon evolve from adenomatous polyps. The majority of adenomatous polyps are benign, but they may transpose to malignancy. Those malignancies may be in situ (non-invasive) or invasive. The diagram shows examples of polypoid malignancies.

Going clockwise starting in the lower left corner, the first malignancy in the polyp invades the submucosa. The second malignancy is non-invasive (in situ) in a polyp. The third malignancy is invasive and invades the head of the polyp. The fourth malignancy is also invasive and invades the stalk of the polyp. The fifth lesion does not go beyond the lamina propria of the mucosa. The sixth malignancy invades the muscularis mucosa but does not go into the submucosa.
ICD-O-3 Histology Coding

Colon and Rectum
Caution!!

Pre-2007

Multiple Primary and Histology Rules used in the following slides are based on 2006 rules.
Colon and Rectum Histologies

• 95 percent of cases are adenocarcinoma*
  – ICD-O-3 codes 814-838
    • 8140/3 adenocarcinoma
    • 8210/3 adenocarcinoma in adenomatous polyp
    • 8220/3 adenocarcinoma in adenomatous polyposis coli
    • 8261/3 adenocarcinoma in villous adenoma

*Per Colorectal Cancer Facts & Figures Special Edition 2005; American Cancer Society

According to the American Cancer Society publication, *Colorectal Cancer Facts & Figures Special Edition 2005*, the histology of 95% of colon/rectum cancer cases is adenocarcinoma. According to ICD-O-3, histology with the first 3 digits 814 through 838 is classified as adenoma and adenocarcinoma. Common histology for colon and rectum that is categorized as adenocarcinoma includes adenocarcinoma, NOS, adenocarcinoma in adenomatous polyp, adenocarcinoma in adenomatous polyposis coli, and adenocarcinoma in villous adenoma.
Colon and Rectum Histologies

• Other histologies
  – Mucinous adenocarcinoma 8480/3
  – Signet ring cell adenocarcinoma 8490/3
  – Lymphoma 959-972
    • Does not have schema for AJCC stage

Other histologies in colon and rectum include mucinous adenocarcinoma, signet ring cell adenocarcinoma, and lymphoma. All data items are abstracted for lymphoma cases of colon and rectum, but they do not have a schema for AJCC staging. Cases with lymphoma of the colon or rectum may be analyzed separately from the other colon and rectum cases.
Histology Coding Rules: Colon/Rectum

- Rules are a hierarchy
- Use rules in priority order with rule 1 having highest priority
- Use the first rule that applies
- Rules from SEER Program Coding and Staging Manual (PCSM) 2004, pages 86–87

The histology coding rules are a hierarchy. They are listed in priority order and rule 1 has the highest priority. When determining what code to record for histology, begin with rule 1 and stop when you get to the first rule that applies. If rule 1 applies, there is no need to go any further. The rules for coding histology are found in the SEER Program Coding and Staging Manual 2004, pages 86–87. As documented in NAACCR Volume II: Data Standards and Data Dictionary, the source of the standards for histology are SEER and the Commission on Cancer. The SEER rules for histology coding are used because SEER has always worked closely with the editors of the ICD-O-3 Manual on use of the Manual.
Histology Coding Rules: Colon/Rectum

Single Tumor
1. Code the histology if only one type is mentioned in the pathology report

*Example:* Descending colon, carcinoma in situ in a polyp

*Answer:* 8210/2 Carcinoma in situ in a polyp, NOS

The first set of rules is for single tumors.

**Rule 1:** Code the histology if only one type is mentioned in the pathology report.

**Example:** There is a single polyp in the descending colon described as carcinoma in situ in a polyp. The histology is recorded as 8210/2, carcinoma in situ in a polyp, NOS.
Histology Coding Rules: Colon/Rectum

2. Code the **invasive histology** when both invasive and in situ tumor are present.

   *Example:* Cecal lesion, mucinous adenocarcinoma and signet ring cell adenocarcinoma in situ
   
   Mucinous adenocarcinoma 8480/3
   Signet ring cell adenocarcinoma in situ 8490/2

   **Answer:** 8480/3 Mucinous adenocarcinoma

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**Rule 2:** Code the **invasive histology** when both invasive and in situ tumor are present.

**Example:** This single lesion of the cecum contains mucinous adenocarcinoma with invasive behavior and signet ring cell adenocarcinoma with in situ behavior. The code for the invasive histology, mucinous adenocarcinoma (8480/3), is recorded.
Histology Coding Rules: Colon/Rectum

2. (Continued)

Exception: If the histology of the invasive component is an NOS term such as carcinoma, adenocarcinoma, melanoma, or sarcoma, then code the histology using the specific term associated with the in situ component and the invasive behavior.

Exception to Rule 2: If the histology of the invasive component is an NOS term such as carcinoma, adenocarcinoma, melanoma, or sarcoma, then code the histology using the specific term associated with the in situ component and the invasive behavior.
Histology Coding Rules: Colon/Rectum

2. (Continued)

Example: Lesion of sigmoid colon, tubular carcinoma in situ and carcinoma

- Tubular carcinoma in situ 8211/2
- Carcinoma, NOS 8010/3

Answer: 8211/3 Tubular carcinoma

Example: The single lesion of the sigmoid colon contains tubular carcinoma in situ, a specific histology with in situ behavior, and carcinoma, a malignant NOS histology. The exception to rule 2 states to code the specific histology, in this case tubular carcinoma, and to code the malignant behavior from the NOS histology. So, the correct code is 8211/3, tubular carcinoma.
Histology Coding Rules: Colon/Rectum

3. Use a **mixed** histology code if one exists

4. Use a **combination** code if one exists

*Example:* Sigmoid lesion, adenocarcinoma with mucinous and clear cell differentiation

Adenocarcinoma 8140/3
Mucinous adenocarcinoma 8480/3
Clear cell adenocarcinoma 8310/3

*Answer:* 8255/3 Adenocarcinoma with mixed subtypes

The next two rules pertain to mixed and combination codes.

**Rule 3:** Use a **mixed** histology code if one exists.

**Rule 4:** Use a **combination** code if one exists. When using a mixed or combination histology code, the word **and** or **mixed** will be in the diagnosis.

*Example:* The single lesion of the sigmoid is described as adenocarcinoma with mucinous and clear cell differentiation. The mucinous and clear cell differentiation are two different adenocarcinoma subtypes combined with adenocarcinoma. The histology is recorded as adenocarcinoma with mixed subtypes (8255/3).
Histology Coding Rules: Colon/Rectum

5. Code the **more specific term** when one of the terms is NOS and the other is a more specific description of the same histology.

**Rule 5:** Code the **more specific term** when one of the terms is NOS and the other is a more specific description of the same histology.
Histology Coding Rules: Colon/Rectum

5. (Continued)

Example: Descending colon lesion, adenocarcinoma and signet ring cell adenocarcinoma

Adenocarcinoma 8140/3
Signet ring cell adenocarcinoma 8490/3

Answer: 8490/3 Signet ring cell adenocarcinoma

Example: The single lesion of the descending colon contains adenocarcinoma, an NOS histology, and signet ring cell adenocarcinoma, a more specific adenocarcinoma histology. The code for the more specific histology, signet ring cell adenocarcinoma (8490/3), should be recorded.
Histology Coding Rules: Colon/Rectum

6. Code the **majority** of the tumor

Terms that mean majority of tumor:

- Predominantly; with features of; major; type (eff. 1/1/99); with…differentiation (eff. 1/1/99); pattern and architecture (if in CAP protocol; eff. 1/1/2003)

Terms documented in *SEER PCSM 2004*, page 85

**Rule 6:** Code the **majority** of the tumor. Terms that indicate “majority of tumor” include “predominantly,” “with features of,” “major,” “type” (effective January 1, 1999), “with…differentiation” (effective January 1, 1999), “pattern and architecture” [if in College of American Pathologists (CAP) protocol, effective January 1, 2003]. The list of “majority” terms is found on page 85 of the *SEER Program Coding and Staging Manual 2004*. 
Histology Coding Rules: Colon/Rectum

6. (Continued)

Example: Splenic flexure tumor, signet ring cell carcinoma with features of mucinous carcinoma

- Signet ring cell carcinoma 8490/3
- Mucinous carcinoma 8480/3

Answer: 8480/3 Mucinous carcinoma

Example: The single tumor of the splenic flexure is described as signet ring cell carcinoma with features of mucinous carcinoma. Because “with features of” is terminology that indicates tumor majority, the mucinous carcinoma should be recorded as the histology. The correct code for mucinous carcinoma is 8480/3.
Histology Coding Rules: Colon/Rectum

6. Code the **majority** of the tumor

Terms that DO NOT mean majority of tumor

With foci of; focus of/focal; areas of;
elements of; component (eff. 1/1/99)

Terms documented in SEER PCSM 2004, page 85

Terms that do not mean “majority of tumor” are: “with foci of,” “focus of/focal,” “areas of,” “elements of,” “component” (effective January 1, 1999). They are also found on page 85 of the SEER Program Coding and Staging Manual 2004. If these terms are used, the histology does not represent the majority of the tumor and should not be recorded as the histology.
Example: The single lesion of the cecum is described as solid carcinoma with focal signet ring cell carcinoma. “Focal” is not a term that describes tumor majority. For this example, solid carcinoma is the tumor majority and should be recorded as the histology. The correct code is 8230/3.


Rule 7: Code the **numerically higher** ICD-O-3 code. This is the last rule for single tumors and should be used infrequently.

Example: The single descending colon lesion contains both clear cell adenocarcinoma and colloid adenocarcinoma. None of the previous rules applies to this situation, so the histology with the highest code should be recorded. In this case, the histology with the highest code is 8480/3, colloid adenocarcinoma.
Histology Coding Rules: Colon/Rectum

Multiple Tumors with Different Behaviors in Same Organ Reported as Single Primary
Code the histology of the invasive tumor when one lesion is in situ and the other is invasive

*Example:* 2 separate sigmoid polyps
1) adenocarcinoma in situ in polyp 8210/2
2) adenocarcinoma in polyp stalk 8210/3

*Answer:* 8210/3 Adenocarcinoma in polyp

This rule is used when there are multiple tumors with different behaviors in the same organ reported as a single primary. Code the histology of the invasive tumor when one lesion is in situ and the other is invasive.

*Example:* There are two polyps in the sigmoid colon. The histology for both polyps is adenocarcinoma in a polyp, but the behavior for the first polyp is in situ and the behavior for the second polyp is invasive. This is one primary because the lesions are in the same subsite and have the same histology, and the invasive histology, adenocarcinoma in a polyp (8210/3), is recorded.
Histology Coding Rules: Colon/Rectum

Multiple Tumors in Same Organ Reported as Single Primary

1. Code histology when multiple tumors have same histology

   *Example:* Well differentiated adenocarcinoma of rectum; separate metastatic tumor island, adenocarcinoma, with irregular contours present in fat

   **Answer:** 8140/31 Adenocarcinoma

The rules for multiple tumors in the same organ reported as a single primary follow.

**Rule 1:** Code the histology when multiple tumors have the same histology.

**Example:** There is a tumor in the rectum with adenocarcinoma as well as a separate metastatic tumor island in the fat with adenocarcinoma. Because the tumor island in the fat has irregular contours, it is considered a metastatic nodule and not lymph node metastasis. This is a single primary, and the histology is recorded as adenocarcinoma (8140/3).
Histology Coding Rules: Colon/Rectum

2. Code the histology to adenocarcinoma (8140/_; in situ or invasive) when there is an adenocarcinoma and an adenocarcinoma in a polyp (8210/_ , 8261/_ , 8263/_ ) in the same segment of the colon or rectum

Rules 2 and 3 apply only to colon and rectum.

Rule 2: Code the histology to adenocarcinoma (8140/_; in situ or invasive) when there is an adenocarcinoma and an adenocarcinoma in a polyp (8210/_ , 8261/_ , 8263/_ ) in the same segment of the colon or rectum.
Histology Coding Rules: Colon/Rectum

2. (Continued)

*Example*: Right colon, villous adenoma and separate 1.5 cm lesion

1) adenocarcinoma in villous adenoma

   8261/3

2) adenocarcinoma

   8140/3

*Answer*: 8140/3 Adenocarcinoma

*Example*: There is a villous adenoma and a separate lesion in the right colon. The histology for the villous adenoma is adenocarcinoma in a villous adenoma, and the histology for the separate lesion is adenocarcinoma. Per rule 2, the adenocarcinoma is coded for histology when there is both a polyp (includes villous adenoma because the first four digits of the ICD-O-3 code are 8261) with adenocarcinoma and a separate lesion with adenocarcinoma in the same colon segment. The histology is adenocarcinoma (8140/3).
Histology Coding Rules: Colon/Rectum

3. Code the histology to carcinoma (8010/__; in situ or invasive) when there is a carcinoma and a carcinoma in a polyp (8210/__) in the same segment of the colon or rectum.

**Rule 3:** Code the histology to carcinoma (8010/__; in situ or invasive) when there is a carcinoma and a carcinoma in a polyp (8210/__) in the same segment of the colon or rectum.
Histology Coding Rules: Colon/Rectum

3. (Continued)

Example: Transverse colon, polyp and separate 2 cm lesion

1) carcinoma in a polyp  8210/3
2) carcinoma  8010/3

Answer: 8010/3 Carcinoma

Example: There is a polyp and a separate lesion in the transverse colon. The histology for the polyp is carcinoma in a polyp, and the histology for the separate lesion is carcinoma. Per rule 3, the carcinoma is coded when there is both a polyp with carcinoma and a separate lesion with carcinoma in the same colon segment. The histology is carcinoma (8010/3).
Histology Coding Rules: Colon/Rectum

4. Use a **combination** code for:
   a. Bladder: Papillary and urothelial (transitional cell) carcinoma (8130)
   b. Breast: Paget Disease and duct carcinoma (8541)
   c. Breast: Duct carcinoma and lobular carcinoma (8522)
   d. Thyroid: Follicular and papillary carcinoma (8340)

**Rule 4** is not applicable to colon/rectum. This rule is used only for carcinomas of the bladder, breast, and thyroid.
Histology Coding Rules: Colon/Rectum

5. Code the more specific term when one of the terms is NOS and the other is a more specific description of the same histology.

**Rule 5:** Code the more specific term when one of the terms is NOS and the other is a more specific description of the same histology.
Histology Coding Rules: Colon/Rectum

5. (Continued)

Example: Rectosigmoid colon, 2 lesions
1) adenocarcinoma 8140/3
2) mucin-producing adenocarcinoma 8481/3

Answer: Mucin-producing adenocarcinoma 8481/3

Example: The patient has two lesions in the rectosigmoid colon. The first lesion is adenocarcinoma, an NOS term, and the second lesion is mucin-producing adenocarcinoma, a specific description of the same histology. Because the two lesions are in the same site and one is an NOS histology and the other is a specific description of the same histology, this is counted as one primary and mucin-producing adenocarcinoma (8481/3) is recorded as the histology because it is more specific.
Histology Coding Rules: Colon/Rectum

6. Code all other multiple tumors with different histologies as multiple primaries

*Example:* Sigmoid colon, 2 lesions

1) Mucinous adenocarcinoma 8480/3
2) Malignant lymphoma 9590/3

*Answer:* 2 primary sites; complete abstract for each one

**Rule 6:** Code all other multiple tumors with different histologies as multiple primaries. If there are multiple tumors in the same segment of the colon with different histologies and they don’t meet the circumstances described in the previous rules, consider the tumors separate primaries and complete multiple abstracts.

**Example:** There are two lesions in the sigmoid colon. The first lesion is mucinous adenocarcinoma, and the second lesion is malignant lymphoma. The histologies are different and none of the rules for multiple tumors determined to be a single primary apply. The lesions are separate primaries and two abstracts should be completed.
For colon/rectum, intraepithelial and noninvasive are synonyms for in situ. Tumors described histologically as intraepithelial or noninvasive should be coded with ICD-O-3 behavior code 2 (in situ). Even though tumors described as intramucosal are categorized in AJCC stage as Tis, the ICD-O-3 behavior is not in situ (2). Intramucosal is not a synonym for in situ. The behavior code for intramucosal tumors of the colon and rectum is malignant (3), and the stage for SS77 and SS2000 is local.
Coding Grade for Colon/Rectum

- Histologic grade, differentiation, codes
  1 = well differentiated
  2 = moderately differentiated
  3 = poorly differentiated
  4 = undifferentiated

Grade is the measurement of how closely cancer cells resemble the cells of the organ in which the cancer originated. Code 1 indicates that the cancer cells closely resemble those of the organ of origin. As the grade number increases the resemblance of cancer cells to those of the organ of origin decreases. Grade 4 cancers have little or no resemblance to the cells of the organ of origin. The general code definitions for grade are shown on this slide; 1 is well differentiated, 2 is moderately differentiated, 3 is poorly differentiated, and 4 is undifferentiated.
Coding Grade for Colon/Rectum

- Two-grade system
  - Apply to colon, rectosigmoid junction, rectum
  - Documented in FORDS, page 13, and SEER PCSM, page 93

<table>
<thead>
<tr>
<th>Code</th>
<th>Terminology</th>
<th>Histologic Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Low grade</td>
<td>1/2</td>
</tr>
<tr>
<td>4</td>
<td>High grade</td>
<td>2/2</td>
</tr>
</tbody>
</table>

Some cancers, including colon, rectosigmoid junction, and rectum, may be graded using a two-grade system. If the grade is described as low grade or grade 1 of 2 (1/2), assign code 2. If the grade is described as high grade or grade 2 of 2 (2/2), assign code 4. The conversion table for a two-grade system is found in FORDS, page 13, and SEER Program Coding and Staging Manual, page 93.
Abstracting Colon and Rectum Cases
Date of Diagnosis: Colon/Rectum

- Review all sources for first date of diagnosis
  - Physical exams
  - Imaging reports
  - Pathologic confirmation
  - Physicians’ and nurses’ notes
  - Consultation reports

Review the patient’s health record carefully to identify the date of first cancer diagnosis. Documentation may be found in the physical exam, imaging reports, pathology reports, physicians’ and nurses’ notes, and consultation reports. If a patient is receiving treatment at your facility and was diagnosed elsewhere, the date of diagnosis may be found in copies of reports forwarded from the diagnosing facility or in consultation reports. When determining diagnosis date, remember which ambiguous terms constitute a cancer diagnosis and which do not.
The terms shown on this slide are ambiguous terms that constitute a cancer diagnosis. If that documentation is the first diagnosis of cancer on a report, including physical examination, then the date it was made is the date of diagnosis. The list of terms is documented in FORDS, page 3, and SEER Program Coding and Staging Manual 2004, page 3.
Ambiguous Diagnostic Terms That Do Not Constitute a Cancer Diagnosis

- Cannot be ruled out
- Equivocal
- Possible
- Potentially malignant

- Questionable
- Rule out
- Suggests
- Worrisome

If the terms on this slide are included in a diagnosis, they do not constitute a diagnosis of cancer. The date the information was discovered would not be the date of diagnosis. The list of terms is documented in FORDS, page 4, and SEER Program Coding and Staging Manual, page 3.
Colon/Rectum Cancer Work-up

• Physical examination
  – Digital rectal examination (DRE)
• X-rays and scans
  – Barium enema
  – Computerized tomography (CT) scans of abdomen and pelvis

The initial work-up for cancer of the colon/rectum begins with a physical examination that may include a digital rectal exam. The digital rectal exam may document location and size of the tumor. Physical exam may also document status of lymph nodes and enlargement of other organs. Hepatomegaly, splenomegaly, or enlargement of other internal organs documents the need for further work-up that may identify metastasis. Imaging studies may document tumor size, location, and presence of metastasis. Barium enema may diagnose the cancer as well as document size and location. Computerized tomography (CT) scans of the abdomen and pelvis may diagnose the cancer, document tumor size and location, document lymph node involvement or metastatic disease.
Colon/Rectum Cancer Work-up

- Sigmoidoscopy
- Colonoscopy
- Biopsy

Through sigmoidoscopy or colonoscopy, a scope is inserted into the colon to visualize the lining. This may identify tumor size and location. Sigmoidoscopy and colonoscopy are used for screening as well as work-up for cancer of the colon/rectum. Biopsy may be performed at the time of sigmoidoscopy or colonoscopy to any suspicious lesions. Biopsy will identify the histology, behavior, and grade of the tumor.
As you know, collaborative staging includes a set of data items collected and then used to derive AJCC T, N, M, and stage group as well as summary stage 1977 and 2000. During this presentation we will discuss collaborative staging for colon and rectum. We will only discuss the collaborative staging data items required for submission to NPCR. For colon those are CS extension, CS lymph nodes, and CS mets at dx.
Colon and rectum each have a CS schema. The colon schema begins on page 271 of the CS Staging Manual and Coding Instructions. It is applicable for sites with ICD-O-3 topography code C18.0–C18.9. The schema for rectosigmoid and rectum begins on page 279 of the manual and is applicable for ICD-O-3 codes C19.9 and C20.9.
The extension codes document the furthest extension of the primary tumor. Extension codes 00–55 for colon and rectum describe the depth of invasion of the primary tumor through the layers of the intestinal wall. The depth of invasion through the wall is critical to derive T categories 1–3.
Colorectal Cancer: Extension

• Notes
  1. Ignore intraluminal extension
  2. Definition of tumor nodule vs. lymph node mets
  3. Codes 60–80 code contiguous (direct) extension
     • Discontinuous involvement is coded in Mets at Dx

Three descriptive notes are included in the coding instructions for CS extension of colon and rectum.

**Rule 1:** When assigning extension, ignore intraluminal tumor extension from one segment to adjacent segments or intraluminal extension to the ileum from the cecum.

**Rule 2:** If a tumor nodule is found in the pericolic fat or adipose tissue and it does not include histologic evidence of residual lymph node but is does have the form and smooth contour of a lymph node, it should be coded as regional lymph node metastasis; however if it has an irregular contour, it should be coded in CS extension as code 45.

**Rule 3:** Extension codes 60–80 indicate regional and distant contiguous tumor spread. Discontinuous involvement is coded in CS mets at dx.
Extension code 00 is used when the tumor is noninvasive and intraepithelial. Intraepithelial tumors do not go beyond the epithelium of the mucosa of the colo/rectal wall.
Extension codes 05–16 Polyps

Extension codes 05 through 16 are used when coding extension of polyps of the colon and rectum. Code 05 is used when a polyp contains a non-invasive cancer. Code 10 is used for tumors that are confined to the mucosa of a polyp or non-polypoid tumor. Assign code 12 when a tumor invades the muscularis mucosa, including the muscularis mucosa of the stalk of a polyp. Use code 13 when a malignant tumor in a polyp is invasive but confined to the head of the polyp. Code 14 indicates a tumor in a polyp that is invasive but confined to the polyp’s stalk. Assign code 15 when a polyp contains an invasive tumor, but no other information is available. Code 16 is assigned when a malignant tumor either non-polypoid or in a polyp invades the submucosa of the colon/rectum wall. If a tumor invades the muscularis propria of the wall, assign code 20.
The arrows in the diagram have invaded the mucosa but are confined to the mucosa and not extended into the muscularis mucosa, the final layer of the mucosa. The extension code is 10.
The arrow in this diagram shows that the tumor invades the mucosa to the last layer, the muscularis mucosa. Because it invades but does not go beyond the muscularis mucosa, the extension code is 12.
Extension code 16  Invasive confined to submucosa

When a tumor goes through the mucosa and into the submucosa of the intestinal wall, assign code 16.
Extension code 20 Invasive muscularis propria invaded

Tumors assigned extension code 20 invade the wall into the submucosa.
When documentation in the health record indicates that the tumor extension is localized but no more specific information is available, use code 30.
Extension code 40 Transmural, NOS invasion through muscularis into (sub)serosal tissue/fat

Invasion through the wall to the subserosal tissues or fat is assigned code 40. “Through the wall” means invasion of the intestinal wall into subserosal tissue and is coded to 40. Invasion of subserosal tissue is not beyond the organ of origin. These are AJCC T3 lesions, but the summary stage is local.
When you cannot determine if the tumor extends to non-peritonealized (subserosal fat) (code 40) or through the serosa to pericolic fat (code 45), use code 42 (fat, NOS).
Extension code 45  Pericolic fat extension to adjacent connective tissue
Extension code 46  Adherent to but not involving other structures

Code 45 indicates that the tumor has gone through all layers of the wall and into pericolic fat. Code 46 indicates that the tumor is adherent to other organs or structures but is not microscopically involved. The attachment may be viewed by imaging or surgical observation, but there is no pathologic evidence of invasion of the other organ.
Extension code 50  Serosa
Invasion of/through visceral peritoneum

When a tumor invades through the serosa or visceral peritoneum, assign code 50.
As discussed in the anatomy presentation, not all segments of the colon and rectum are covered by serosa or visceral peritoneum. Sites covered by serosa include the cecum, transverse colon, sigmoid colon, the anterior portion of the descending colon, the anterior portion of the ascending colon, the rectosigmoid junction, and the upper third and anterior wall of the middle third of the rectum. Subsites that are not covered by peritoneum include the posterior ascending colon, the posterior descending colon, and the lower third of the rectum also known as the rectal ampulla.
When a tumor invades pericolic connective tissue (42 or 45) and goes into or through the serosa (50), assign code 55.
Code 60 indicates that the primary tumor has contiguous extension to adjacent organs. Adjacent organs differ for the subsites of the colon, the rectosigmoid, and the rectum. Examples shown on the slide include 1) direct extension of tumor from the ascending colon to the liver; 2) direct extension from the transverse colon to the stomach; 3) direct extension from the sigmoid colon to the small intestine; and 4) direct extension from the rectum to the skeletal muscle of the pelvic floor.
Other extension codes are presented on this slide. Assign code 57 when the tumor is adherent to other structures and pathology is positive for invasion of other organ or it is unknown if there is microscopic involvement. Code 65, #1 on the slide, is assigned for any colon site with invasion of the abdominal wall. Code 66, #2 on the slide, is assigned when there is contiguous tumor spread from the ascending colon to the right kidney. Code 66 is also used when there is extension from the ascending colon to the right ureter or from the descending colon to the left kidney or left ureter. Code 70, #3 on the slide, indicates spread from the cecum, appendix, ascending, descending or sigmoid colon to the fallopian tube, ovary, or uterus. Code 80 indicates other contiguous extension including extension from the transverse colon to the ureter.
Colorectal Cancer: CS Lymph Nodes

Notes
1. Regional nodes only
2. Definition of tumor nodule vs. regional node mets: code smooth nodules here
3. Inferior mesenteric nodes are distant for cecum, appendix, ascending, transverse, hepatic flexure; superior mesenteric nodes are distant for all colon sites

Notes for coding CS lymph nodes.

Note 1: Code involvement of regional lymph nodes only in this data item. Involvement of distant lymph nodes is coded in CS mets at dx.

Note 2: A tumor nodule in the pericolic adipose tissue of a primary carcinoma without histologic evidence of residual lymph node in the nodule is classified as regional lymph node metastasis if the nodule has the form and smooth contour of a lymph node, or if the contour is not described. If the nodule has an irregular contour, it should be coded in CS Extension as code 45.

Note 3: Involvement of inferior mesenteric lymph nodes is distant metastasis and coded in mets at dx for cecum, appendix, ascending colon, transverse colon, and hepatic flexure. Superior mesenteric node involvement is distant metastasis for all colon sites and coded in mets at dx.
For all colon sites lymph node involvement in colic, epicolic, mesocolic, and pericolic lymph nodes or a smooth nodule in pericolic fat/mesentary/mesocolic fat (note 2) is assigned code 10.
For the rectosigmoid, code 10 is assigned when rectal, perirectal, or pericolic lymph nodes are involved or there is a nodule in pericolic fat/mesentary/mesocolic fat (note 2). Assign code 10 for rectum if rectal or perirectal lymph nodes are involved or there is a nodule in the perirectal fat (note 2).
Colon Cancer  CS Lymph Nodes

**Code 20—site-specific**
Regional nodes for each segment of colon
- Cecum
- Ascending
- Hepatic flexure
- Transverse
- Splenic flexure
- Descending
- Sigmoid

**Code 30—all sites**
Regional nodes, NOS including mesenteric, NOS

Code 20 for colon is site-specific. For the cecum the cecal, ileocolic, and right colic lymph nodes are assigned code 20. For the ascending colon the ileocolic, middle colic, and right colic lymph nodes are assigned code 20. For the hepatic flexure the middle colic and right colic lymph nodes are assigned code 20. For the transverse colon the middle colic lymph nodes are assigned code 20. For the splenic flexure the inferior mesenteric, left colic, and middle colic lymph nodes are assigned code 20. For the descending colon the inferior mesenteric, left colic, and sigmoid lymph nodes are assigned code 20. For the sigmoid colon the inferior mesenteric, sigmoidal, superior hemorrhoidal, and superior rectal lymph nodes are assigned code 20. Mesenteric lymph node involvement is assigned code 30 for all colon sites. Also use code 30 for regional lymph node involvement, NOS.
Rectal Cancer  CS Lymph Nodes

Code 20—site-specific
Regional nodes for each segment

Rectosigmoid: 1, 2, 3, 4, 6
Rectum: 2, 3, 4, 5, 6, 7

1  Left colic
2  Inferior mesenteric
3  Superior rectal (hemorrhoidal)
4  Sigmoidal
5  Internal iliac
6  Middle rectal (hemorrhoidal)
7  Sacral (not visible—posterior to rectum)

(Numbered areas on diagram) For rectosigmoid code 20 describes left colic, inferior mesenteric, superior rectal, hemorrhoidal, sigmoidal, or middle rectal lymph node involvement. For rectum assign code 20 when lymph node involvement is in the inferior mesenteric, superior rectal, sigmoidal, internal iliac, middle rectal, or sacral chains.
**Colon Cancer: CS Mets at Dx**

- Codes 08, 10 are distant nodes
  - 08, 10 separated due to summary stage mapping
- Code 40 is distant mets
  - Via bloodstream (hematogenous)
  - Discontinuous
  - Examples: liver, lung, brain
- Code 50 is a combination of any distant lymph nodes and any distant metastases

Information on distant metastasis at the time of diagnosis is coded in CS mets at dx. Code 08 and 10 for the colon record involvement of distant lymph nodes. There are two codes because some of the lymph nodes map to regional stage for summary stage 77. Distant metastasis, excluding lymph nodes, is assigned code 40. Code 50 is used when there is both distant lymph node involvement and discontinuous distant metastasis.
Rectal Cancer: CS Mets at Dx

- Code 10 is distant nodes, NOS
- Codes 11–12 are specific distant lymph nodes staged differently in SS77
- Code 40 is distant mets
  - Via bloodstream (hematogenous)
  - Discontinuous
  - Examples: liver, lung, brain
- Code 50 is a combination of any distant lymph nodes and any distant metastases

For rectum and rectosigmoid, assign code 10 when node involvement is to distant nodes, NOS. Code 11 is assigned for rectosigmoid when there is involvement of internal iliac or obturator nodes. These were staged differently in summary stage 77 and a specific code is assigned to allow the data to be mapped correctly. Code 12 is assigned when named distant lymph node regions are involved. Distant metastasis, excluding lymph nodes, is assigned code 40. Code 50 is used when there is both distant lymph node involvement and discontinuous distant metastasis.
First Course Treatment

Colorectal Cancer
First Course Treatment

• Intended to affect tumor by
  – Modification
  – Control
  – Removal
  – Destruction

• Includes curative and palliative treatment

First course treatment is defined in FORDS 2004, page 28, as “all methods of treatment recorded in the treatment plan and administered to the patient before disease progression or recurrence.” The intent of treatment is to modify, control, remove, or destroy the tumor. Curative treatment as well as treatment given to control symptoms, alleviate pain, or make the patient more comfortable may also be first course treatment. We will discuss the first course treatment data items the central registry is required to submit to NPCR. Cancer programs approved by the Commission on Cancer (CoC) are required to collect other first course treatment data items as well.
The standard treatment for colon and rectum cancer is resection of the primary tumor and regional lymph nodes. The type of procedure performed to destroy or resect the primary tumor is coded in the data item, surgical procedure of primary site. The codes are site-specific, and colon, rectosigmoid, and rectum each has its own set of codes, although some codes are the same for the three sites.
Surgical Procedure of Primary Site

• En bloc resection
  – Resection of primary site and other contiguous organs during the same procedure

An en bloc resection is when other contiguous organs and the primary site are resected as part of the same procedure, but not necessarily as a single specimen. An example of an en bloc resection for the colorectal sites, would be resection of the right colon and small bowel as part of the same procedure.
Surgical Procedure Primary Site: Colon, Rectosigmoid, Rectum

- Code 00: None
- Codes 10–14: Local tumor destruction without pathology specimen
- Codes 20–29: Local tumor destruction with pathology specimen

For colon, rectosigmoid, and rectum, use code 00 when no surgery of the primary site was performed. Codes 10–14 are assigned when the procedure provides local tumor destruction but there is no pathology specimen. These include photodynamic therapy, electrocautery, cryosurgery, and laser ablation. Photodynamic therapy uses light to destroy the tumor; electrocautery burns the tumor; cryosurgery destroys the tumor by freezing it; and laser destroys tumor with an intensely powerful beam of light. Use codes 20–29 when the procedure locally destroys the tumor and there is a pathology specimen. This includes excisional biopsy and polypectomy.
Code 30 for colon includes those procedures that excise the tumor and some of the surrounding normal tissues without resecting the entire segment of the colon. A resection of a segment of the ascending colon is assigned code 30. If a portion of a segment of the colon is resected and an organ contiguous to the segment of the colon is also resected as part of the same procedure, code 32 is assigned. If a portion of the sigmoid colon was removed and the bladder was removed as part of the same procedure, this would be an en bloc resection and code 32 would be assigned. Procedures coded to 40 are subtotal colectomy or hemicolectomy. The difference between subtotal colectomy or hemicolectomy and partial colectomy is that a subtotal colectomy or hemicolectomy is complete resection of a segment of the colon. Partial colectomy or segmental resection is only the removal of tumor and surrounding tissue, not an entire colon segment. A left hemicolectomy or right hemicolectomy is assigned code 40. If the operation is described as a sigmoid colon resection, read the pathology and operative reports carefully to make sure the entire sigmoid colon was resected. If it was, assign code 40 for the surgical procedure of primary site. If the procedure performed is hemicolectomy or subtotal colectomy plus removal of a contiguous organ, assign code 41. For example, if the procedure was right hemicolectomy with removal of the small bowel as part of the same procedure, assign code 41.
Surgical Procedure of Primary Site: Colon

- Code 50: Total colectomy
- Code 51: Total colectomy plus resection of contiguous organ
- Code 60: Total proctocolectomy
- Code 61: Total proctocolectomy plus resection of contiguous organ
- Code 70: Colectomy or proctocolectomy with resection of contiguous organs

Code 50 is assigned for colon when the entire colon is resected, total colectomy. That includes the removal of the colon from the cecum to the rectosigmoid junction and may include a portion of the rectum. When trying to determine if a patient had a segmental resection (30), hemicolectomy (40), or total colectomy (50), carefully review the pathology and operative reports to determine how much of the colon was resected. Code 51 is assigned when total colectomy is performed and a contiguous organ is removed as part of the same procedure. If the procedure was colectomy with removal of the bladder, code 51 would be assigned. Assign code 60 when total proctocolectomy is performed. Total proctocolectomy is removal of the entire colon from the cecum to the rectosigmoid junction and the entire rectum. If total proctocolectomy is performed with removal of a contiguous organ as part of the same procedure, assign code 61. If a patient has a colectomy or proctocolectomy with resection of contiguous organs and there is not enough information in the record to assign code 32, 41, 51, or 61, use code 70.
Surgical Procedure of Primary Site: Rectosigmoid

- Code 30: Wedge or segmental resection, partial proctosigmoidectomy
- Code 31: Partial proctosigmoidectomy plus resection of contiguous organs
- Code 40: Pull through with sphincter preservation
- Code 50: Total proctectomy

Code 30 for rectosigmoid includes those procedures that excise the tumor and some of the surrounding normal tissues without resecting the entire rectosigmoid including wedge or segmental resection and partial proctosigmoidectomy. Procedures assigned code 30 for rectosigmoid cancer include anterior resection, Hartmann’s procedure, and low anterior resection. If a segmental resection or partial proctosigmoidectomy is performed and contiguous organs such as the small bowel or bladder are also resected as part of the same procedure, assign code 31. Assign code 40 when the procedure performed for cancer of the rectosigmoid is described as pull through with sphincter preservation. This includes coloanal anastamosis. Code 50 is assigned for total proctectomy, removal of the entire rectum.
Surgical Procedure of Primary Site: Rectosigmoid

• Code 51: Total colectomy
• Code 55: Total colectomy with ileostomy, NOS
• Code 56: Ileorectal reconstruction
• Code 57: Total colectomy with other pouch

Code 51 is assigned for rectosigmoid cancer for total colectomy, removal of the colon from the cecum to the rectosigmoid. Assign code 55 when the procedure performed is a total colectomy with ileostomy, NOS. Ileostomy is the surgical creation of an opening into the ileum. When the specific type of opening created is not named, assigned code 55. If the procedure performed to the rectosigmoid is some type of reconstruction of the rectum and ileum, assign code 56. If total colectomy is performed with the creation of some other type of pouch such as Koch pouch, assign code 57.
Surgical Procedure of Primary Site: Rectosigmoid

• Code 60: Total proctocolectomy, NOS
• Code 65: Total proctocolectomy with ileostomy, NOS
• Code 66: Total proctocolectomy with ileostomy and pouch
• Code 70: Colectomy or proctocolectomy in continuity with other organs

Assign code 60 when total proctocolectomy is performed for rectosigmoid cancer. Total proctocolectomy is removal of the colon from the cecum to the rectosigmoid junction as well as the rectum. If proctocolectomy is performed with ileostomy, assign code 65. If proctocolectomy is performed with ileostomy and pouch, assign code 66. If a patient has a colectomy or proctocolectomy with resection of contiguous organs for rectosigmoid cancer, assign code 70.
Surgical Procedure of Primary Site: Rectum

- Code 30: Wedge or segmental resection, partial proctectomy
- Code 40: Pull through with sphincter preservation
- Code 50: Total proctectomy
- Code 60: Total proctocolectomy, NOS
- Code 70: Proctectomy or proctocolectomy with resection in continuity with other organs; pelvic exenteration

Code 30 for rectum includes those procedures that excise the tumor and some of the surrounding normal tissues of the rectum without resecting the entire rectum. Procedures assigned code 30 for rectal cancer include anterior resection, Hartmann’s procedure, and low anterior resection, and transsacral rectosigmoidectomy. Assign code 40 for cancer of the rectum when the procedure performed is described as pull through with sphincter preservation including coloanal anastamosis. Code 50 is assigned for total proctectomy, removal of the entire rectum. Code 60 is assigned for total proctocolectomy, removal of the colon from the cecum to the rectosigmoid including the entire rectum. Assign code 70 if proctectomy or proctocolectomy is performed with resection of contiguous organs. Code 70 includes pelvic exenteration, which is removal of the organs and adjacent structures of the pelvis.
Surgical Procedure Primary Site: Colon, Rectosigmoid, Rectum

- Code 80: Colectomy, NOS; Proctectomy, NOS
- Code 90: Surgery, NOS
- Code 99: Unknown

For colon, rectosigmoid, or rectum, assign code 80 if colectomy or proctectomy was performed, but the procedure is not described in codes 30 through 70. If another procedure is performed to the colon, rectosigmoid, or rectum and it is not described in any of the other codes for the data item, surgical procedure of primary site, assign code 90. Code 99 is assigned when it is unknown if surgery to the primary site was performed.
Resection of the primary tumor and regional lymph nodes is standard treatment for colon and rectal cancer. Any lymph node surgery that is part of first course treatment is recorded in this data item. For colon and rectum, regional lymph node dissection is performed at the same time that the colon or rectum resection is performed.
The codes for scope of regional lymph node surgery are shown on this slide. The codes are the same for all sites and are hierarchical. If more than one procedure is performed as part of first course treatment, code the procedure with the highest code. If a patient with adenocarcinoma of the sigmoid colon had a sigmoidectomy and resection of six colic lymph nodes, the lymph node resection would be assigned code 5 for the data item, scope of regional lymph node surgery.
Surgical Procedure/Other Site

• Record removal of distant lymph nodes or other tissues beyond the primary site
  – Surgical removal of liver metastasis for colon and rectum

• Do not record removal of tissues removed en bloc with the primary site

• Do not record incidental removal of tissue
  – Appendectomy with colon cancer surgery

The removal of distant lymph nodes or other tissues that are not part of the primary site is recorded in the data item, surgical procedure/other site. For colon or rectum, the most common procedure recorded here would be surgical removal or ablation of liver metastasis. If other tissues were removed “en bloc” with the primary, that removal is coded in the surgical procedure of primary site. The incidental removal of a tissue or organ is not recorded in this data item. An appendectomy performed at the same time as a hemicolecction for colon cancer, would be considered incidental and not coded here.
The codes for surgical procedure/other site are shown on this slide. The codes are the same for all sites and are hierarchical. If more than one procedure is performed as part of first course treatment, code the procedure with the highest code. The surgical ablation of liver metastasis for a patient with rectal cancer would be assigned code 4, nonprimary surgical procedure to distant site.
Radiation Therapy
Colon and Rectum

- Radiation therapy is not standard treatment for colon cancer
- Radiation therapy is used with surgery to treat rectal cancer
  - Pre-operative treatment to shrink tumor prior to surgery
  - Post-operative treatment to prevent metastasis and recurrence

Radiation is not standard treatment for colon cancer; however, radiation does play a major role in the treatment of rectal cancer. It may be given pre-operatively to shrink the tumor prior to surgery, or post-operatively to prevent metastasis and recurrence. The treatment modality for radiation therapy for rectal cancer is most often external beam radiation. The NPCR required radiation treatment data item is regional treatment modality.
Chemotherapy for Colon and Rectum

• Single-agent chemotherapy
  – 5-FU, Vincristine, Irinotecan, Oxaliplatin, Capecitabine, Bevacizumab, and Cetuximab

• Multiagent chemotherapy
  – FOLFIRI: folic acid (ancillary drug), 5-FU (chemo), Irinotecan (chemo)
  – FOLFOX: Oxaliplatin (chemo), 5-FU (chemo), Leucovorin (ancillary drug)
  – 5-FU and Vincristine

Chemotherapy may be given to patients diagnosed at a higher stage as adjuvant therapy post-operatively. Chemotherapy drugs given to treat colon and rectal cancer include 5-FU (AKA Fluorouracil, Floxuridine), Vincristine, Irinotecan, Oxaliplatin, Capecitabine, Bevacizumab, and Cetuximab. Most chemotherapy agents are given intravenously, but Capecitabine is taken orally. Multi-agent regimens include FOLFIRI [folic acid (ancillary drug), 5-FU (chemo), Irinotecan (chemo)], FOLFOX [Oxaliplatin (chemo), 5-FU (chemo), Leucovorin (ancillary drug)], 5-FU and Vincristine. Read the health record carefully to determine if chemotherapy was first course or subsequent therapy. Only code first course therapy in this data item. Ancillary drugs such as Leucovorin and folic acid are not coded as treatment. However, some immunotherapy drugs are given with chemotherapy. If Levamisole or Interferon are given with 5-FU, they are coded as immunotherapy.
Immunotherapy for Colon and Rectum

• Immunotherapy alters body’s immune system to destroy cancer cells
  – Levamisole
  – Interferon
  – Both may be given in conjunction with 5-FU chemotherapy

• Make sure immunotherapy is first course treatment

Immunotherapy is biological or chemical agents that alter the body’s immune system to destroy cancer cells. Immunotherapy is sometimes used to treat late stage colon and rectal cancer, but review the health record carefully to make sure that it is first course and not subsequent treatment. Levamisole and Interferon are both immunotherapy and may be given in conjunction with 5-FU chemotherapy treatment. The SEER*Rx database is an important resource to use when trying to determine what type of treatment a drug is. The database can be downloaded from the SEER Web site and is updated every six months.