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Colorectal Cancer Preventable, Treatable, Beatable




CRC Statistics




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- CRC 3rd most common CA in US
- Second leading cause of CA deaths in US
- Estimated 106,000 new colon CA, 41,000 new rectal CA and 57,000 CRC deaths/year in US
- Male – 1/ 24 chance, Female – 1/ 30 chance

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BEATABLE

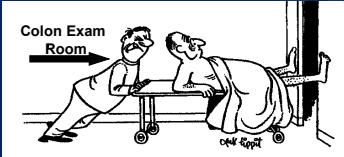


CRC Statistics




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- >90% diagnosed CRC > age 50, 72 average
- 80% CRC is preventable
- <50% screened over age 50




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Prevention

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- 37% patients said “the doctor didn’t order it or didn’t say I needed it.”



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Prevention

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- Lower risk of CRC**
 - Exercise
 - Fiber in diet
 - Folic acid, folate, calcium, vit D, magnesium
 - Regular use of ASA or NSAIDS
 - Hormone replacement therapy (HRT)

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- Increase risk of CRC**
 - High-fat foods
 - History of smoking (30-40% more likely to die)
 - Increased alcohol intake
 - Personal or family history of cancer
 - Carriers of HNPCC or FAP-related genes

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Prevention




CRC Screening Guidelines
(Adults age 50 and older)


Tests That Detect Adenomatous Polyps and Cancer

Flexible Sigmoidoscopy	Every 5 years
Colonoscopy	Every 10 years
Barium Enema	Every 5 years
CT Colonography	Every 5 years (new 2008)

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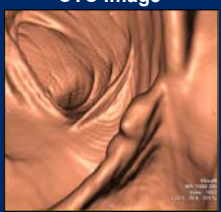
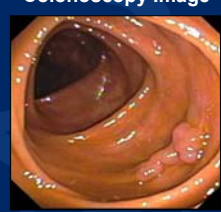


Prevention




CRC Screening


CTC Image Colonoscopy Image

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Prevention




CRC Screening Guidelines
(Adults age 50 and older)

Tests That Primarily Detect Cancer


Guaiac Fecal Occult Blood Test (gFOBT)	Annually
Fecal Immunochemical Test (FIT)	Annually
Stool DNA (sDNA)	Interval uncertain (new 2008)

Positive results generally result in need for colonoscopy


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Prevention




Category	Age to Begin	Recommendation
No ↑ risk	Age 50	Every 10 years
First-degree relative < age 60 with hx of CRC or adenomatous polyps	Age 40 or 10 years before age of dx of CRC relative	Every 5 – 10 years
Hx of adenoma with high-grade dysplasia	Within 3 years after initial polypectomy	If normal repeat in 3 years

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Prevention




Category	Age to Begin	Recommendation
Hx of surgical resection of CRC	Within 1 year after surgical resection	Repeat in 3 years, if normal every 5 years
Family Hx of FAP	Puberty	Every 1 - 2 years till age 40
Family Hx of HNPCC	Age 21	Every 1 - 2 years till age 40
Hx of IBD	8 years after onset	Every 1 – 2 years

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Prevention & Detection of Hereditary CRC



- Gene mutation – growth of polyps/adenomas
- 5 – 10% CRC
- Two most common types
 - Hereditary Nonpolyposis Colorectal Cancer (HNPCC)
 - Familial Adenomatous Polyposis (FAP) or Attenuated Familial Adenomatous Polyposis (AFAP)

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Prevention & Detection of Hereditary CRC




■ HNPCC

- CRC - 25% by age 50, 80% by age 70
- 70% risk endometrial cancer
- 1 – 3y progression from adenoma
- Colectomy
- Prophylactic TAH, BSO (after child-bearing)

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Prevention & Detection of Hereditary CRC




■ Screening for HNPCC

- Start colonoscopies @ 25 – 30y, every 1 – 2y
- Start GYN exam & transvaginal ultrasound at 25y, annually

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Prevention & Detection of Hereditary CRC



■ FAP (>100 polyps) & AFAP (<100 polyps)

- 90% by age 45, 99% lifetime risk
- Start to develop polyps in mid-teens
- Extra colonic tumors of stomach, duodenum, bones and skin
- Prophylactic colectomy

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Prevention & Detection of Hereditary CRC



Screening for FAP & AFAP

- FAP – start colonoscopies @ 10 – 15y, annually
- AFAP – start colonoscopies @ 15 – 20y, every 1 – 3y based on # of polyps
- Start EGD @ 25 – 30y, every 1 – 4y based on # of polyps

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Detection



Signs and Symptoms of CRC

- Bleeding from the rectum
- A change in bowel movement pattern that continues over time
- Cramping or steady abdominal pain
- Vomiting
- Constant fatigue
- Loss of appetite or sudden weight loss
- Chronic constipation

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Detection



- < 1% of all polyps progress to cancer
- 45% of larger polyps associated with cancer
- 5 – 10 years polyp → adenoma → cancer




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Detection



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- **Nonneoplastic Polyps (90%)**
 - Histologic classification
 - Hyperplastic
 - Inflammatory
 - Hamartomatous
 - Lymphoid


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Detection


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- **Hyperplastic Polyps**
 - <0.5 cm
 - Rectosigmoid




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Detection


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- **Inflammatory Polyps**
 - Acute or chronic inflammation
 - IBD/Ulcerative Colitis




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- **Hamartoma**
 - 0.3 – 6 CM, < 100
 - Puetz-Jeghers Syndrome (PJS), juvenile polyposis
 - Small Intestine




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- **Lymphoid Polyps**
 - Rectum or ileocecal
 - Diversion proctitis, viral infection, polyposis




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Detection



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- **Neoplastic (benign or malignant)**
- **Adenoma (benign tumor)**
 - Histologic classification
 - Tubular
 - Tubulovillous
 - Villous
 - Least likely to most likely to develop into cancer
Tubular → Tubulovillous → Villous


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- **Tubular Adenoma**
 - Least likely to progress to malignancy
 - Tube-like structure microscopically
 - Usually pedunculated
 - 75% of all neoplastic




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Detection


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- **Tubulovillous Adenoma**
 - 50% villous architecture




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Detection


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- **Villous Adenoma**
 - Most likely to progress to carcinoma
 - Ruffled, frilly structure microscopically
 - > 75% villous architecture
 - Usually sessile




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Detection

Microscopic Histology

Tubular Tubulovillous Villous



Normal Colon



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Detection

- **Dysplasia** – abnormal growth of cells, precursor to cancer, indicative of early neoplastic process
 - Low grade dysplasia
 - can develop into high grade dysplasia
 - High grade dysplasia/Carcinoma In Situ
 - high risk of developing into cancer


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Detection

- **HGD/CIS** - intraepithelial carcinoma




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Detection


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- **Adenocarcinoma (malignant)**



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Diagnosis



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- Adenocarcinomas (cancers of glandular cells lining colon and rectum)
- Staging - predict prognosis & develop Tx plan
- Staging & Tx according to site of cancer: colon, rectum, anal canal, anal margin

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Diagnosis



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- **Staging of CRC**
 - TNM
 - T – depth of tumor invasion (T0 – T4)
 - N – number of nodes (N0 – N2)
 - M – metastasis (M0 – M1)

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Diagnosis



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0	Tis, N0, M0
I	T1-2, N0, M0
IIA	T3, N0, M0
IIIB	T4a, N0, M0
IIC	T4b, N0, M0
IIIA	T1-2, N1, M0/T1, N2a, M0
IIIB	T3-4a, N1, M0/T2-3, N2a, M0/T1-2, N2b, M0
IIIC	T4a, N2a, M0/T3-4a, N2b, M0/T4b, N1-2, M0
IVA	Any T, Any N, M1a
IVB	Any T, Any N, M1b

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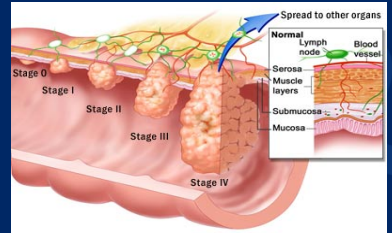


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Diagnosis



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Diagnosis




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- **Staging of Anal Cancer**
 - **TNM**
 - T – size of tumor (T0 – T4)
 - N – site of nodal invasion (N0 – N3)
 - M – metastasis (M0 – M1)


0	TIS, N0, M0
I	T1, N0, M0
II	T2-3, N0, M0
IIIA	T1-3, N1, M0 T4, N0, M0
IIIB	T4, N1, M0 Any T, N2-3, M0
IV	Any T, Any N, M1

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Prognosis




Five-year survival rate

	Colon	Rectal	Anal
Stage I	93%	92%	>95%
Stage IIA	85%	73%	75%
Stage IIB	72%	73%	
Stage IIIA	83%	67%	60%
Stage IIIB	64%	44%	10%
Stage IIIC	44%	30%	
Stage IV	8%	8%	Unusual

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Treatment




**National Comprehensive Cancer Network (NCCN)
Clinical Practice Guidelines in Oncology**


Clinical presentation and stage

- Workup (diagnostic testing)
- Treatment (surgery, chemotherapy, radiation)
- Surveillance (follow-up diagnostic testing)

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Treatment of Colon Cancer



STAGE	DESCRIPTION	TREATMENT
0	Cancer limited to lining of colon	Polypectomy or Surgical Resection
I	Cancer has invaded several layers of colon wall	Surgical Resection
II	Cancer has grown thru the wall of the colon, but not to lymph nodes	Surgical Resection, possible Chemo
III	Cancer has spread to nearby lymph nodes	Surgical Resection, Chemo, possible Radiation
IV	Cancer has spread to other organs (liver or lungs); metastasis	If appropriate, Surgical Resection, Chemo

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Treatment of Colon Cancer



▪ Surgical Treatment of Colon Cancer

- Colectomy (hemicolectomy or resection) – removal of cancer with some normal bowel, surrounding lymph nodes



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Treatment of Colon Cancer



▪ Surgical Treatment of Colon Cancer

- Resection with colostomy (Hartmann's procedure) - removal of cancer with some normal bowel, surrounding lymph nodes, colostomy may be permanent or temporary, unsafe to rejoin colon and rectum

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Treatment of Colon Cancer



▪ NCCN Guidelines' Principles for Surgery

- Minimum of 12 lymph nodes removed and examined to establish staging

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Treatment of Rectal Cancer



▪ Surgical Treatment of Rectal Cancer

- Low Anterior Resection (LAR) – removal of cancer with some normal rectum and surrounding lymph nodes, possible temporary colostomy through incision in lower abdomen, cancer located well above anus



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Treatment of Rectal Cancer



▪ Surgical Treatment of Rectal Cancer

- Abdominoperineal Resection (APR) - removal of cancer with part/all of sigmoid colon, rectum, anus, and surrounding lymph nodes through incision in lower abdomen and perineum, permanent colostomy if cancer located close to anus



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Treatment of Rectal Cancer



▪ Surgical Treatment of Rectal Cancer


- Pelvic Exenteration – removal of rectum, surrounding lymph nodes and internal reproductive organs (posterior), additional removal of bladder (total), permanent colostomy, cancer has invaded structures in the pelvis, high morbidity rate association

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Treatment of Anal Cancer




- Large % infected with HPV
- Higher risk for weakened immune systems or infected with HIV
- Staged according to size of lesion
- Most squamous cell carcinomas
- Anal canal and anal margin (below anal verge) staged and treated differently

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Treatment of Anal Canal Cancer




STAGE	DESCRIPTION	TREATMENT
I	Tumor is 2 cm or less in size	Chemo and Radiation
II	Tumor is > 2 cm in size	Chemo and Radiation
III	Tumor has spread to nearby lymph nodes and/or adjacent organs	Chemo and Radiation
IV	Cancer has spread to other organs outside abdominal area	Surgical Resection, Chemo, Radiation


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Treatment of Anal Canal Cancer




- **Surgical Treatment of Anal Canal Cancer**
 - Abdominoperineal Resection (APR) - removal of cancer with some normal rectum, surrounding lymph nodes and anus through incision in lower abdomen and perineum, permanent colostomy, cancer located close to anus





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Treatment of Anal Margin Cancer




STAGE	DESCRIPTION	TREATMENT
I	Tumor is 2 cm or less in size	Local Excision
II	Tumor is > 2 cm in size	Chemo and Radiation
III	Tumor has spread to extradermal structures (cartilage, muscle, bone) or perirectal lymph nodes	Chemo and Radiation
IV	Cancer has spread to other organs; metastasis	Surgical Resection, Chemo, Radiation






Treatment of Anal Margin Cancer




- **Surgical Treatment of Anal Margin Cancer**
 - Abdominoperineal Resection (APR) - removal of cancer with some normal rectum, surrounding lymph nodes and anus through incision in lower abdomen and perineum, permanent colostomy, cancer located close to anus









Treatment of Metastatic CRC




- 20% CRC have metastasis to liver when diagnosed
- 15 – 30% develop liver metastases within 3 years
- 20% diagnosed liver metastasis eligible for surgical resection
- Surgery is only curative treatment
- Resected: up to 50% five-year survival rate
- Nonresected: median survival of 5 - 10 months





Treatment of Metastatic CRC 

NCCN Criteria for Resectability of Metastases


- Liver or Lung
 - Complete resection of metastases must be feasible
 - No other unresectable sites of metastasis
 - Primary tumor resected for cure


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Treatment of Metastatic CRC 

Nonsurgical Treatment of Metastatic CRC


- Hepatic Arterial Infusion (HAI) – high concentration of chemotherapy infused into liver through hepatic artery (NCCN Guidelines)
 - Combined treatment with resection or for nonresectable liver metastases

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Treatment of Metastatic CRC 

Nonsurgical Treatment of Metastatic CRC

- Targeted Therapy – drugs that inhibit vascular (VEGF) or epidermal growth (EGFR) on the surface of the tumor
 - Combined treatment with chemotherapy


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CRC Survival




- 37% CRC diagnosed in early local stage; >90% five-year survival rate
- 37% CRC diagnosed in regional stage; 66% five-year survival rate
- 26% CRC diagnosed after metastasis 8.5% five –year survival rate

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Follow-up Care



	Colonoscopy	CEA Blood Level	CT of Chest, Abd & Pelvis
Colon	Within 1 year, repeat in 3 years, if normal repeat in 5 years	Every 3 – 6 months for 5 years	Every 6 – 12 months for 3 years
Rectal	Within 1 year, repeat in 3 years, if normal repeat in 5 years <i>And Proctoscopy every 3 – 6 months</i>	Every 3 – 6 months for 5 years	Every 6 – 12 months for 3 years

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Preventable Treatable Beatable

Despite its high incidence, colorectal cancer is one of the most detectable and, if found early, most treatable forms of cancer.