

NEOPLASMS OF THE COLON AND RECTUM

2014/2015 FCDS Educational Webcast Series



February 19, 2015
Steven Peace, CTR



2015 Update; Background, Anatomy, Risk Factors,
Screening Guidelines, MPH Rules Review
AJCC TNM 7thed, SS2000, CSv02.05 and SSFs
Plus...NCCN 2015 Tx Guidelines

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Presentation Outline

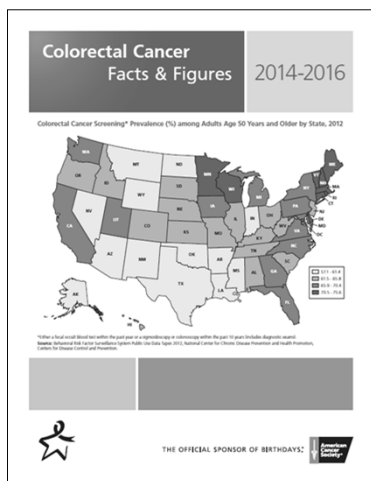
- Overview - Incidence/Mortality/Survival
- Risk Factors - Signs and Symptoms
- Anatomy of the Colon and Rectum
- Colorectal Cancer Screening
- Multiple Primary Rules
- Histology Coding Rules
- Molecular and Genetic Tumor Markers
- Staging - SS2000, AJCC TNM, CSv02.05
- NCCN Treatment Guidelines



<http://safetyca.info>

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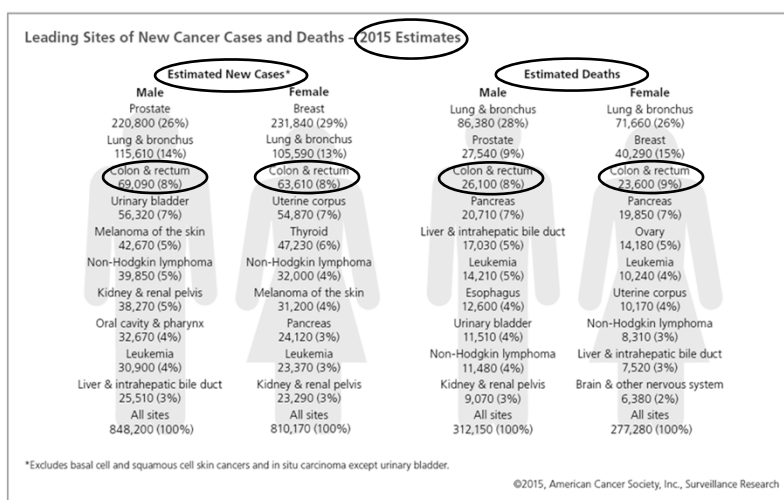
Overview



- 1 out of every 20 persons in the U.S. will develop colon or rectal cancer in their lifetime.
- Colorectal cancer is the #3 cause of cancer deaths in the U.S.
- Colorectal cancer often begins as a benign growth; a polyp.
- Adenomas are a type of polyp and are benign tumors of the tissue lining the colon or rectum.
- Most adenomas are benign.
- However, some adenomas have the potential to develop into cancer over the long term.
- When removed early, polyps are prevented from developing into malignant cancer.

American Cancer Society – Colorectal Cancer Facts & Figures 2014-2016

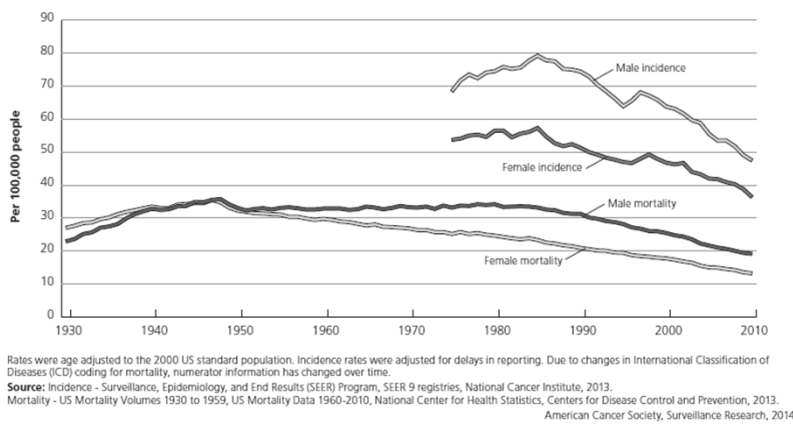
Overview



American Cancer Society – Cancer Facts & Figures 2015

Incidence and Mortality

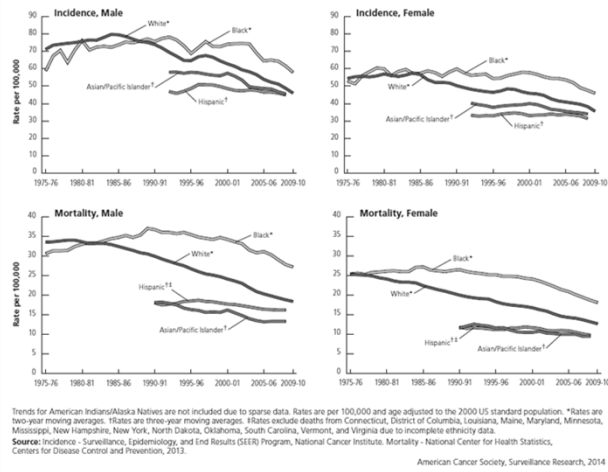
Figure 4. Trends in Colorectal Cancer Incidence and Death Rates by Sex, US, 1930-2010



American Cancer Society – Colorectal Cancer Facts & Figures 2014-2016

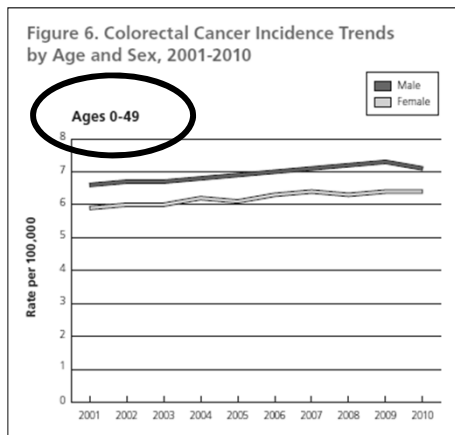
Incidence and Mortality

Figure 5. Trends in Colorectal Cancer Incidence and Mortality Rates by Race/Ethnicity and Sex, 1975-2010



American Cancer Society – Colorectal Cancer Facts & Figures 2014-2016

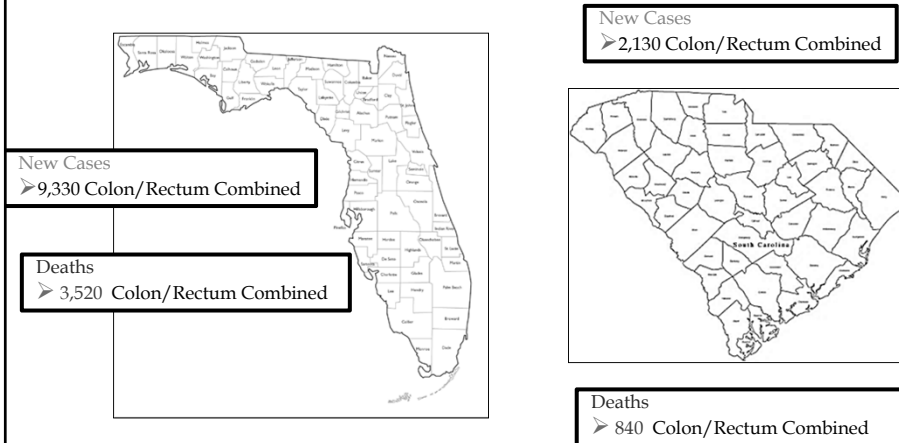
Incidence and Mortality



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Incidence and Mortality

2015 New Cases and Deaths



American Cancer Society – Cancer Facts & Figures 2015

Trends in Five-year Relative Cancer Survival Rates (%), 1975-2010

Site	1975-1977	1987-1989	2004-2010
All sites	49	55	68
Breast (female)	75	84	91
Colon	51	60	65
Leukemia	34	43	60
Lung & bronchus	12	13	18
Melanoma of the skin	82	88	93
Non-Hodgkin lymphoma	47	51	71
Ovary	36	38	45
Pancreas	3	4	7
Prostate	68	83	100*
Rectum	48	58	68
Urinary bladder	72	79	79

5-year relative survival rates based on patients diagnosed in the SEER 9 areas from 1975-1977, 1987-1989, and 2004-2010, all followed through 2011.
 *99.6%
 Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2014.

Survival

Five-year Relative Survival Rates* (%) by Stage at Diagnosis, 2002-2008

	All Stages	Local	Regional	Distant		All Stages	Local	Regional	Distant
Breast (female)	89	98	84	24	Ovary	44	92	72	27
Colon & rectum	64	90	70	12	Pancreas	6	23	9	2
Esophagus	17	38	20	3	Prostate	99	100	100	28
Kidney†	71	91	64	12	Stomach	27	62	28	4
Larynx	61	76	42	35	Testis	95	99	96	73
Liver‡	15	28	10	3	Thyroid	98	100	97	54
Lung & bronchus	16	52	25	4	Urinary bladder§	78	70	33	6
Melanoma of the skin	91	98	62	15	Uterine cervix	68	91	57	16
Oral cavity & pharynx	62	82	57	35	Uterine corpus	82	95	67	16

*Rates are adjusted for normal life expectancy and are based on cases diagnosed in the SEER 18 areas from 2002-2008, followed through 2009.
 †Includes renal pelvis. ‡Includes intrahepatic bile duct. §Rate for in situ cases is 96%.

Local: an invasive malignant cancer confined entirely to the organ of origin. **Regional:** a malignant cancer that 1) has extended beyond the limits of the organ of origin directly into surrounding organs or tissues; 2) involves regional lymph nodes by way of lymphatic system; or 3) has both regional extension and involvement of regional lymph nodes. **Distant:** a malignant cancer that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis to distant organs, tissues, or via the lymphatic system to distant lymph nodes.

Source: Howlader N, Noone AM, Krapcho M, et al. (eds). SEER Cancer Statistics Review, 1975-2009, National Cancer Institute, Bethesda, MD, www.seer.cancer.gov/csr/1975_2009/, 2012.

American Cancer Society, Surveillance Research 2013

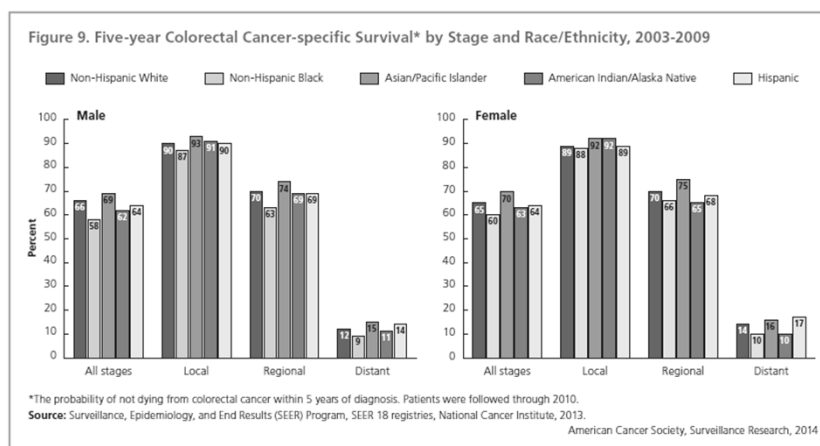
Survival by AJCC Stage

AJCC TNM Stage	5-year Relative Survival Rate
I	92%
IIA	87%
IIB	63%*
IIIA	89%*
IIIB	69%
IIIC	53%
IV	11%

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Survival



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Risk Factors



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Risk Factors

- Family History
- Personal History
- Physical Inactivity
- Overweight
- Obesity
- Diet
- Alcohol
- Smoking
- Type 2 Diabetes

Table 2. Summary of Selected Risk Factors for Colorectal Cancer

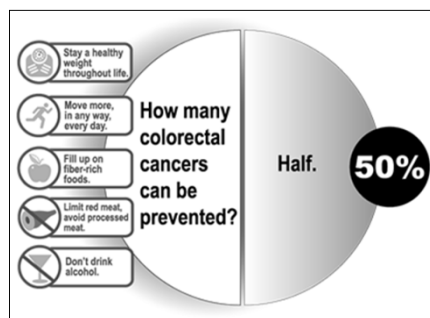
	Relative Risk*
Factors that increase risk:	
Hereditary and Medical History	
Family history	
1 first-degree relative ⁴¹	2.2
more than 1 relative ⁴³	4.0
relative with diagnosis before age 45 ⁴⁴	3.9
Inflammatory bowel disease ⁴²	
Crohn disease (colon)	2.6
Ulcerative colitis	
colon	2.8
rectum	1.9
Diabetes ⁴⁵	1.2
Behavioral factors⁴⁶	
Alcohol consumption (heavy vs. nondrinkers)	1.6
Obesity	1.2
Red meat consumption	1.2
Processed meat consumption	1.2
Smoking (current vs. never)	1.2
Factors that decrease risk:	
Physical activity (colon) ⁴⁷	0.7
Dairy consumption ⁴⁸	0.8
Fruit consumption ⁴⁹	0.9
Vegetable consumption ⁵⁰	0.9
Total dietary fiber (10 g/day) ⁵¹	0.9

*Relative risk compares the risk of disease among people with a particular "exposure" to the risk among people without that exposure. Relative risk for dietary factors compares the highest with the lowest consumption. If the relative risk is more than 1.0, then risk is higher among exposed than unexposed persons. Relative risks less than 1.0 indicate a protective effect.

⁵Several recent, small studies indicate that current risk may be lower due to improvements in treatment and the use of colonoscopy screening to detect precancerous lesions.

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Prevention



- Current Recommendations for the Prevention of Colorectal Cancer**
1. Get screened regularly.
 2. Maintain a healthy weight throughout life.
 3. Adopt a physically active lifestyle.
 4. Consume a healthy diet with an emphasis on plant sources; specifically:
 - Choose foods and beverages in amounts that help achieve and maintain a healthy weight.
 - Eat 5 or more servings of a variety of vegetables and fruits each day.
 - Choose whole grains in preference to processed (refined) grains.
 - Limit your consumption of processed and red meats.
 5. If you drink alcoholic beverages, limit consumption.

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Prevention



Source: <http://positivechoices.com>

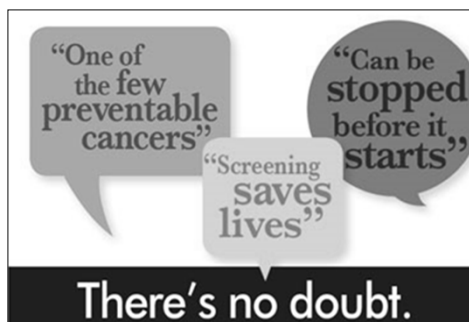
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Signs and Symptoms



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Screening



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Colorectal Cancer Screening Guidelines*

Beginning at age 50, men and women should follow one of the following examination schedules:

Test	Time interval
Fecal occult blood test	Annual
Flexible sigmoidoscopy	5 yrs
Double contrast barium enema	5 yrs
Colonoscopy	10 yrs
CT Colonography	5 yrs

*For people at average risk; individuals at higher risk should talk with a doctor about a different testing schedule.

Recommendation Details

Structural Exams			
Flexible Sigmoidoscopy <ul style="list-style-type: none"> Fairly quick Few complications Minimal bowel preparation Does not require sedation or a specialist 	Performance: High for rectum & lower one-third of the colon Complexity: Intermediate	<ul style="list-style-type: none"> Views only one-third of colon Cannot remove large polyps Small risk of infection or bowel tear Slightly more effective when combined with annual fecal occult blood testing Colonoscopy still needed if abnormalities are detected Limited availability 	5 years
Colonoscopy <ul style="list-style-type: none"> Examines entire colon Can biopsy and remove polyps Can diagnose other diseases Required for abnormal results from all other tests 	Performance: Highest Complexity: Highest	<ul style="list-style-type: none"> Full bowel preparation needed Can be expensive Sedation of some kind usually needed, necessitating a chaperone to return home Patient may miss a day of work Highest risk of bowel tears or infections compared with other tests 	10 years
Double-contrast Barium Enema <ul style="list-style-type: none"> Can usually view entire colon Few complications No sedation needed 	Performance: High (for large polyps) Complexity: High	<ul style="list-style-type: none"> Full bowel preparation needed Some false positive test results Cannot remove polyps or perform biopsies Exposure to low-dose radiation Colonoscopy necessary if abnormalities are detected Very limited availability 	5 years
Computed Tomographic Colonography <ul style="list-style-type: none"> Examines entire colon Fairly quick Few complications No sedation needed Noninvasive 	Performance: High (for large polyps) Complexity: Intermediate	<ul style="list-style-type: none"> Full bowel preparation needed Cannot remove polyps or perform biopsies Exposure to low-dose radiation Colonoscopy necessary if abnormalities are detected Not covered by all insurance plans 	5 years

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Recommendation Details

Stool Tests (Low-sensitivity stool tests, such as single-sample FOBT done in the doctor's office or toilet bowl tests, are not recommended)			
High-Sensitivity Gualac-based Fecal Occult Blood Test (FOBT)			
<ul style="list-style-type: none"> No bowel preparation Sampling is done at home Low cost Noninvasive 	Performance: Intermediate for cancer Complexity: Low	<ul style="list-style-type: none"> Requires multiple stool samples Will miss most polyps May produce false-positive test results Pre-test dietary limitations Slightly more effective when combined with a flexible sigmoidoscopy every five years Colonoscopy necessary if abnormalities are detected 	Annual
Fecal Immunochemical Test (FIT)			
<ul style="list-style-type: none"> No bowel preparation Sampling is done at home Low cost Noninvasive 	Performance: Intermediate for cancer Complexity: Low	<ul style="list-style-type: none"> Requires multiple stool samples Will miss most polyps May produce false-positive test results Slightly more effective when combined with a flexible sigmoidoscopy every five years Colonoscopy necessary if abnormalities are detected 	Annual
Stool DNA Test			
<ul style="list-style-type: none"> No bowel preparation Sampling is done at home Requires only a single stool sample Noninvasive 	Performance: Intermediate for cancer Complexity: Low	<ul style="list-style-type: none"> Will miss most polyps High cost compared to other stool tests New technology with uncertain interval between testing Colonoscopy necessary if abnormalities are detected 	Uncertain
*Complexity involves patient preparation, inconvenience, facilities and equipment needed, and patient discomfort.			

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Screening High Risk Populations

- Individuals at High Risk Include:
 - Family History – 1st degree relative
 - Family History – more than 1 relative
 - Family History – relative with dx < age 60
 - Personal History – Colon Cancer
 - Personal History – Colon Polyp(s)
 - Personal History – Inflammatory Bowel Disease/Syndrome
 - Crohn's Disease/Ulcerative Colitis
 - Personal History – Diabetes
 - High Risk Hereditary Syndromes
- Screening should begin before age 50
- Colonoscopy is recommended screening method
- Discuss your personal risk and routine screening schedule with your personal healthcare provider

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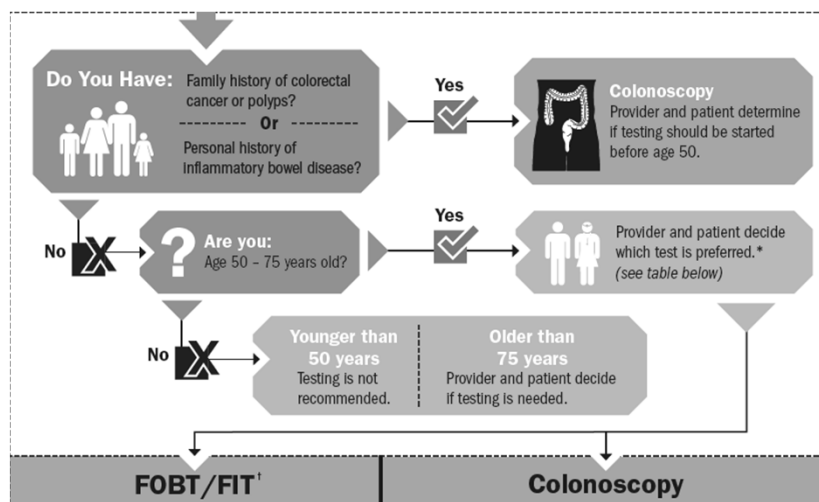
Hereditry and Colon Cancer

ESTIMATED RISK FOR COLON CANCER BY SYNDROME		
Syndrome	Gene(s)	Risk
FAP (familial adenomatous polyposis)	APC	90% by age 45
Attenuated FAP	APC	69% by age 80
Lynch (HNPCC)	MLH1, MSH2, MSH6 PMS2, EPCAM	40% to 80% by age 75
MUTYH-associated polyposis	MUTYH	35% to 53%
Peutz-Jeghers	STK11	39% by age 70
Juvenile polyposis	BMPRIA, SMAD4	17% to 68% by age 60

<http://www.ambrygen.com>

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Choosing the Right Test



SOURCE: Vital Signs 2013 and USPSTF
<http://www.uspreventiveservicestaskforce.org/uspstf/uspsc0lo.htm>

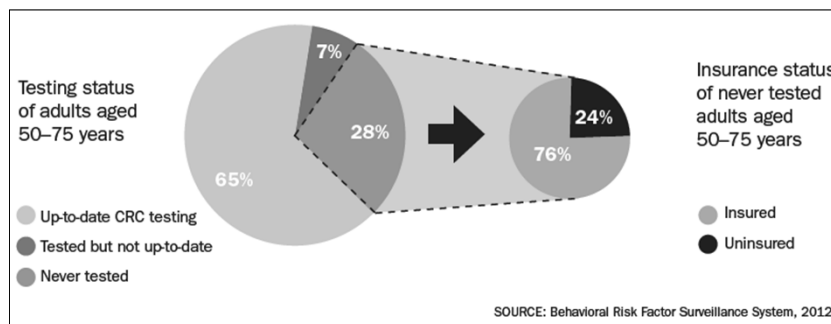
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Choosing the Right Test

FOBT/FIT [†]	Colonoscopy
<p>Key facts</p> <ul style="list-style-type: none"> Reduces death from colorectal cancer Safe, available, and easy to complete Done on your own at home and returned Finds cancer early by finding blood in the stool Finds most cancers early when done every year 	<p>Key facts</p> <ul style="list-style-type: none"> Reduces death from colorectal cancer Can prevent cancer by removing polyps (or abnormal growths in the colon) during test Examines entire colon Finds most cancers or polyps that are present at the time of the test Done every 10 years if no polyps are found
<p>Things to consider</p> <ul style="list-style-type: none"> May produce positive test results, even when no polyps or cancer are in the colon When the test is positive colonoscopy is required Person testing themselves comes into brief close contact with stool samples on a test kit 	<p>Things to consider</p> <ul style="list-style-type: none"> Stomach pain, gas or bloating is possible before, during or after test Must be performed at a hospital or clinic, usually with sedation or anesthesia, and someone must go with the person to take him or her home after the test A clear liquid diet is required before test Must take medication that will cause loose bowel movements to clean out the colon prior to test Likely needs to take a day off work/activities Small risk of serious complications (for example, bleeding or perforated colon)
<p>[†] Guaiac Fecal Occult Blood Test (FOBT) or Fecal Immunochemical Test (FIT)</p>	
<p><i>*Flexible sigmoidoscopy may not be readily available and has largely been replaced by colonoscopy in the US.</i></p>	

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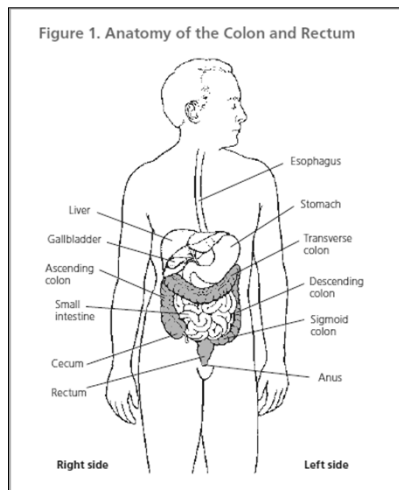
23 Million Adults Never Screened



SOURCE: Vital Signs 2013 and USPSTF
<http://www.uspreventiveservicestaskforce.org/uspstf/uspcolo.htm>

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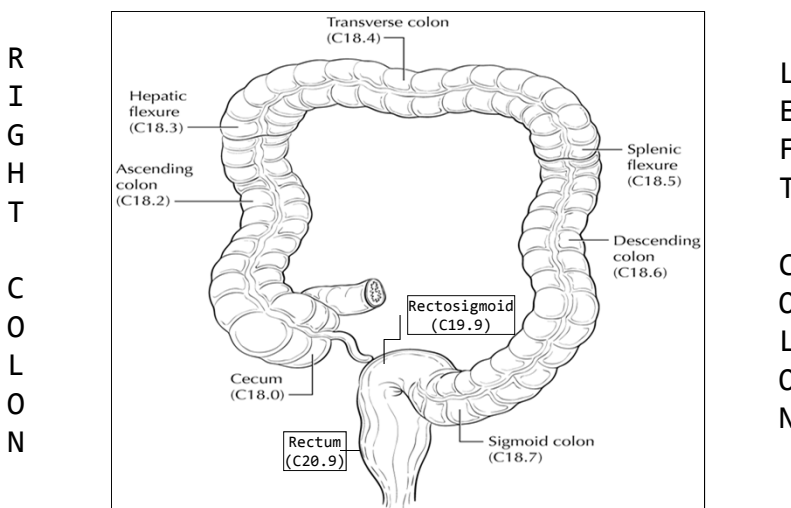
Anatomy



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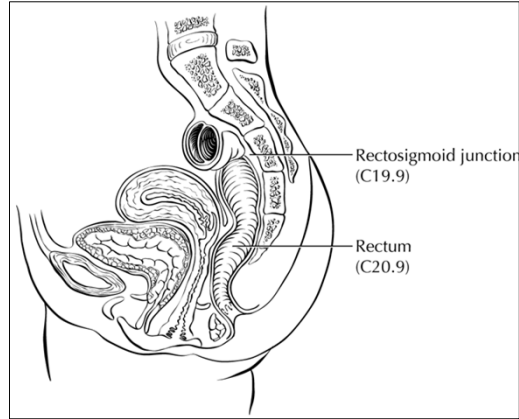
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Colon and Rectum



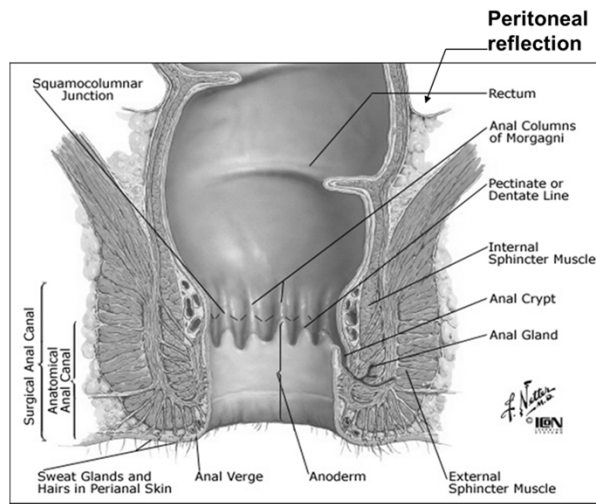
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Rectosigmoid and Rectum



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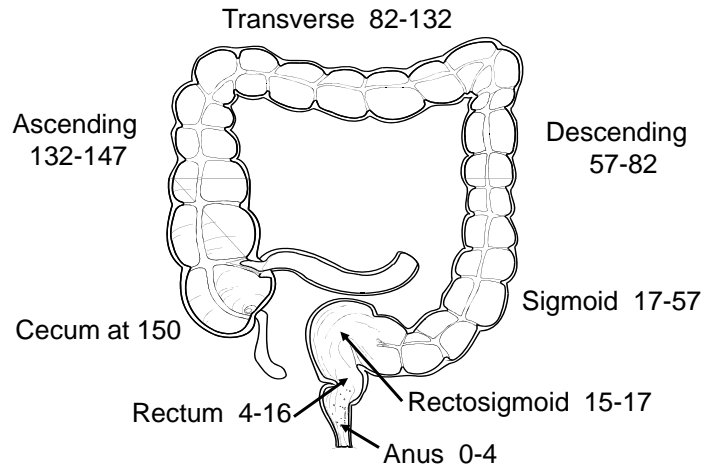
Rectum - Anorectum - Anus



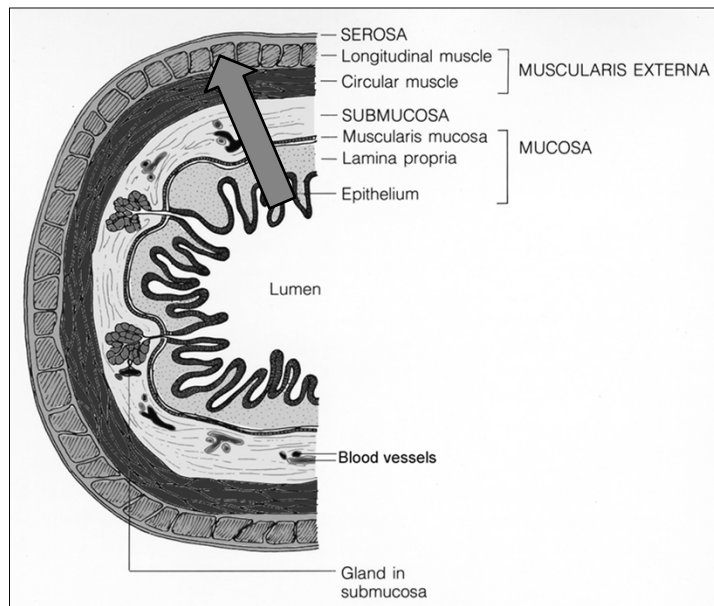
Source: www.analcancerinfo.ucsf.edu

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Colonoscopy Measurements



Distance from Anal Verge (approximations only)
Adapted from AJCC Cancer Staging Manual

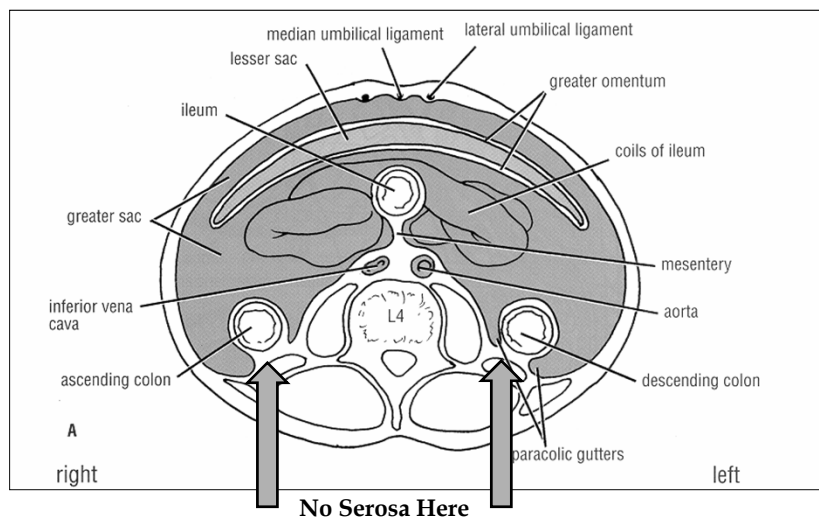


“Non-Peritonealized” Surface

- ❑ Some colon surfaces have no serosa at the exterior surface (around the hollow organ)
- ❑ The serosa acts as barrier for tumors that begin on inside surface of the colon and invade down into the mucosa and through the wall of the colon (the serosa).
- ❑ When there is no serosa – you lose a natural barrier that helps contain the colon cancer
- ❑ Non-Peritonealized Surfaces in Colon-Rectum:
 - Rectum – no serosa in rectum below peritoneal reflection
 - Descending Colon – no serosa covering posterior surfaces
 - Ascending Colon – no serosa covering posterior surfaces

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“Non-Peritonealized” Surface

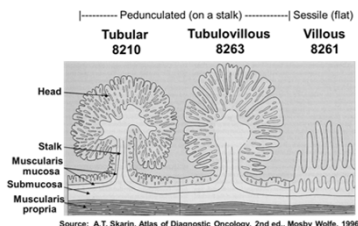


Source: *Clinical Anatomy for Medical Students, 5th Edition*, Richard S. Snell. Little, Brown and Company, 1995.

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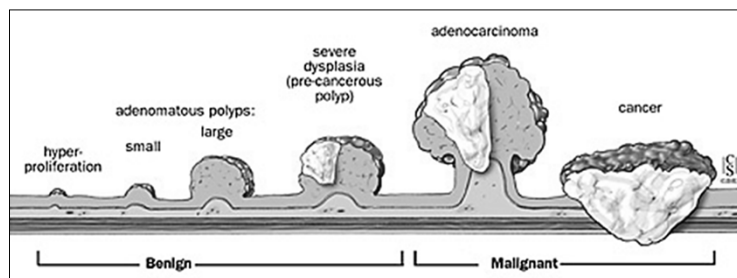
Polyps and Colon Cancer

- 95-98% of colon cancers - adenocarcinoma
 - Most originate in polyps or adenomas
 - But, only 10% of adenomas develop into cancers
- Types of adenoma
 - Tubular
 - Villous
 - Tubulo-villous
- Process takes up to 10 years
- De Novo Cancers – mucinous, signet ring
 - >10% of all colon ca are mucinous (>50% mucin production)
 - <1% of all colon ca are signet ring cell (>50% signet rings)



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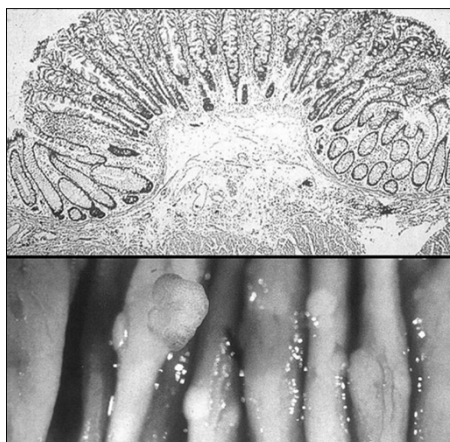
Polyps and Colon Cancer



<http://hopkinscoloncancercenter.org>

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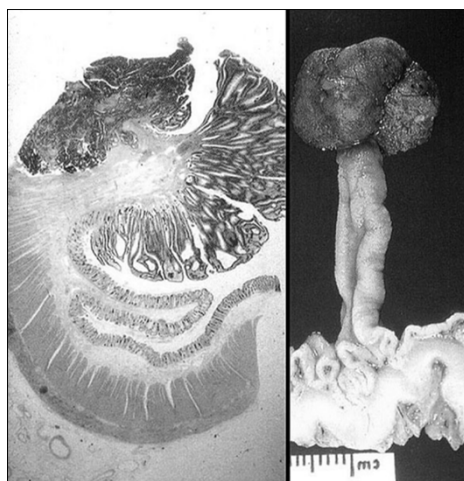
Polyps and Colon Cancer



<http://www.pathology.pitt.edu/lectures/gi/colon-a/14.htm>

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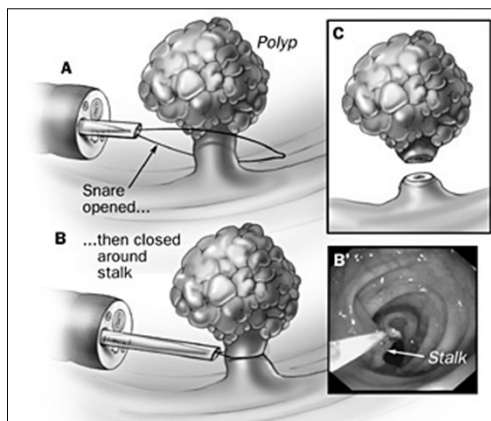
Polyps and Colon Cancer



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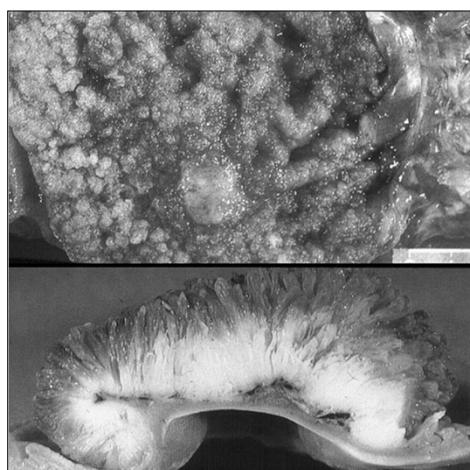
Polyps and Colon Cancer



<http://hopkinscoloncancercenter.org>

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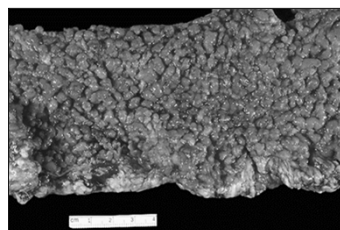
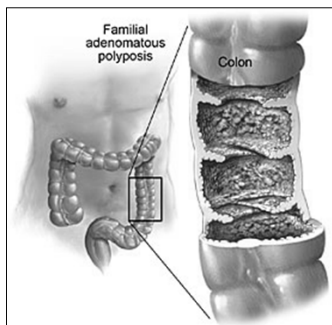
Polyps and Colon Cancer



<http://www.pathology.pitt.edu/lectures/gi/colon-a/17.htm>

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Polyps and Colon Cancer

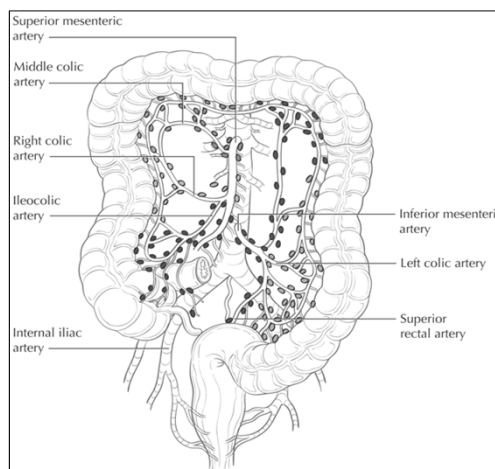


<http://www.mayoclinic.org/images>

<http://www.mlibrary.med.utah.edu>

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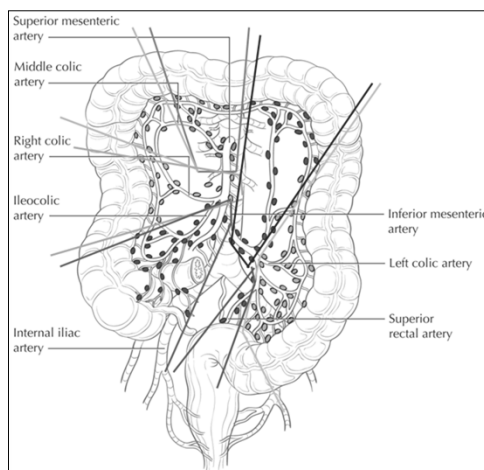
Lymphatics of Colon / Rectum



AJCC Image - The regional lymph nodes of the colon and rectum are colored by anatomic location.

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Lymphatics of Colon / Rectum



Modified AJCC Image - The regional lymph nodes of the colon and rectum are colored by anatomic location.

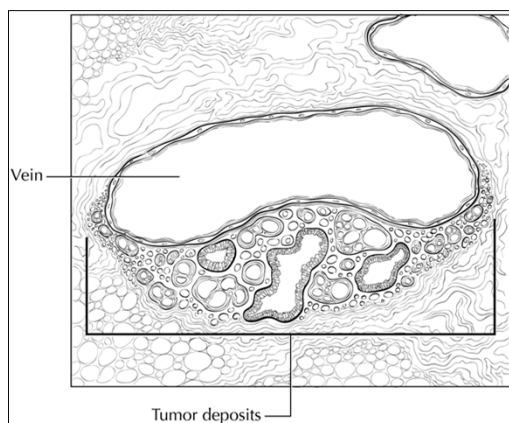
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“Tumor Deposits”

- ▣ Definition
 - Separate tumor nodules or tumor deposits of malignant cells in perirectal or pericolic fat with no evidence of lymph node tissue
- ▣ Found in primary lymphatic drainage area
- ▣ Other names
 - Peri-tumoral deposits, satellite nodules, discontinuous extramural extension, or malignant tumor foci
- ▣ N1c = Specific TNM “N” Code for tumor nodule or deposit(s) in the subserosa, mesentery, or non-peritonealized pericolic or perirectal tissues without regional nodal metastasis.

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“Tumor Deposits”



Discrete foci of tumor found in the pericolic or perirectal fat or in adjacent mesentery (mesocolic fat) away from the leading edge of the tumor and showing no evidence of residual lymph node tissue but within the lymph drainage area of the primary carcinoma are considered to be peritumoral deposits or satellite nodules, and their number should be recorded in the site-specific Prognostic Markers on the staging form as Tumor Deposits .

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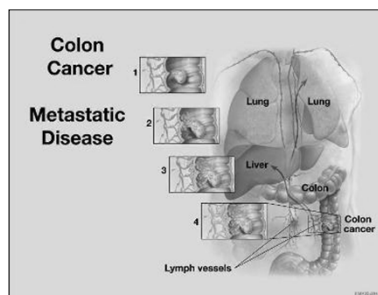
“Tumor Deposits”

- Mesenteric
- Pericolonic
- Perirectal
- Subserosa
- All Regional Lymph Nodes Negative
- Deposits + LNs
- N1c = Tumor deposit(s) in the subserosa, mesentery, or nonperitonealized pericolic or perirectal tissues without regional nodal metastasis.

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Metastatic Sites

- Lung
- Liver
- Lymph Nodes
- Seeding in peritoneum
- Seeding of small intestine
- Seeding of other segments of colon



www.colorectal-surgeon.com

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MPH RULES TERMS AND DEFINITIONS



- 2017 MPH Rules Update
- New MPH Database
- Text Only Rules
- Stay Tuned

Colon Equivalent Terms, Definitions and Illustrations C180-C189 (Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)	
<p>Introduction <i>Note 1:</i> Rectum and rectosigmoid are covered by The Other Sites rules. <i>Note 2:</i> For the purpose of these rules, the words "exophytic" and "polypoid" are not synonymous with a polyp.</p> <p>Use these rules only for cases with primary colon cancer.</p> <p>Ninety-eight percent of colon cancers are adenocarcinoma. Ten to fifteen percent of these cases produce enough mucin to be categorized as mucinous/colloid.* Mixed histologies and specific types other than mucinous/colloid or signet ring cell are rare.</p> <p>*ACS Clinical Oncology</p> <p>Equivalent or Equal Terms <i>Note:</i> For the purpose of these rules, the words "exophytic" and "polypoid" are not synonymous with a polyp.</p> <ul style="list-style-type: none"> • Familial polyposis, familial adenomatous polyposis, (FAP) • Intramucosal, lateral extension • Invasion through colon wall, extension through colon wall, transmural • Low grade neuroendocrine carcinoma, carcinoid • Most invasive, most extensive • Mucin producing, mucin secreting • Mucinous, colloid • Polyp, adenoma • Serosa, visceral peritoneum • Tumor, mass, lesion, neoplasm • Type, subtype, predominantly, with features of, major, or with ____ differentiation. <p>Definitions</p> <p>Adenocarcinoid (8245/3): A specific histology commonly found in the appendix.</p> <p>Adenocarcinoma with mixed subtypes (8255): Rarely used for colon primaries (see introduction).</p> <p>Adenocarcinoma, intestinal type (8144) is a form of stomach cancer. Do not use this code when the tumor arises in the colon.</p> <p>Adenoma: A benign lesion composed of tubular or villous structures showing intraepithelial neoplasia (See definition of intraepithelial neoplasia).</p>	<p style="text-align: right;">49</p>
<p>Colon Terms and Definitions</p> <p style="text-align: right;">Revised November 1, 2007</p>	29

Colon Equivalent Terms, Definitions and Illustrations C180-C189 (Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)	
<p style="text-align: right;">30</p> <p>Composite carcinoid (8244): One tumor which contains both carcinoid and adenocarcinoma.</p> <p>Familial polyposis, familial adenomatous polyposis (FAP), adenocarcinoma in: a condition characterized by the development of many adenomatous polyps, often seen in several members of the same family.</p> <p>Frank adenocarcinoma: Adenocarcinoma arising from the colon wall (no evidence of a polyp)</p> <p>In Situ: Noninvasive; intraepithelial, (adeno)carcinoma in a polyp or adenoma, noninvasive.</p> <p>Intestinal type adenocarcinoma (8144) is a gastric histology term and is not listed in the WHO Histological Classification of Tumors of the Colon and Rectum.</p> <p>Intraepithelial neoplasia, high grade may be either severe dysplasia or carcinoma in situ. Report cases of carcinoma in situ only.</p> <p>Intraepithelial neoplasia, low grade is not a reportable condition. A person with intraepithelial neoplasia is at risk for developing invasive cancer.</p> <p>Intramucosal tumors may be noninvasive or invasive. The term intramucosal may refer to the surface epithelium, the basement membrane, or the lamina propria.</p> <p>Invasive tumor: A tumor that penetrates the basement membrane and invades the lamina propria.</p> <p>Most invasive: The tumor with the greatest continuous extension through the wall of the colon. The layers of the colon wall in order of least to greatest extension:</p> <ul style="list-style-type: none"> • Mucosa (surface epithelium, lamina propria, basement membrane) • Submucosa • Muscularis propria • Subserosa (pericolic fat, subserosal fat) • Retroperitoneal fat (pericolic fat) • Mesenteric fat (pericolic fat) • Serosa (visceral peritoneum). 	<p style="text-align: right;">50</p>
<p>Colon Terms and Definitions</p> <p style="text-align: right;">January 1, 2007</p>	

MPH RULES

MULTIPLE PRIMARY RULES



- 2017 MPH Rules Update
- New MPH Database
- Text Only Rules
- Stay Tuned

Multiple Primary Rules

Unknown Number

- M1. Unknown whether single or multiple tumors = single

One Tumor

- M2. Single tumor = single

Multiple Tumors

- M3. Adenoca in adenomatous polyposis coli in one or multiple segments = single

Source: AFritz and Associates, LLC

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Multiple Primary Rules

Multiple Tumors, continued

- M4. Different topography = multiple
- M5. Diagnosis dates > 1 year apart = multiple
- M6. Invasive after in situ > 60 days = multiple
- M7. Frank adenocarcinoma and malignant tumor in a polyp = single
- M8. Non-specific and specific histology = single
- M9. Multiple polyps (all malignant) = single
- M10. Histology different = multiple
- M11. All other scenarios = single

Source: AFritz and Associates, LLC

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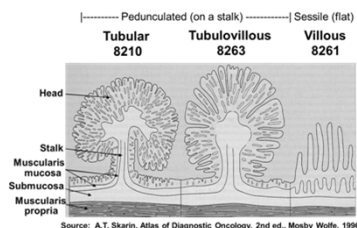
MPH RULES HISTOLOGY CODING RULES



- 2017 MPH Rules Update
- New MPH Database
- Text Only Rules
- Stay Tuned

Histopathology Review

- ▣ 95-98% of colon cancers - adenocarcinoma
 - Most originate in polyps or adenomas
 - But, only 10% of adenomas develop into cancers
- ▣ Types of adenoma
 - Tubular
 - Villous
 - Tubulo-villous
- ▣ Process takes up to 10 years
- ▣ De Novo Cancers – mucinous, signet ring
 - >10% of all colon ca are mucinous (>50% mucin production)
 - <1% of all colon ca are signet ring cell (>50% signet rings)



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New Histologic Terms and Code

- ▣ Glandular intraepithelial neoplasia, high grade
- ▣ Glandular intraepithelial neoplasia, grade III
- ▣ Flat intraepithelial neoplasia, high grade
- ▣ 8148/2 – Use Code for GI Tract in 2016 (?)
- ▣ All low grade intraepithelial neoplasia = /0
- ▣ All grade I or grade II intraepithelial neoplasia = /0

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Mucinous and Signet Ring Cell

▣ Mucinous adenocarcinoma (8480)

Code when

- Final diagnosis is mucinous OR
- Documentation says > 50% mucinous
 - May use microscopic section of path report

▣ Signet ring cell carcinoma (8490)

Code when

- Final diagnosis is signet ring cell OR
- Documentation says > 50% signet ring cell
 - May use microscopic section of path report
- "...with signet ring cells" ≠ signet ring cell CA

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Colorectal NETs and GISTs

▣ **NET - Neuroendocrine Tumor**

- Carcinoid Tumor - 2015 ALL are reportable/malignant
- Neuroendocrine Carcinoma
- Mitotic Count Matters
- Serum Chromogranin A (CgA)
- Urinary 5-Hydroxyindoleacetic Acid (5-HIAA)

▣ **GIST - Gastrointestinal Stromal Tumor**

- Tumor Size Matters
- Mitotic Count Matters
- KIT (CD117) Mutation
- PDGFRA (CD140A) Mutation

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Histology Coding Rules

Single tumor

- ▣ H1. If no tissue, code physician's statement
- ▣ H2. If no primary tissue, code metastasis
- ▣ H3. Adenocarcinoma, NOS vs. intestinal type adenocarcinoma
- ▣ H4. 8210, 8261, or 8263 - carcinoma in a polyp
- ▣ H5. Mucinous or signet ring cell > 50% of tumor
- ▣ H6. Adenocarcinoma, NOS when mucinous or signet ring cell < 50% of tumor
- ▣ H7. 8255 combined mucinous and signet ring

Source: AFritz and Associates, LLC

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Histology Coding Rules

Single tumor, continued

- ▣ H8. 8240 carcinoid when combined neuroendocrine and carcinoid
- ▣ H9. 8244 composite carcinoid when combined adenoca and carcinoid
- ▣ H10. 8245 adenocarcinoid when diagnosis is exactly "adenocarcinoid"
- ▣ H11. Single histology
- ▣ H12. Invasive if both invasive and in situ
- ▣ H13. Most specific term
- ▣ H14. Higher code

Source: AFritz and Associates, LLC

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Histology Coding Rules

Multiple tumors abstracted as a single primary

- ▣ H15. If no tissue, code physician's statement
- ▣ H16. If no primary tissue, code metastasis
- ▣ H17. 8220 Familial polyposis
- ▣ H18. 8263 - carcinoma is tubulo-villous adenoma
- ▣ H19. 8221 when < 100 polyps
- ▣ H20. Most invasive tumor
- ▣ H21. 8210, 8261, or 8263 - carcinoma in a polyp
- ▣ H22. Single histology
- ▣ H23. Most specific term
- ▣ H24. Higher code

Source: AFritz and Associates, LLC

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Prognostic and
Predictive
Biochemical and
Molecular Tumor
Marker Testing,
Genetic Testing,
& Required SFs



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College of American Pathologists



Colon and Rectum • Biomarkers
ColonBiomarkers [1.0.0.0]

Template for Reporting Results of Biomarker Testing of Specimens From Patients With Carcinoma of the Colon and Rectum

For the Members of the Cancer Biomarkers Reporting Workgroup, College of American Pathologists

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The College does not permit reproduction of any substantial portion of these templates without its written authorization. The College hereby authorizes use of these templates by physicians and other health care providers in reporting results of biomarker testing on patient specimens, in teaching, and in carrying out medical research for non-profit purposes. This authorization does not extend to reproduction or other use of any substantial portion of these protocols for commercial purposes without the written consent of the College.

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CAP Biomarker Template – Colon and Rectum, Version 1.0.0.0 - DRAFT

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College of American Pathologists

Immunohistochemistry Testing (IHC) for Mismatch Repair Proteins (select all that apply) (Note A)

- MLH1
- Intact nuclear expression
 - Loss of nuclear expression
 - Cannot be determined (explain): _____
- MSH2
- Intact nuclear expression
 - Loss of nuclear expression
 - Cannot be determined (explain): _____
- MSH6
- Intact nuclear expression
 - Loss of nuclear expression
 - Cannot be determined (explain): _____
- PMS2
- Intact nuclear expression
 - Loss of nuclear expression
 - Cannot be determined (explain): _____
 - Background nonneoplastic tissue/internal control with intact nuclear expression

Microsatellite Instability (MSI) (Note A)

- MSI-Stable (MSS)
- MSI-Low (MSI-L)
- 1%-29% of the markers exhibit instability
 - 1 of the 5 NCI or mononucleotide markers exhibit instability
 - Other (specify): _____
- MSI-High (MSI-H)
- ≥30% of the markers exhibit instability
 - 2 or more of the 5 NCI or mononucleotide markers exhibit instability
 - Other (specify): _____
- MSI-Indeterminate

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Microsatellite Instability - MSI

- ▣ What is MSI?
 - Genetic Test using PCR (polymerase chain reaction) looking for DNA Repair errors and HNPCC features
- ▣ What does positive result indicate?
 - MSI predicts response to chemotherapy
 - MSI may indicate patient's overall prognosis
 - MSI-H (highly positive MSI Test) may be related to development of HNPCC or Lynch Syndrome
- ▣ Who should get tested?
 - Patient under age 50 with colon cancer
 - Patient under age 50 with rectal cancer
 - Patient with other HNPCC-associated tumors
 - Patient with family history of colon/rectal cancer

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Genetic Mutations in Colon Cancer

ESTIMATED RISK FOR COLON CANCER BY SYNDROME		
Syndrome	Gene(s)	Risk
FAP (familial adenomatous polyposis)	<i>APC</i>	90% by age 45
Attenuated FAP	<i>APC</i>	69% by age 80
Lynch (HNPCC)	<i>MLH1, MSH2, MSH6, PMS2, EPCAM</i>	40% to 80% by age 75
<i>MUTYH</i> -associated polyposis	<i>MUTYH</i>	35% to 53%
Peutz-Jeghers	<i>STK11</i>	39% by age 70
Juvenile polyposis	<i>BMPRIA, SMAD4</i>	17% to 68% by age 60

<http://www.ambrygen.com>

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KRAS Mutation

- ▣ What is KRAS wild-type?
- ▣ What is KRAS mutation?
- ▣ When is KRAS testing done?
- ▣ What does positive result mean?
- ▣ What about BRAF V600E Mutation?

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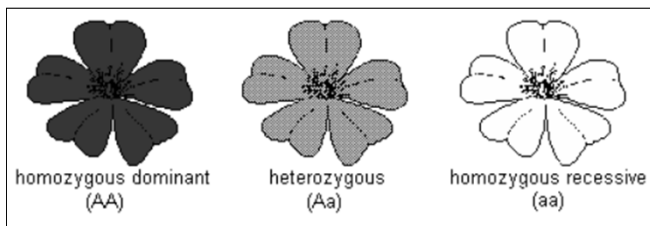
Other Genetic Mutation Tests

- ▣ APC Mutation
- ▣ PIK3CA Mutation
- ▣ PTEN Mutation
- ▣ TFAP2E - fluorouracil resistance

- ▣ Multi-parameter Gene Expression Testing
- ▣ Protein Expression Assay
- ▣ DNA Microarrays

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18q Loss of Heterozygosity



Cancer Staging

American Joint Committee on Cancer
Colon and Rectum Cancer Staging 7TH EDITION

Definitions

Primary Tumor (T)

- T0 Primary tumor cannot be assessed
- T1 Tumor invades lamina propria
- T2 Tumor invades submucosa
- T3 Tumor invades muscularis propria
- T4 Tumor invades through the muscularis propria and invades adjacent structures
- T4a Tumor invades through the muscularis propria and invades adjacent structures
- T4b Tumor invades through the muscularis propria and invades adjacent structures

Regional Lymph Nodes (N)

- N0 Regional lymph nodes are not assessed
- N1 Metastasis in 1-3 regional lymph nodes
- N2 Metastasis in 4-6 regional lymph nodes
- N3 Metastasis in 7 or more regional lymph nodes

Distant Metastasis (M)

- M0 No distant metastasis
- M1 Distant metastasis
- M1a Metastasis confined to one site of site
- M1b Metastasis in 2 or more sites of site
- M1c Metastasis in 3 or more sites of site

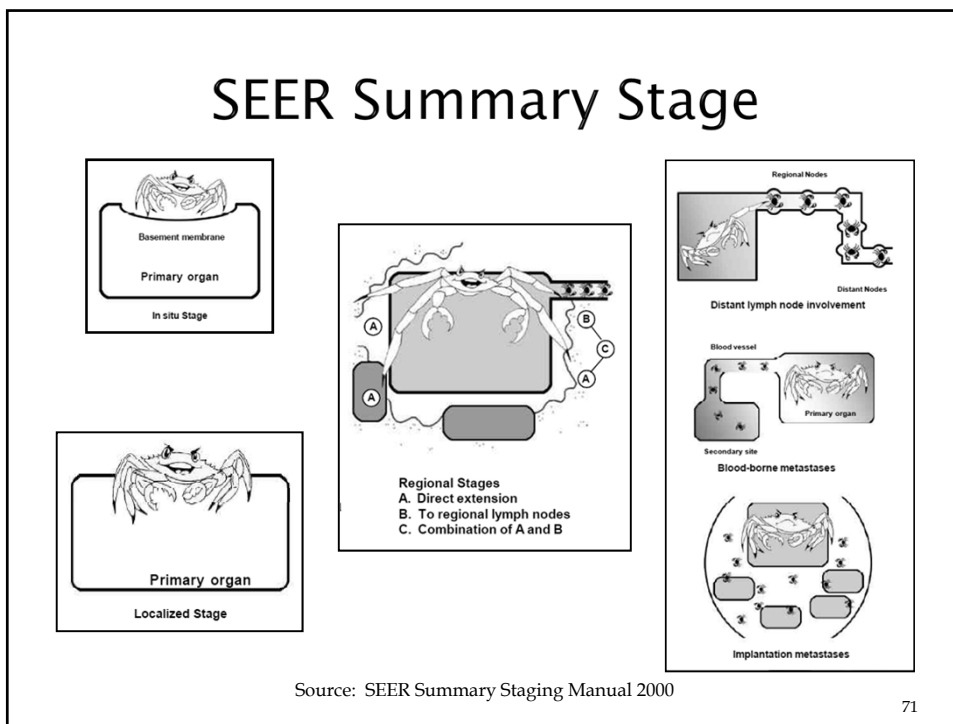
Staging

The American Joint Committee on Cancer (AJCC) Cancer Staging Manual provides a common language for cancer staging. It is used by healthcare providers to describe the extent of cancer and to help determine the best treatment options. The staging system is based on the TNM system, which stands for Tumor, Node, and Metastasis.

Stage	T	N	M
0	Tis	N0	M0
I	T1	N0	M0
II	T2	N0	M0
III	T3	N1	M0
IV	T4	N1	M1
V	T4	N2	M1
VI	T4	N3	M1
VII	T4	N3	M1
VIII	T4	N3	M1
IX	T4	N3	M1
X	T4	N3	M1
XI	T4	N3	M1
XII	T4	N3	M1
XIII	T4	N3	M1
XIV	T4	N3	M1
XV	T4	N3	M1
XVI	T4	N3	M1
XVII	T4	N3	M1
XVIII	T4	N3	M1
XIX	T4	N3	M1
XX	T4	N3	M1

AJCC
 American Joint Committee on Cancer
 Cancer Staging Manual, 7th Edition
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SEER Summary Stage

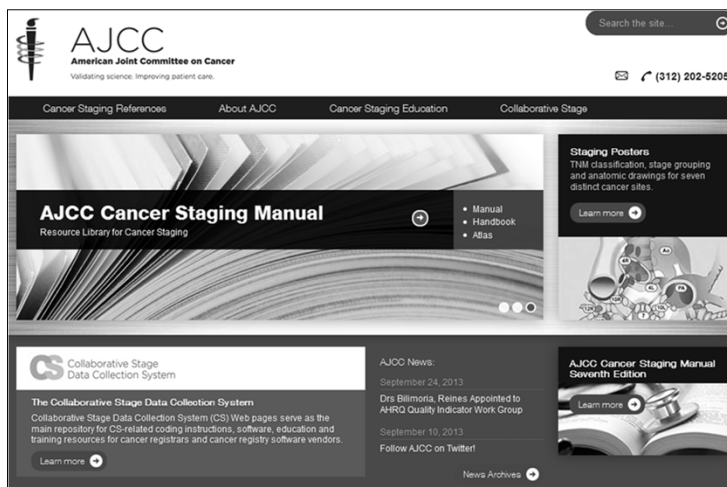


Source: SEER Summary Staging Manual 2000

SEER Summary Stage

	Regional by direct extension only	3 Regional lymph node(s) involved only	7 Distant site(s)/node(s) involved
<p>COLON</p> <p>C18.0-C18.9</p> <p>C18.0 Cecum</p> <p>C18.1 Appendix</p> <p>C18.2 Ascending (right) colon</p> <p>C18.3 Hepatic flexure of colon</p> <p>C18.4 Transverse colon</p> <p>C18.5 Splenic flexure of colon</p> <p>C18.6 Descending (left) colon</p> <p>C18.7 Sigmoid colon</p> <p>C18.8 Overlapping lesion of colon</p> <p>C18.9 Colon, NOS</p> <p>SUMMARY STAGE</p> <p>0 In situ: Invasive; intraepithelial (Adeno)carcinoma in situ</p> <p>Localized only</p> <p>Invasive tumor confined to:</p> <ul style="list-style-type: none"> Intramucosa, NOS Lamina propria Mucosa, NOS Muscularis mucosae Muscularis propria Perimuscular tissue into polyp, NOS Head of polyp Stalk of polyp Submucosa (superficial) Subserosal tissue (sub)transmural, NOS Wall, NOS <p>Confined to colon, NOS</p> <p>Extension through wall, NOS</p> <p>Invasion through muscularis</p> <p>Localized, NOS</p> <p>Note: Ignore intraluminal extension to adjacent</p>	<p>Extension to:</p> <p>All colon sites:</p> <p>Extension into through:</p> <ul style="list-style-type: none"> Abdominal wall^{***} Adjacent tissue(s), NOS Connective tissue Fat, NOS Greater omentum Mesenteric fat Mesentery Mesocolon Pericolic fat Retoperitoneum (excluding fat) Small intestine <p>Ascending colon:</p> <ul style="list-style-type: none"> Kidney, right^{***} Liver, right lobe Retropertoneal fat^{***} Ureter, right^{***} <p>Transverse colon and flexures:</p> <ul style="list-style-type: none"> Bile ducts^{***} Gallbladder^{***} Gastrocolic ligament Kidney Liver Pancreas Spleen Stomach^{***} <p>Descending colon:</p> <ul style="list-style-type: none"> Kidney, left^{***} Pelvic wall^{***} Retropertoneal fat^{***} Spleen Ureter, left <p>Sigmoid colon:</p> <ul style="list-style-type: none"> Pelvic wall^{***} 	<p>REGIONAL Lymph Nodes</p> <p>All colon sub-sites:</p> <ul style="list-style-type: none"> Cecic, NOS Epicolic (adjacent to bowel wall) Mesenteric, NOS Paracolic/pericolic <p>Nodule(s) in pericolic fat</p> <p>Cecum and Appendix:</p> <ul style="list-style-type: none"> Cecal, NOS Anterior (prececal) Ileocolic Right colic <p>Ascending colon:</p> <ul style="list-style-type: none"> Ileocolic Middle colic Right colic <p>Transverse colon and flexures:</p> <ul style="list-style-type: none"> Inferior mesenteric for splenic flexus Left colic for splenic flexure only Middle colic² Right colic for hepatic flexure only <p>Descending colon:</p> <ul style="list-style-type: none"> Inferior mesenteric Left colic Sigmoid^{***} <p>Sigmoid:</p> <ul style="list-style-type: none"> Inferior mesenteric Sigmoidal (sigmoid mesenteric) Superior hemorrhoidal^{***} Superior rectal^{***} <p>Regional lymph node(s), NOS</p>	<p>All colon sites unless included in code 2</p> <p>Distant lymph node(s):</p> <ul style="list-style-type: none"> Para-aortic Retropertoneal Superior mesenteric² Other distant lymph node(s) <p>Extension to:</p> <ul style="list-style-type: none"> Adrenal (suprarenal) gland Bladder Diaphragm² Fallopian tube² Fistula to skin Gallbladder Other segment(s) of colon via serosa Ovary² Uterus² <p>Cecum and appendix:</p> <ul style="list-style-type: none"> Distant lymph node(s): Inferior mesenteric Other distant lymph node(s) <p>Extension to:</p> <ul style="list-style-type: none"> Kidney, right Liver, right Ureter, right <p>Ascending colon:</p> <ul style="list-style-type: none"> Distant lymph node(s): Inferior mesenteric Other distant lymph node(s) <p>Transverse colon and flexures:</p> <ul style="list-style-type: none"> Distant lymph node(s): Inferior mesenteric for hepatic flexure Other distant lymph node(s) <p>Extension to:</p> <ul style="list-style-type: none"> Ureter <p>Sigmoid colon:</p> <ul style="list-style-type: none"> Extension to: Cul de sac (rectouterine pouch) Ureter

AJCC Cancer Staging - TNM



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AJCC Cancer Staging - TNM



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Pathologic Staging Parameters

- ▣ Primary Tumor Grade
- ▣ Depth of Invasion (“T” and CS Extension)
- ▣ Number of Lymph Nodes Examined
- ▣ Number of Lymph Nodes Positive
- ▣ Extranodal Tumor Deposits
- ▣ Status of Resection Margins - proximal, distal and radial or not a full evaluation of margins
- ▣ Lymph-vascular Invasion (LVI)
- ▣ Perineural Invasion (PNI)
- ▣ Response to Neoadjuvant Treatment as applicable

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Collaborative Stage Data Collection System

Registrars Vendors Search the site...

Software Coding Instructions **Schema** Education About CS AJCC

Latest News

CSv02.05 Cancer Schema

- Breast
- Lung
- Colon
- Rectum
- Melanoma Skin
- Prostate
- Bladder
- Kidney/Renal Pelvis
- Thyroid
- Lymphoma

[Full Schema Listing](#)

AJCC
Validating science. Improving patient care.

Announcements

- Collaborative Stage Transition Newsletter - January 13, 2015
- Collaborative Stage Transition Newsletter - October 17, 2014
- Collaborative Stage Transition Newsletter - August 18, 2014

CS Archives

[Click Here for v010000 - v010140](#)

Educational Resources

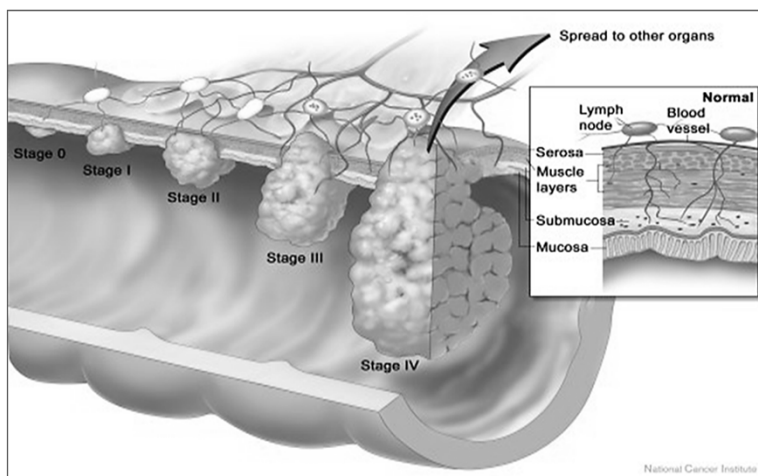
- [TS Ext Eval 1 or 3 for Op Findings](#)
Watch >
- [Testis Calculating the LDH Range for SSF 10 and SSF 16](#)
Watch >

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CS Extension

	Code	Description	TNM 7 Map	TNM 6 Map	SS77 Map	SS2000 Map
In situ	000	In situ, intraepithelial, noninvasive	Tis	Tis	IS	IS
	050	(Adeno)carcinoma, noninvasive, in a polyp or adenoma	Tis	Tis	IS	IS
In situ	100	Invasive tumor confined to mucosa, NOS, including intramucosal, NOS	Tis	Tis	L	L
	110	Invades lamina propria, including lamina propria in the stalk of a polyp	Tis	Tis	L	L
Invasive	120	Confined to and not through the muscularis mucosae, including muscularis mucosae in the stalk of a polyp.	Tis	Tis	L	L
	130	Confined to head of polyp, NOS	T1	T1	L	L
	140	Confined to stalk of polyp, NOS	T1	T1	L	L
	150	Invasive tumor in polyp, NOS	T1	T1	L	L
	160	Invades submucosa (superficial invasion), including submucosa in the head or stalk of a polyp	T1	T1	L	L
	170	Stated as T1 with no other information on extension	T1	T1	L	L

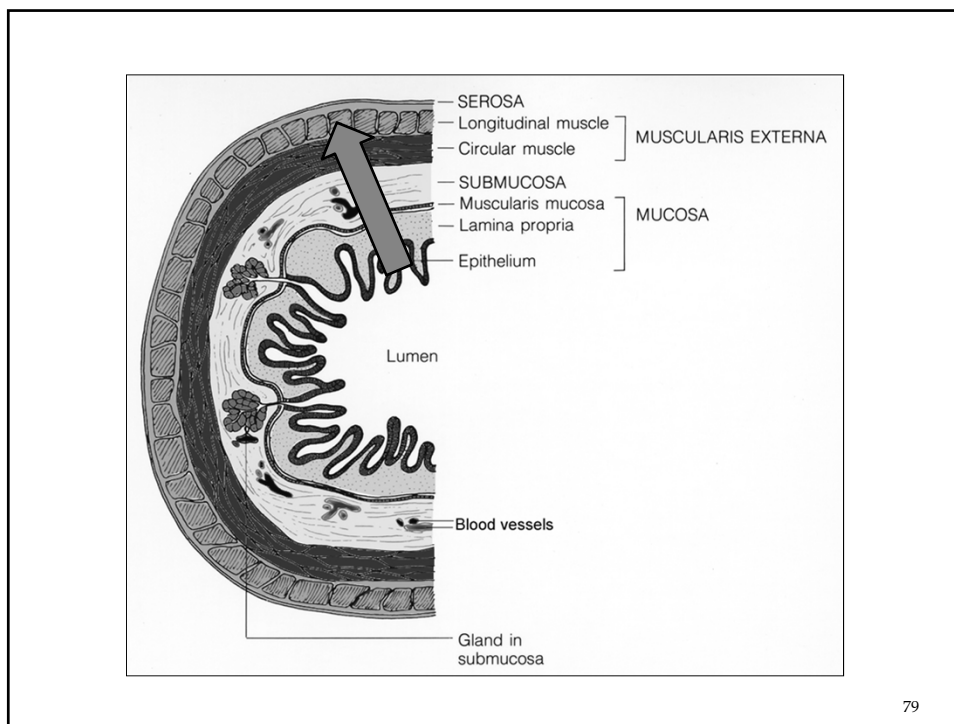
77



National Cancer Institute

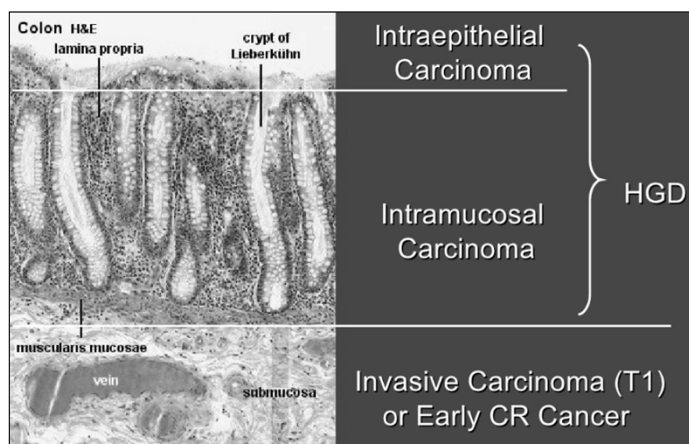
Source: National Cancer Institute

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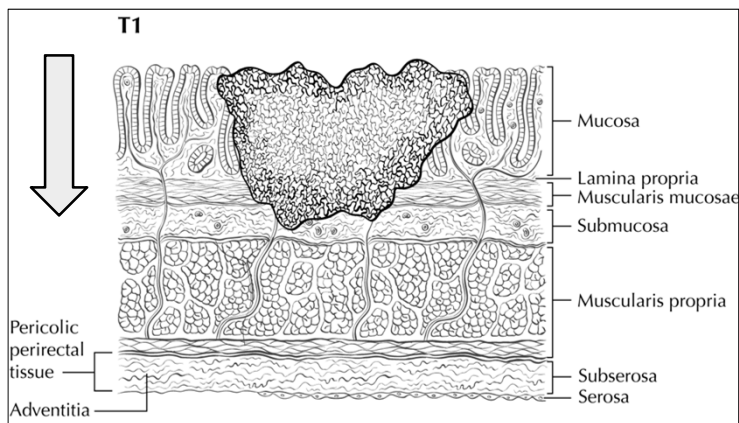
Intramucosal Colon Cancer



Source: <http://www.slideshare.net/giaffa/petruzzello>

80

CS Extension



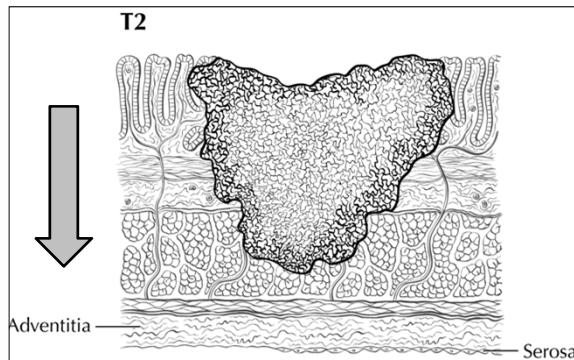
Tumor invades submucosa

AJCC Cancer Staging Atlas - Chapter 14

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CS Extension

200	Muscularis propria invaded Stated as T2 with no other information on extension	T2	T2	L	L
-----	---	----	----	---	---



Tumor invades muscularis propria

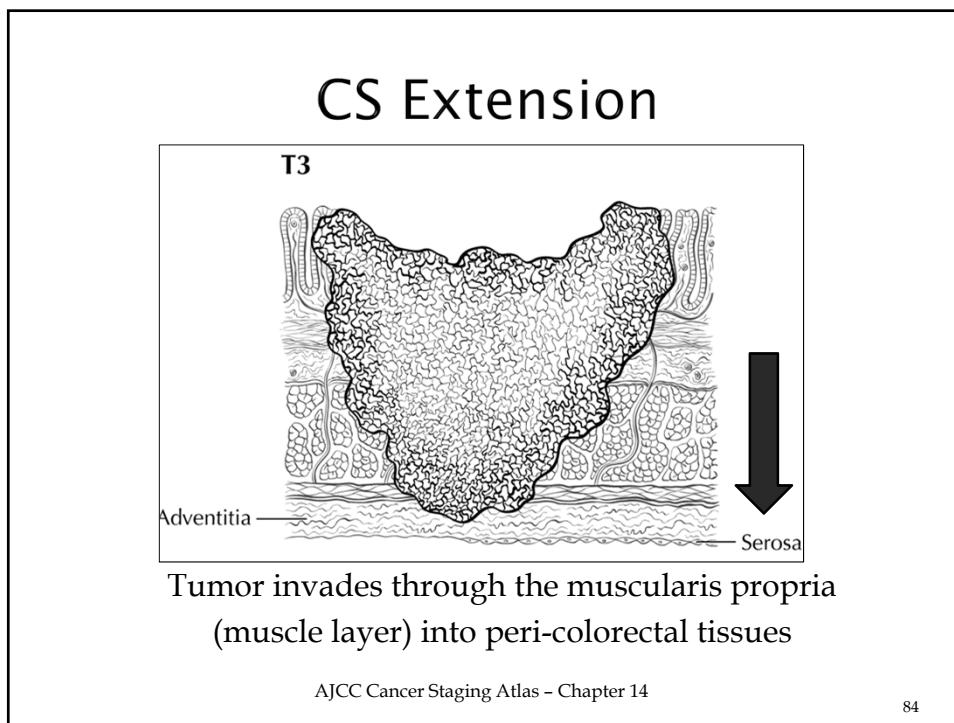
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CS Extension

400	Extension through wall, NOS Invasion through muscularis propria or muscularis, NOS Non-peritonealized pericolic tissues invaded Perimuscular tissue invaded Subserosal tissue/(sub)serosal fat invaded Transmural, NOS Wall, NOS	T3	T3	L	L
450	Extension to: All colon sites: Adjacent tissue(s), NOS Connective tissue Mesenteric fat Mesentery Mesocolon Pericolic fat Ascending and descending colon Retroperitoneal fat Transverse colon and flexures Gastrocolic ligament Greater omentum	T3	T3	RE	RE

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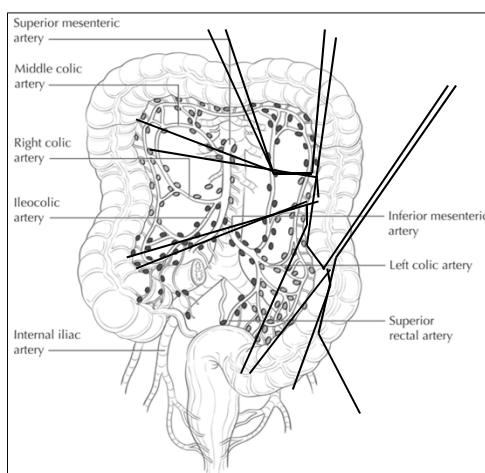


CS Extension

500	Invasion of/through serosa (mesothelium) (visceral peritoneum) Tumor penetrates to surface of visceral peritoneum	T4a	T4	RE	RE
550	500 + (450 or 458)	T4a	T4	RE	RE
560	Stated as T4a with no other information on extension	T4a	T4	RE	RE
565	Adherent to other organs or structures clinically with no microscopic examination Tumor found in adhesion(s) if microscopic examination performed	T4b	T4	RE	RE
570	Adherent to other organs or structures, NOS	T4b	T4	RE	RE
600	All colon sites: Small intestine Cecum: Greater omentum Ascending colon: Greater omentum Liver, right lobe Transverse colon and flexures: Gallbladder/bile ducts Kidney Liver Pancreas Spleen	T4b	T4	RE	RE

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Lymphatics of Colon / Rectum



Modified AJCC Image - The regional lymph nodes of the colon and rectum are colored by anatomic location.

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CS Lymph Nodes

050	TD in the subserosa, mesentery, or nonperitonealized pericolic or perirectal tissues WITHOUT regional nodal metastasis Stated as N1c with no other information on regional lymph nodes	N1c	N1	RN	RN
-----	---	-----	----	----	----

110	Regional lymph nodes for all colon sites: Colic, NOS Epicolic (adjacent to bowel wall) Mesocolic, NOS Paracolic/pericolic	^	*	RN	RN
-----	---	---	---	----	----

AJCC Cancer Staging Atlas - Chapter 14 87

CS Lymph Nodes

210	Regional lymph nodes, for specific colon sites: Cecum: <ul style="list-style-type: none"> Anterior (prececal) Posterior (retrocecal), NOS Ileocolic: <ul style="list-style-type: none"> Right colic Ascending colon: <ul style="list-style-type: none"> Ileocolic Middle colic Right colic Transverse colon and flexures: <ul style="list-style-type: none"> Inferior mesenteric for splenic flexure only Left colic for splenic flexure only Middle colic Right colic for hepatic flexure only Descending colon: <ul style="list-style-type: none"> Inferior mesenteric Left colic Sigmoid colon: <ul style="list-style-type: none"> Inferior mesenteric Sigmoidal (sigmoid mesenteric) Superior hemorrhoidal Superior rectal 	^	*	RN	RN
220	Regional lymph nodes for descending colon: Sigmoid	^	*	D	RN
300	Regional lymph nodes for all colon sites: Mesenteric, NOS Regional lymph node(s), NOS	^	*	RN	RN

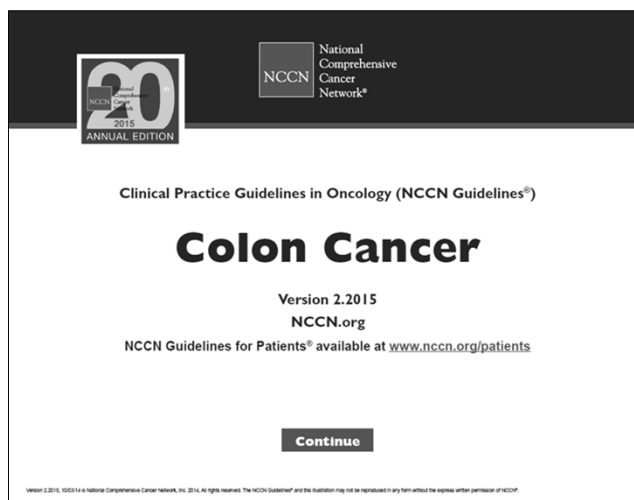
88

CS Lymph Nodes

400	OBSOLETE DATA CONVERTED V0203 See code 430 Stated as N1 pathologic	ERROR	ERROR	ERROR	ERROR
410	Stated as pathologic N1a with no other pathologic information on regional lymph nodes	N1a	N1	RN	RN
420	Stated as pathologic N1b with no other pathologic information on regional lymph nodes	N1b	N1	RN	RN
430	Stated as pathologic N1 [NOS] with no other pathologic information on regional lymph nodes	N1NOS	N1	RN	RN
450	OBSOLETE DATA CONVERTED V0203 See code 480 Stated as N2 pathologic	ERROR	ERROR	ERROR	ERROR
460	Stated as pathologic N2a with no other pathologic information on regional lymph nodes	N2a	N2	RN	RN
470	Stated as pathologic N2b with no other pathologic information on regional lymph nodes	N2b	N2	RN	RN
480	Stated as pathologic N2 [NOS] with no other pathologic information on regional lymph nodes	N2NOS	N2	RN	RN

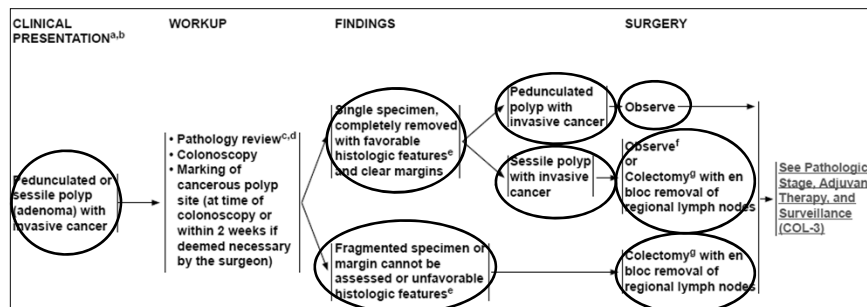
89

Treatment



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Polyp Removal – Any Type



• Favorable histologic features: grade 1 or 2, no angiolymphatic invasion, and negative margin of resection. There is no consensus as to the definition of what constitutes a positive margin of resection. A positive margin has been defined as 1) tumor <1 mm from the transected margin, 2) tumor <2 mm from the transected margin, and 3) tumor cells present within the diathermy of the transected margin.¹⁻⁴

• Unfavorable histologic features: grade 3 or 4, angiolymphatic invasion, or a "positive margin." See the positive margin definition above.

There is controversy as to whether malignant colorectal polyps with a sessile configuration can be successfully treated by endoscopic removal. The literature seems to indicate that endoscopically removed sessile malignant polyps have a significantly greater incidence of adverse outcomes (residual disease, recurrent disease, mortality, and hematogenous metastasis, but not lymph node metastasis) than do polypoid malignant polyps. However, when one closely looks at the data, configuration by itself is not a significant variable for adverse outcome, and endoscopically removed malignant sessile polyps with grade I or II histology, negative margins, and no lymphovascular invasion can be successfully treated with endoscopic polypectomy.³⁻⁷

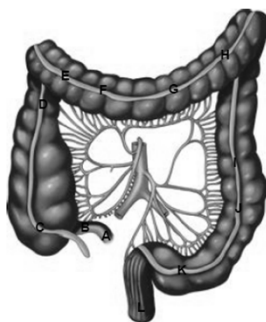
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Surgical Resection

DEFINITIONS OF COMMON COLORECTAL RESECTIONS

The extent of colorectal resection depends on the location of the tumor, any underlying condition (eg, inflammatory bowel disease, hereditary syndrome), and the vascular supply to the colorectum.

Definitions of common colorectal resections are as follows:¹



- A through C Ileocectomy
- A through D Ascending colectomy
- A through F Right hemicolectomy
- A through G Extended right hemicolectomy
- E through H Transverse colectomy
- G through I Left hemicolectomy
- F through I Extended left hemicolectomy
- J through K Sigmoid colectomy
- A through J Subtotal colectomy
- A through K Total colectomy
- K through L Low anterior resection with sphincter preservation
- K through L Abdominoperineal resection without sphincter preservation

Adapted and reprinted with permission from Bullard KM and Rothenberger DA. (2005). Colon, Rectum, and Anus. In Brunicaudi C (Ed.) Schwartz's Principles of Surgery, 8th Edition, page 1069. McGraw Hill: New York, NY.

NCCN Guidelines – Colorectal Cancer Screening

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Neoadjuvant (Pre-Surgical) Treatment

- Advanced Stage at Diagnosis
 - Pre-Surgical Treatment with:
 - FOLFIRI or
 - mFOLFOX6 or
 - CapeOx plus
 - Any of Above may also add bevacizumab
 - If KRAS/NRAS Wild Type may also add
 - Panitumumab or Cetuximab
 - Unresectable or Post-Surgical Treatment with:
 - Same as Above or
 - Capecitabine
 - FOLFOXIRI
 - Irinotecan
 - IROX
 - Regorafenib


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Adjuvant (Post-Surgical) Treatment

- Chemotherapy alone, or in combination with radiation, is given before and/or after surgery when cancer has deeply penetrated the bowel wall or spread to lymph nodes.
- FOLFOX/CapeOx regimens superior to 5-FU/leucovorin
- Bevacizumab, cetuximab, panitumumab, or irinotecan should NOT be used as adjuvant therapy for Stage II/III
- Adjuvant chemotherapy for colon cancer in otherwise healthy patients 70 years of age and older is equally effective as in younger patients.
- Toxicity in older patients can be limited if certain drugs (e.g., irinotecan, oxaliplatin) are avoided.


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 National Comprehensive Cancer Network®		NCCN Guidelines Version 2.2015 Colon Cancer		NCCN Guidelines Index Colon Cancer Table of Contents Discussion	
PATHOLOGIC STAGE ⁶	ADJUVANT THERAPY ^{m,n}	SURVEILLANCE ¹			
T1s; T1, N0, M0 T2, N0, M0	None	Colonoscopy at 1 y ▶ If advanced adenoma, repeat in 1 y ▶ If no advanced adenoma, ¹¹ repeat in 3 y, then every 5 y ⁷			
T3, N0, M0 ^{h,i} (no high-risk features)	Clinical trial or Observation or Consider capecitabine ^o or 5-FU/leucovorin ^o	History and physical every 3–6 mo for 2 y, then every 6 mo for a total of 5 y • CEA ^w every 3–6 mo for 2 y, then every 6 mo for a total of 5 y • Chest/abdominal/pelvic CT ^h annually for up to 5 y for patients at high risk for recurrence ^x • Colonoscopy ^b in 1 y except if no preoperative colonoscopy due to obstructing lesion, colonoscopy in 3–6 mo ▶ If advanced adenoma, repeat in 1 y ▶ If no advanced adenoma, ¹¹ repeat in 3 y, then every 5 y ⁷		If Recurrence, See Workup (COL-9)	
T3, N0, M0 at high risk for systemic recurrence ^{h,k,l} or T4, N0, M0 Node-positive disease, see COL-4	Capecitabine ^{o,p} or 5-FU/leucovorin ^{o,p} or FOLFOX ^{o,p,q,r} or CapeOx ^{o,p,q,r} or FLOX ^{o,p,q,r,s} or Clinical trial or Observation	• PET-CT scan is not routinely recommended • See Principles of Survivorship (COL-G)			

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 National Comprehensive Cancer Network®		NCCN Guidelines Version 2.2015 Colon Cancer		NCCN Guidelines Index Colon Cancer Table of Contents Discussion	
PATHOLOGIC STAGE ⁶	ADJUVANT THERAPY ^{m,n,y}	SURVEILLANCE ¹			
T1-3, N1-2, M0 or T4, N1-2, M0	FOLFOX ^{o,p,r} or CapeOx ^{o,p,r} (both category 1 and preferred) Other options include: FLOX (category 1) ^{o,p,r,s} or Capecitabine ^{o,p} or 5-FU/leucovorin ^{o,p}	History and physical every 3–6 mo for 2 y, then every 6 mo for a total of 5 y • CEA ^w every 3–6 mo for 2 y, then every 6 mo for a total of 5 y • Chest/abdominal/pelvic CT ^h annually for up to 5 y • Colonoscopy ^b in 1 y except if no preoperative colonoscopy due to obstructing lesion, colonoscopy in 3–6 mo ▶ If advanced adenoma, repeat in 1 y ▶ If no advanced adenoma, ¹¹ repeat in 3 y, then every 5 y ⁷		If Recurrence, See Workup (COL-9)	
		• PET-CT scan is not routinely recommended • See Principles of Survivorship (COL-G)			

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ORAL CHEMOTHERAPY

Capecitabine

Brand Name: **Xeloda**®



<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3066368>

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Use SEER*Rx to Code Agents

SEER*Rx 2.2.0

File Help

SEER*Rx Interactive Antineoplastic Drugs Database

Search Text: folfox Search Require All Terms Drugs Regimens

Results (5)

- [R] - FOLFOX
- [R] - FOLFOX4
- [R] - FOLFOX6
- [R] - FOLFOX7
- [R] - FOLFOXIRI

Drug Information

Regimen Name
FOLFOX

Drug #1: Fluorouracil code as Chemotherapy

Drug #2: Leucovorin code as Ancillary Agent

Drug #3: Oxaliplatin code as Chemotherapy

Fluorouracil | Leucovorin | Oxaliplatin


Generic Name
Fluorouracil

Brand Names
5-Fluorouracil
5-Fluoracil
Adrucil
Etuodex
Fluoroplex
Fluracil
Fluril
Oracil
Ro-2-9757
WR-69596


Categories
Chemotherapy

Subcategories
Antimetabolite

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NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

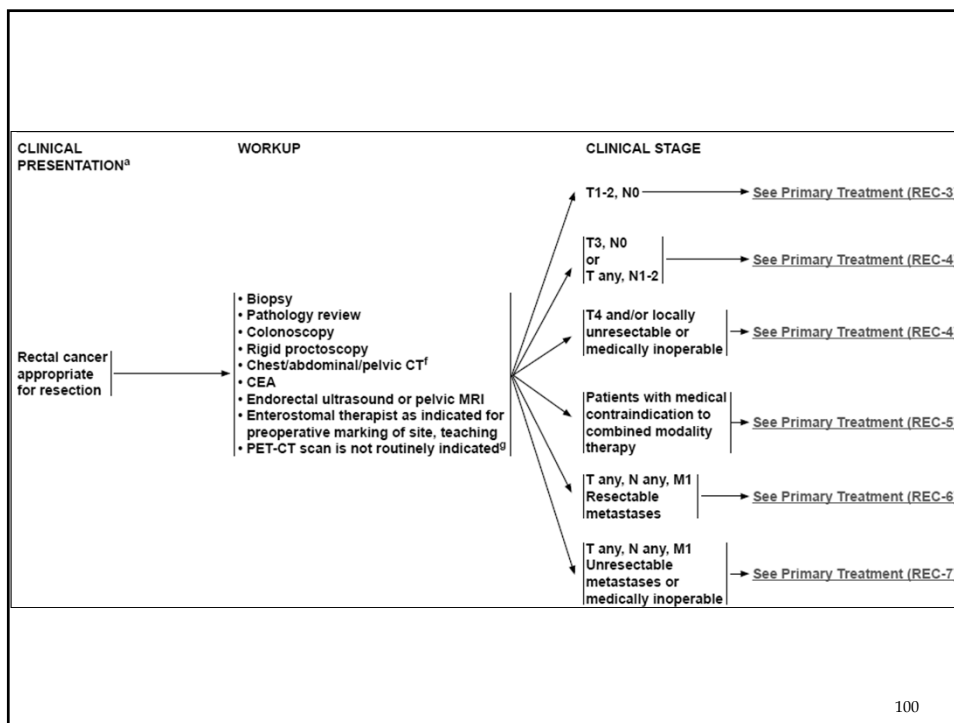
Rectal Cancer

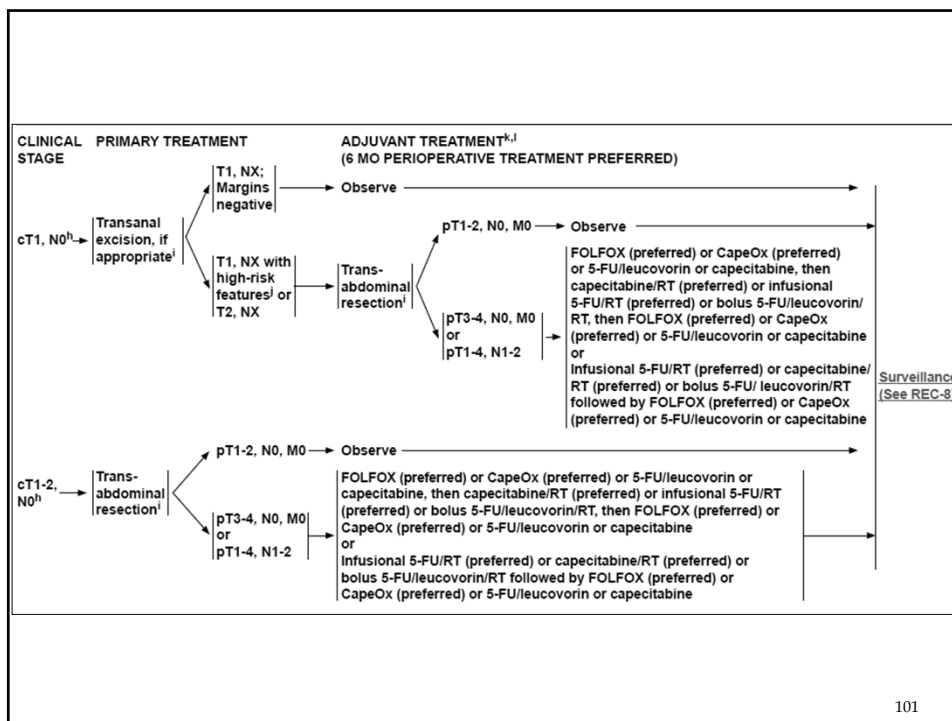
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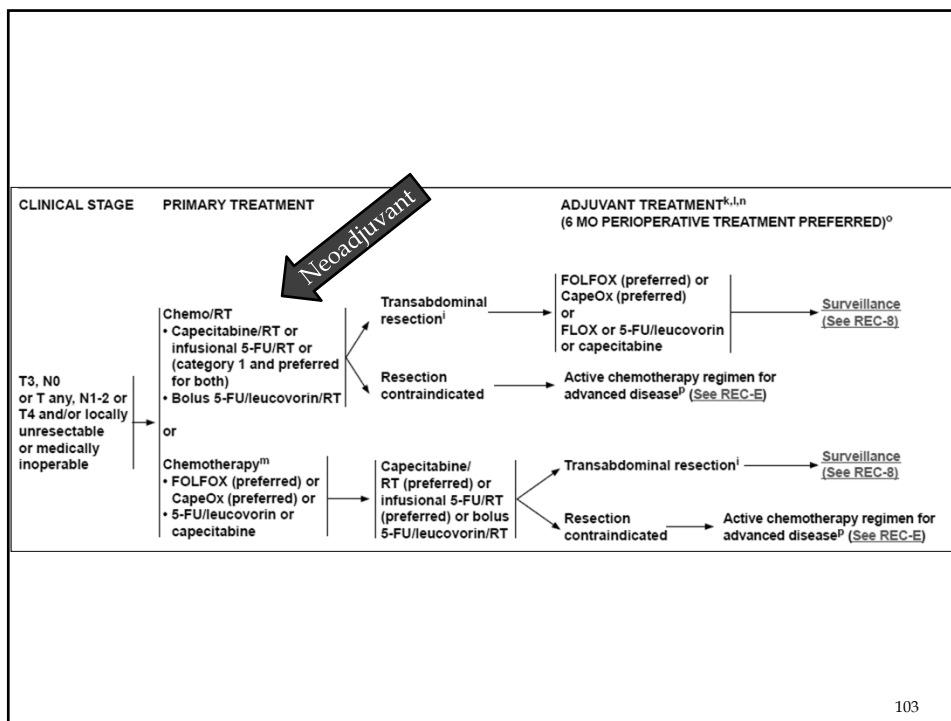
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Neoadjuvant (Pre-Surgical) Treatment

- ❑ Colon – seldom used except for locally advanced tumors to shrink size of primary tumor mass or to reduce size of metastasis deemed resectable.
- ❑ Rectum – used for all stages > T2
- ❑ Chemo plus or minus XRT to primary tumor
- ❑ Not neoadjuvant unless surgery is performed after treatment – if no response may not resect.



What's New – Colorectal Cancer

- ▣ Next Generation Genetic Testing
 - Prognostic, predictive and response to treatments
 - Oncotype Dx/Colon Cancer Assay/ColoPrint/ColDx
- ▣ Chemoprevention – statins/vitamin D/calcium
- ▣ Earlier Detection and High Risk Group Screening
- ▣ Newer Surgical Techniques
 - Laparoscopic Resection
 - Robotic Surgery
- ▣ Targeted Therapies
 - Bevacizumab (Avastin)
 - Cetuximab (Erbix)
 - Panitumumab (Vectibix)
- ▣ Immunotherapy – clinical trials for vaccine tx

What's New – Colorectal Cancer

- ▣ Next Generation Targeted Therapies
 - EGFR Inhibitors – epidermal growth factor receptor (EGFR) inhibitors work by slowing or stopping or otherwise interrupting cancer cell growth and/or proliferation of cancer cells in primary tumor and metastatic tumor(s).
 - ▣ Cetuximab
 - ▣ Panitumumab
 - VEGF Inhibitors – vascular endothelial growth factor (VEGF) inhibitors work by preventing the formation of new blood vessels necessary for tumor growth.
 - ▣ Bevacizumab
 - ▣ Aflibercept or Ziv-Aflibercept
 - ▣ Regorafenib
 - ▣ Ramucirumab

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Questions



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