Colorectal Cancer

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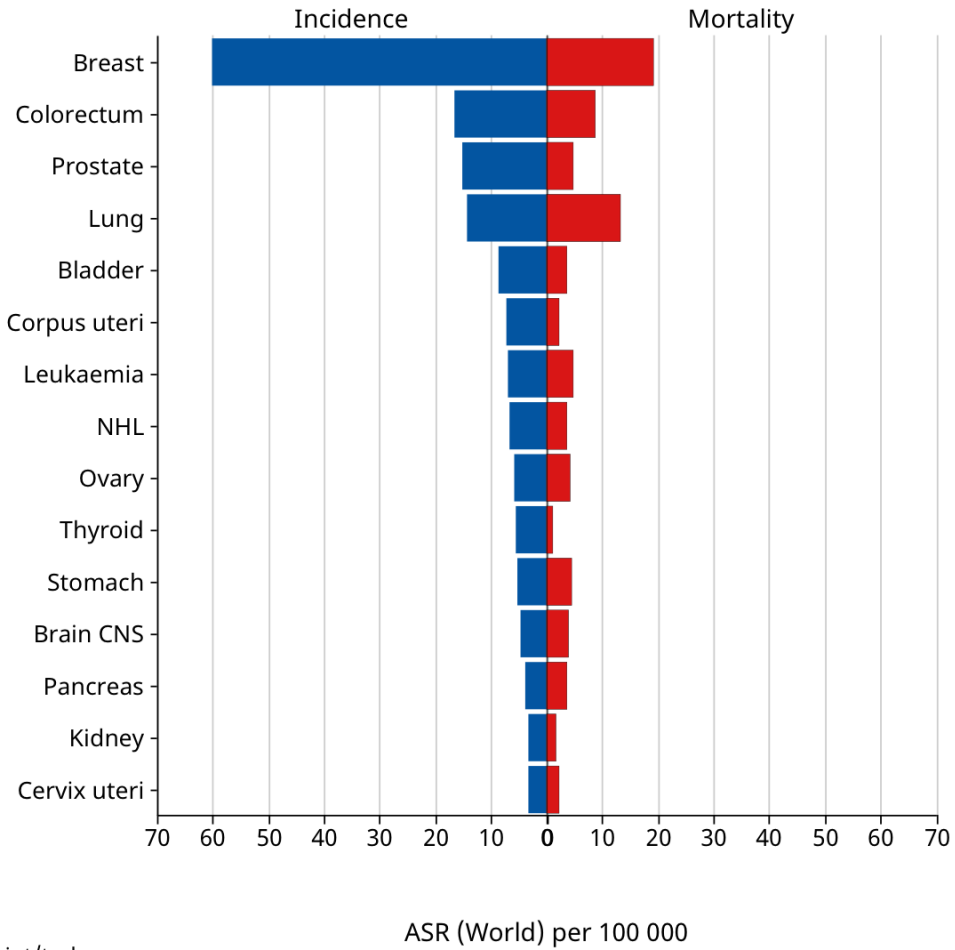
Age-Standardized Rate (World) per 100 000, Incidence and Mortality, Both sexes, in 2022

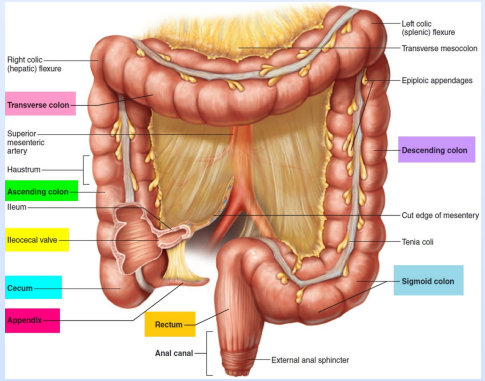
Jordan

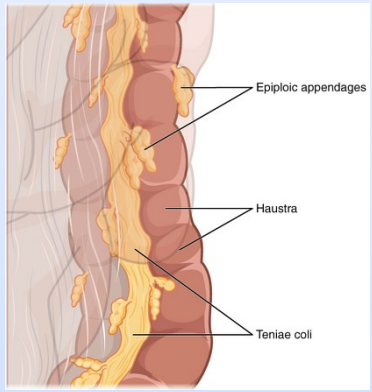
(Top 15 cancer sites)



International Agency for Research on Cancer
World Health Organization

Epidemiology





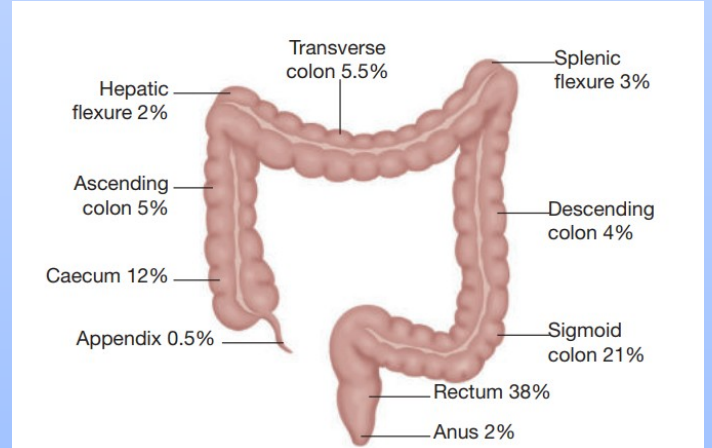
- Worldwide:

In 2022, the IARC's Global Cancer Observatory indicated colorectal cancer as the third most common cancer globally

  - Colorectal cancer is the second leading cause of cancer death.

- Incidence and mortality: male > female (UpToDate).

- It predominantly affects older individuals, with the majority of cases occurring in people aged 40-50 and above.



Risk factors

- **Age**: older age (> 40 years)
- **Race**: more in black people.
- **Gender**: male>female (UpToDate).
- **Hereditary syndromes**
  - Family history: Approx. 25% of individuals with colorectal cancer (CRC) have a positive family history.
  - Familial adenomatous polyposis
  - Hereditary nonpolyposis colorectal cancer
- **Associated conditions**
  - Colorectal adenomas and serrated polyps, Inflammatory bowel disease, Endocarditis and bacteremia due to S. gallolyticus and DM type 2.
- **Lifestyle**: Alcohol and Tobacco
- **Cholecystectomy**: slight increase in the risk of right-sided colon cancer, possibly as a consequence of increased bile acid exposure.
- **Diet**: Obesity, Processed meat and High-fat and low-fiber
- **Pathogens**: Streptococcus bovis, Clostridium septicum.

Protective factors

- High fiber diet
- Physical activity
- ❌smoking
- Regualr screening and family history awareness
- Aspirin,NSAIDs

Intestinal Polyps

Classification of intestinal polyps

Inflammatory	Inflammatory polyps (pseudopolyps in ulcerative colitis)	
Metaplastic	Metaplastic or hyperplastic polyps	
Harmartomatous	Peutz–Jeghers polyp	
	Juvenile polyp	
Neoplastic	Adenoma	Tubular
		Tubulovillous
		Villous
	Adenocarcinoma	
	Carcinoid tumour	

- Adenomatous polyps:
  - The most common type (70%).
  - High malignant potential.
- More risk of malignancy in:
  - **Histology**: Villous > tubular
  - **Size**: more size will increase risk
  - **Morphology**: Sessile > Pediculated

Pathology - Microscopically

- **Right-sided colon carcinomas**: mostly exophytic mass (polypoid or fungating); **tend to bleed**.
- **Left-sided colon carcinomas**: mostly infiltrating mass (annular or encircling) produce ‘apple-core or napkin-ring’ appearance; **tends to obstructive**.
- Most common: adenocarcinoma (95%)
- Less common (5%)
  - Mucinous adenocarcinoma
  - Signet ring cell carcinoma
  - Small cell carcinoma
  - Adenosquamous carcinoma (rare)

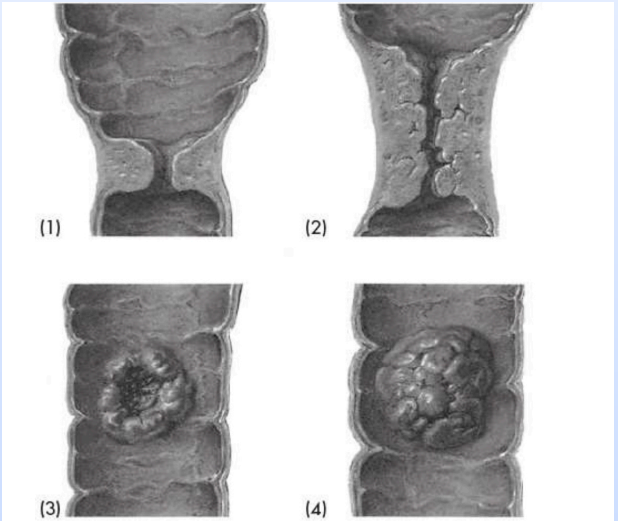
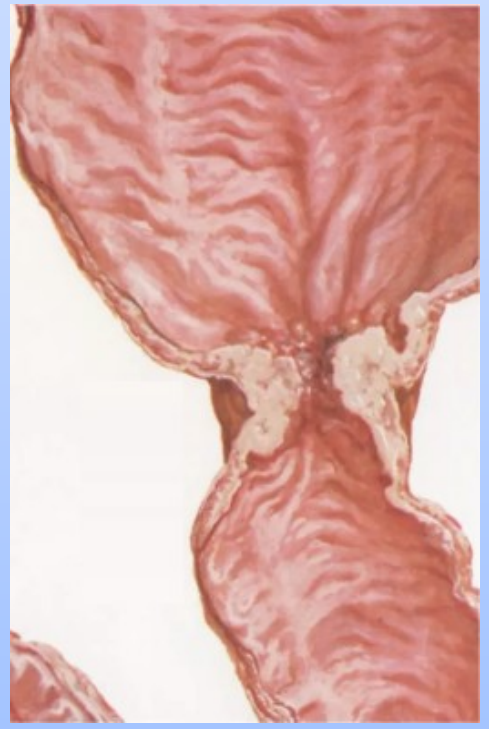
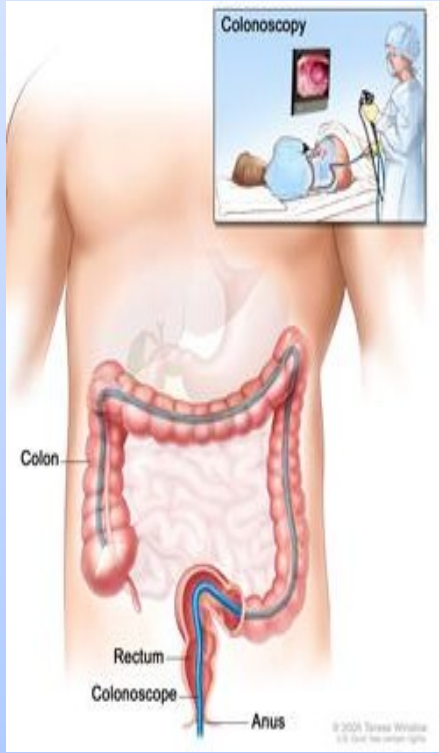


Figure 69.22 The four common macroscopic varieties of carcinoma of the colon. (1) Annular; (2) tubular; (3) ulcer; (4) cauliflower.



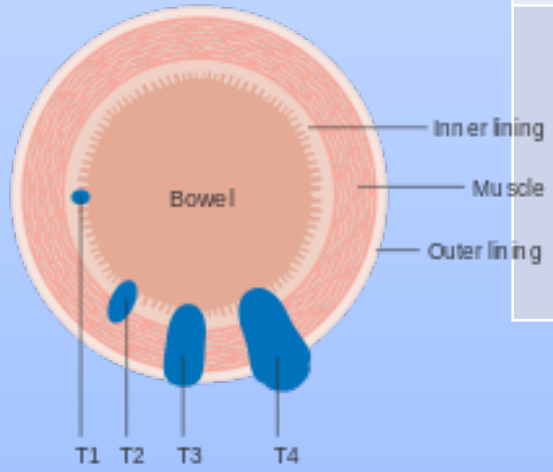
Screening

- **Criteria for average risk of CRC include**:
  - No history of CRC, IBD, or adenomatous polyps
  - No family history of hereditary colon cancer syndromes (e.g., HNPCC, familial adenomatous polyposis).
- **Recommended screening age**:
  - All individuals aged > 50 years; recent guidelines at 45 years of age.
- **With risk factors (family history):**
  - At age 40 or 10 years earlier than the index patients age of diagnosis.
- **Screening modalities:** Consider individual risk factors and patient preference when choosing a screening method.
  - Direct visualization
    - Gold standard: Complete colonoscopy every 10 years if no polyps or carcinomas are detected
    - Alternative: FSIG every 5 years, CT colonography every 5 years.
  - Stool-based testing
    - Annual fecal occult blood test



Staging

- Once the diagnosis of CRC is established the local and distant extent of disease is determined via staging to provide a framework for discussing therapy and prognosis.
- **The most important prognostic factor is Lymph node status.**
- The American Joint committee for cancer (AJCC) TNM classification is the standard staging system and the Dukes classification is a simplified approach to staging for academic purposes



TNM classification for colorectal cancer		
T	T1	Tumor invades into submucosa
	T2	Tumor invades into musculars propria
	T3	Tumor invades into subserosa
	T4a	Tumor breach visceral peritoneum
	T4b	Tumor directly invades adjacent tissue or organ
N	N0	No nodes involved
	N1	N1a: 1 regional LN involved N1b: 2-3 regional LNs involved
	N2	N2a:4-6 LNs involved N2b: 7 or more LNs involved
M	M0	No metastases
	M1a	Confined to one organ
	M1b	More than one organ
	M1c	Metastasis to the peritoneum

Clinical presentation

- Patients with CRC may present in three ways:

1. Those with suspicious symptoms and signs
2. Asymptomatic patients discovered by routine screening which account for 10%
3. Emergency admission with intestinal obstruction, perforation or an acute GI bleed which account for 20-30% of CRC diagnosis

Signs and symptoms

- Change in bowel habits (the most common symptom)
- Rectal bleeding
- Iron deficiency anemia
- Rectal or abdominal mass
- Abdominal pain
- Constitutional symptoms like: weight loss, fever, night sweats, fatigue and abdominal discomfort

Right-sided colon cancer

Large bowel malignancies arising in cecum, ascending colon or transverse colon.

Clinical features include:

- Occult bleeding or melena
- Iron deficiency anemia
- Diarrhea

Left-sided colon cancer

- Arising from the splenic flexure, descending colon, sigmoid colon or the rectosigmoid junction.
- Clinical features include:
  - Change in bowel habits (size, consistency and frequency)
  - Blood-streaked stool
  - Colicky abdominal pain (due to obstruction)

Rectal carcinoma

- Large bowel malignancies located within 15 cm from the anal verge.
- Clinical features include:
  - Hematochezia
  - Decrease in stool caliber (pencil shaped stool)
  - Rectal pain
  - Tenesmus
  - Flatulence
  - Fecal incontinence

Diagnosis

○ History

- We ask the patient about his presenting symptom's onset, timing, severity
- And then ask about the presence of other associating symptoms that could help us in diagnosis and give us a hint of the location of the tumor, we would also ask about the predisposing factors.

○ Physical examination

- Start with the vital signs especially in emergency symptoms
- General look: look for pallor, weight loss, signs of cachexia and jaundice
- Abdomen:
  1. Inspection for distention, visible masses and scars indicative of prior surgery
  2. Palpation for masses, tenderness and liver palpation (which may be enlarged with rough edges
  3. Percussion which may be dull on masses , liver span for hepatosplenomegaly
  4. Auscultation bowel sounds are hyperactive initially which then become hypoactive and eventually diminished when obstruction occurs
  5. Digital rectal examination which should be done for all patients who present with LGIB where distal rectal cancers may be palpable nad evidence of blood may be seen

Pelvic floor MRI and US give accurate T staging of rectal cancer bcz lateral extension is important

- Routine investigation
- Confirmatory – Biopsy
- Staging workup

-CXR

-Barium enema

-CT abdomen

-Virtual colonoscopy

To detect fistula (colovesical fistula) if not apparent in traditional colonoscope .

-MRI

-PET

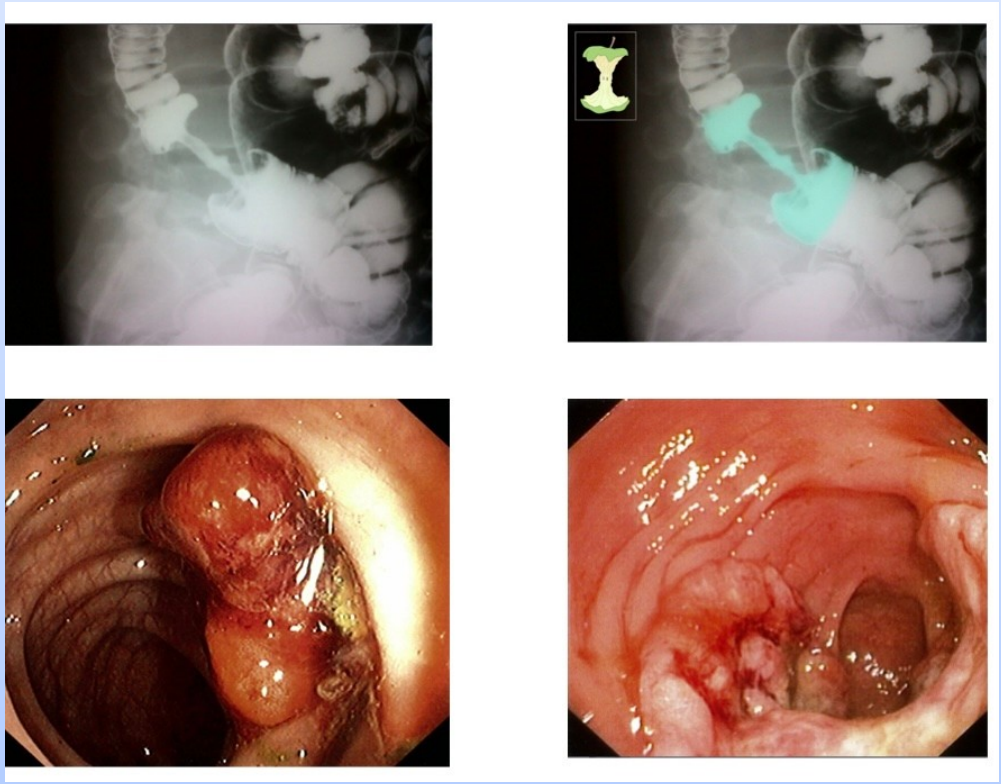
❖ Gold standard – Colonoscopy + Biopsy

- FOBT
- Stool cytology
- CEA
- IHC markers
- Molecular markers- oncogenes

○ Imaging

- **Flexible sigmoidoscopy**

- An **endoscopic evaluation** of the lower gastrointestinal tract from the anus to the sigmoid colon. Can be performed using a flexible or rigid endoscope. Consider in patients with scanty intermittent hematochezia and age<40 years, no red flags and no risk factors
- **Complete colonoscopy**: which is an indication for all patients with suspected CRC with the findings being an ulcer proliferative friable mass, and biopsy is required to confirm the diagnosis. CRC cannot be diagnosed without biopsy
- **Double contrast barium enema**: which is an alternative to colonoscopy when it can't be preformed; findings include endoluminal filling defect with irregular margins and an apple core lesion (napkin ring sign) which is a sharply defined circumferential narrowing of the bowel.



Treatment

- SURGRY is the GOLD STANDARD and principle therapy of primary and non metastatic ca colon

– Curative

– Palliative

– Accurate disease staging

– Guides adjuvant treatment

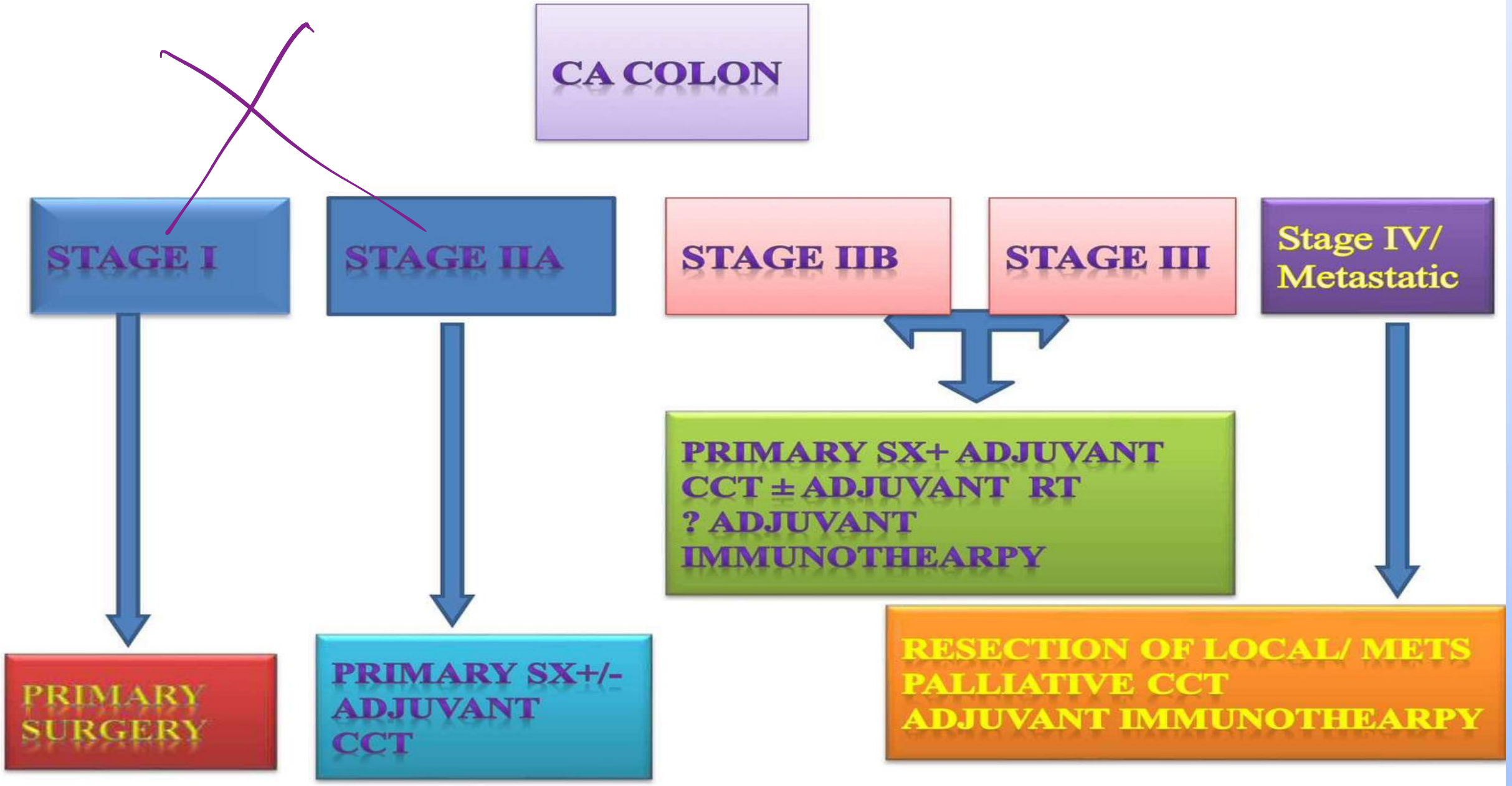
- Likelihood of cure is greater when disease is detected at early stage

❖ AIM

-To excise the primary lesion with adequate margin ~5 cm of normal bowel proximal and distal to the tumor.

-Locoregional lymphadenectomy.

- To reconstitute bowel continuity.


CA COLON
STAGE I
STAGE IIA
STAGE IIB
STAGE III
Stage IV/ Metastatic
PRIMARY SX+ ADJUVANT CCT ± ADJUVANT RT ? ADJUVANT IMMUNOTHEARPY
PRIMARY SURGERY
PRIMARY SX+/- ADJUVANT CCT
RESECTION OF LOCAL/ METS PALLIATIVE CCT ADJUVANT IMMUNOTHEARPY

Types of resection - Hemicolectomy

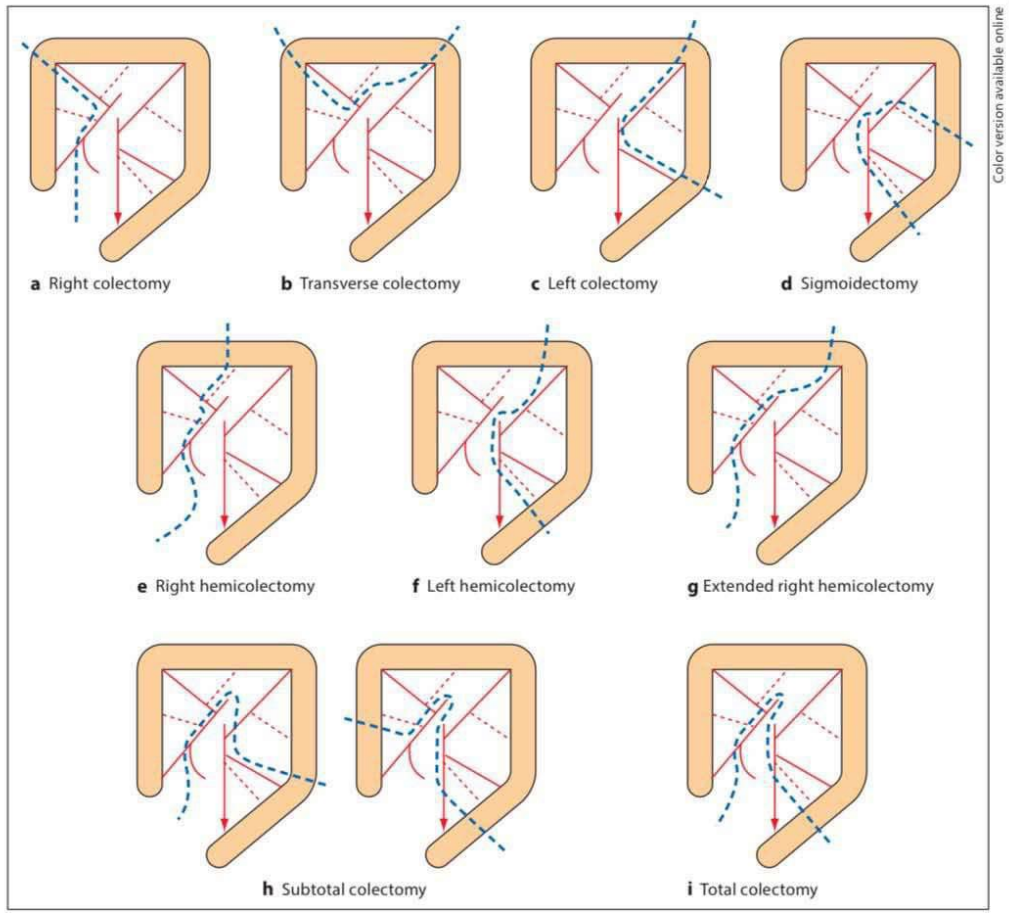
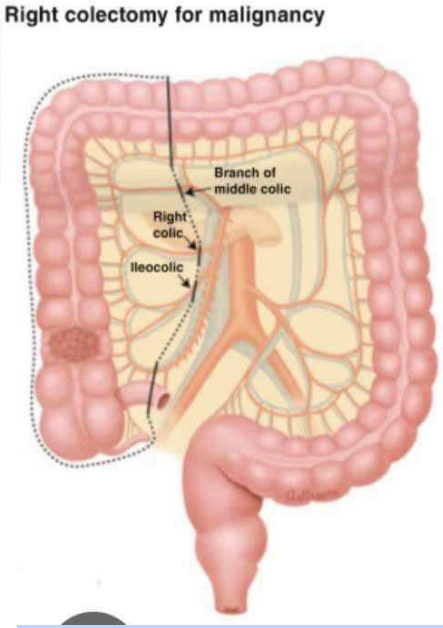
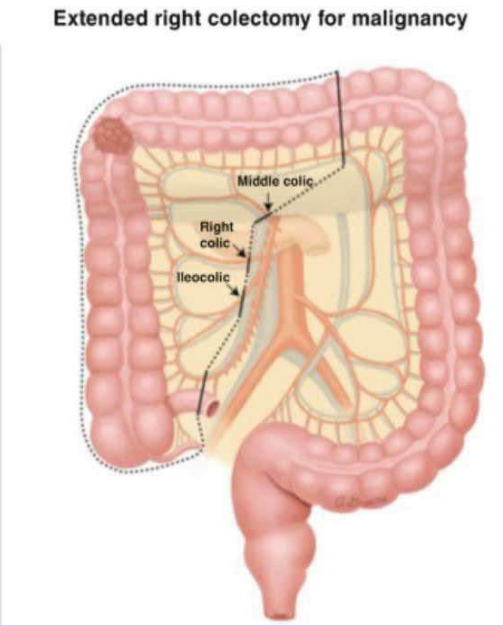
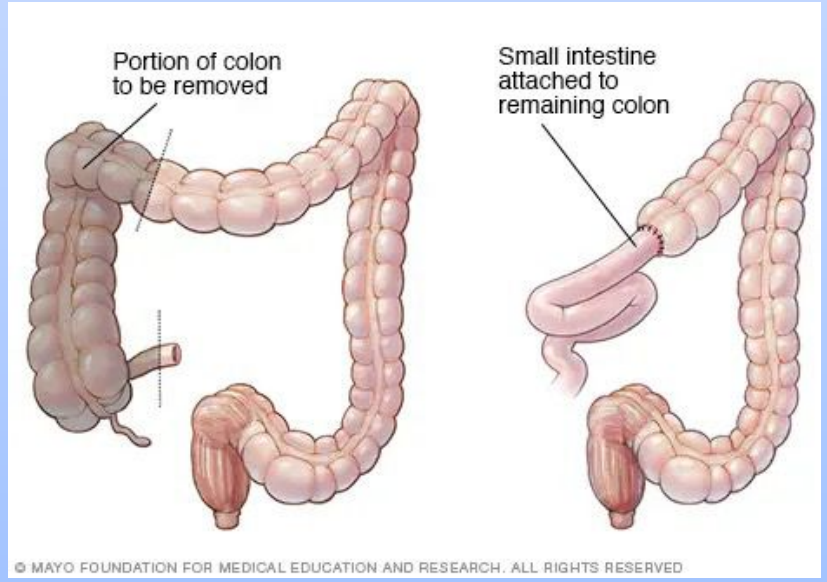


Fig. 7. a–i Definitions of surgical treatment for colon cancer. Segmental resection is defined as treatment in which one main artery is divided (**a–c**), while hemicolectomy involves division of two main arteries (**e**, **f**). In this situation, ligation and division of additional colic arteries does not matter. In hemicolectomy, however, a certain portion of the transverse colon has to be resected in addition to the area of the right or left colon. Extended hemicolectomy is performed if an additional artery from the MCA is excised (**g**). Subtotal colectomy is performed if three main colic arteries are divided, while total colectomy involves four main colic arteries (**i**).







Emergency resection

- 20% of patients with colonic cancer will present as an emergency, the majority with obstruction, but occasionally with hemorrhage or perforation.
- If the lesion is **right-sided**, it is usually possible to perform a right hemicolectomy and anastomosis in the usual manner. If there has been perforation with substantial contamination or if the patient is unstable, it may be advisable to bring out an ileocolostomy following resection of the lesion rather than forming an anastomosis.
- For a **left-sided** lesion the decision lies between a Hartmann's procedure and a resection and anastomosis. An on-table washout may be necessary to remove residual fecal content in the proximally obstructed bowel.

Rectal cancer treatment

- The extent of the resection depends on the location of the tumor, the TNM staging, the sphincter's tone and the distance of the tumor from the anal verge (which should be assessed preoperatively to plan the most appropriate surgical resection. Unlike colon cancer, both adjuvant and neoadjuvant radiotherapy can be used in stages 2,3 and 4 of rectal cancer.
- Gynecologic and urologic consultation must be taken into account if there is evidence of regional spread past the rectum.

Rectal cancer treatment

- **Transanal excision**: which involves minimally invasive excision of small superficial tumors endoscopically that are small (<3cm in size), T1 tumors with no risk factors.
- **Low anterior resection**: a sphincter preserving resection of the rectum and sigmoid with optimal diverting ostomy
- **Abdominoperineal resection**: resection of the rectum, sigmoid and anus with total mesorectal excision and a permanent colostomy indicated when the tumor is close to the sphincter or when the cancer has invaded the sphincter and the patient already has loss of sphincter tone.

Metastasis

- Approximately 20% of patients who present with colon cancer have distant metastasis at the time of presentation. CRC spreads by lymphatic, hematogenous, contiguous and transperitoneal dissemination.
- Since the venous drainage of the intestinal tract is via the portal system, the first site of hematogenous spread is the liver, followed by lungs, bone and the brain. Tumors arising in the distal rectum may metastasize to the lungs before the liver because the inferior rectal vein drains into the inferior vena cava.

With contrast

- Abdomen, pelvis and chest CT scans is used in most institutions for all patients with satge2,3 and 4 colorectal cancer prior to or following resection which may demonstrate regional tumor extension, regional lymphatic and distant metastasis and tumor related complications.
- Liver contrast-enhanced MRI is the preferred first-line imaging study for evaluating CRC liver metastasis.
- PET scans can be used to localize disease recurrence in patients who have elevated CEA serum levels

Follow up

- All patient with CRC should be followed up closely after curative treatment to ensure early identification and management of recurrence via:
  - Patient history, physical examination and CEA levels every 3-6 months in the first 2 years and then every 6 months for 3 years
  - CT chest/abdomen/pelvis annually for 5 years
  - Colonoscopy 1 year after preoperative colonoscopy then every 3-5 years.
  - Proctoscopy/sigmoidoscopy every 6-12 months for 5 years after treatment of rectal cancer which may be combined with endorectal ultrasound.
- 90% of recurrences occur within the first 5 years following treatment.

Free Palestine

Thank You