Colorectal Cancer And Prevention

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Abstract
People that develop colon or rectal cancer often experience no symptoms early in the disease. Not until colon or rectal cancer becomes advanced do symptoms appear. Educating the public, especially patients with a personal or family history of colorectal polyps and cancer, about screening of colorectal cancer are important to prevention and can save lives. Recommended screening exams, such as colonoscopy, can prevent cancers from starting. While some risk factors for cancer may be avoided, such as those related to lifestyle, there are some that are familial and increase the risk of developing colorectal cancer. The risks of colorectal cancer, screening options, diagnosis and treatment are discussed.
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This educational activity is credited for 2.5 hours. Nurses may only claim credit commensurate with the credit awarded for completion of this course activity.

Statement of Learning Need
Nurses need to recognize and stay informed of the symptoms associated with colorectal cancer. Trends in the diagnosis, treatment and prevention of colorectal cancer continue to be part of ongoing research and improvements to best practice recommendations to reduce incidence and mortality.

Course Purpose
To provide nursing professionals with knowledge to care for patients with colorectal cancer.
**Target Audience**

Advanced Practice Registered Nurses and Registered Nurses
(Interdisciplinary Health Team Members, including Vocational Nurses and Medical Assistants may obtain a *Certificate of Completion*)

**Course Author & Planning Team Conflict of Interest Disclosures**

Elizabeth Boldon, RN, MSN, William S. Cook, PhD,
Douglas Lawrence, MA, Susan DePasquale, MSN, FPMHNP-BC – all have no disclosures

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There is no commercial support for this course.

**Activity Review Information**

Reviewed by Susan DePasquale, MSN, FPMHNP-BC

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Please take time to complete a self-assessment of knowledge, on page 4, sample questions *before* reading the article.

Opportunity to complete a self-assessment of knowledge learned will be provided at the end of the course.
1. Colon cancer remains the ________ most common cause of cancer death in the United States.
   a. second
   b. fourth
   c. third
   d. None of the above

2. FAP is a rare disorder that greatly increases risk of developing colon cancer before ________.
   a. age 40
   b. age 45
   c. age 50
   d. age 60

3. A difference between stage III and stage IV colon cancer is
   a. nearby lymph nodes are invaded
   b. spread to other organs
   c. tissue adhesions
   d. None of the above

4. African-Americans and American Indians may consider beginning colon cancer screening at ________.
   a. age 35
   b. age 45
   c. age 55
   d. None of the above.

5. True/False. Low-dose aspirin is linked to a reduced risk of polyps and colon cancer.
   a. True
   b. False
Introduction

Colorectal cancer, or colon cancer, occurs in the colon or rectum. The colon is a 6-foot long muscular tube connecting the small intestine to the rectum. The colon, which along with the rectum is called the large intestine, is a highly specialized organ that is responsible for processing waste so that emptying the bowels is easy and convenient.

The colon removes water from the stool, and stores the solid stool. Once or twice a day it empties its contents into the rectum to begin the process of elimination. The rectum is an 8-inch chamber that connects the colon to the anus. It is the rectum's job to receive stool from the colon, to give notification that there is stool to be evacuated, and to hold the stool until evacuation happens.

Colon cancer, when discovered early, is very treatable. Even if it spreads into nearby lymph nodes, surgical treatment followed by chemotherapy is highly successful. In the most difficult cases — when the cancer has metastasized to the liver, lungs or other sites — treatment can prolong and add to one’s quality of life.¹

Colon cancer affects men and women of all racial and ethnic groups, and is most often found in people 50 years or older. It is the third most common cancer in the United States, behind only lung and prostate cancers in men and lung and breast cancers in women, and the second leading cause of cancer death. Approximately 49,700 Americans are expected to die of large bowel cancer each year. Although colorectal cancer mortality has been progressively declining since 1990 at a rate of about 3 percent per year, it
still remains the third most common cause of cancer death in the United States.²

It is estimated that in 2016, there will be 50,830 people that will die of colon cancer. But the truth is that it doesn't have to be this way. If everyone 50 years or older had a regular screening test, as many as 80% of deaths from colon cancer could be prevented.³

**What Is Colorectal Cancer?**

Colon cancer is cancer of the large intestine (colon), the lower part of the digestive system. Rectal cancer is cancer of the last several inches of the colon. Together, they're often referred to as colorectal cancer.

Most cases of colon cancer begin as small, noncancerous (benign) clumps of cells called adenomatous polyps. Over time some of these polyps become colon cancers. Polyps may be small and produce few, if any, symptoms. For this reason, medical providers recommend regular screening tests to help prevent colon cancer by identifying polyps before they become colon cancer.⁴
**Symptoms of Colorectal Cancer**

Signs and symptoms of colon cancer include:

- A change in bowel habits, including diarrhea or constipation or a change in the consistency of stool
- Rectal bleeding or blood in stool
- Persistent abdominal discomfort, such as cramps, gas or pain
- A feeling that the bowel doesn't empty completely
- Weakness or fatigue
- Unexplained weight loss
- Stools that are more narrow than usual
- Nausea or vomiting

Many people with colon cancer experience no symptoms in the early stages of the disease. When symptoms appear, they'll likely vary, depending on the cancer's size and location in the large intestine.

**Causes of Colorectal Cancer**

In most cases, it's not clear what causes colon cancer. Medical providers know that colon cancer occurs when healthy cells in the colon become altered.

Healthy cells grow and divide in an orderly way to keep the body functioning normally. But when a cell is damaged and becomes cancerous, cells continue
to divide — even when new cells are not needed. These cancer cells can invade and destroy normal tissue nearby. And cancerous cells can travel to other parts of the body.4

Precancerous Growths in the Colon

Colon cancer most often begins as clumps of precancerous cells (polyps) on the inside lining of the colon. Polyps can appear mushroom-shaped, or they can be flat or recessed into the wall of the colon. Removing polyps before they become cancerous can prevent colon cancer.4

Inherited Gene Mutations that Increase the Risk of Colon Cancer

Inherited gene mutations that increase the risk of colon cancer can be passed through families, but these inherited genes are linked to only a small percentage of colon cancers. Inherited gene mutations don't make cancer inevitable, but they can increase an individual's risk of cancer significantly.4

The most common forms of inherited colon cancer syndromes are:

- **Familial adenomatous polyposis (FAP)**

  FAP is a rare disorder that causes a person to develop thousands of polyps in the lining of the colon and rectum. People with untreated FAP have a greatly increased risk of developing colon cancer before age 40.
• **Hereditary nonpolyposis colorectal cancer (HNPCC)**

HNPCC, also called Lynch syndrome, increases the risk of colon cancer and other cancers. People with HNPCC tend to develop colon cancer before age 50.

FAP, HNPCC and other, more rare inherited colon cancer syndromes can be detected through genetic testing. If someone is concerned about his or her family's history of colon cancer, they should talk to a medical provider about whether the family history suggests an increased risk of these conditions.4

**Risk Factors for Colorectal Cancer**

Factors that may increase the risk of colon cancer are outlined in this section. These include factors such as age, ethnicity, family history, medical history, diet and lifestyle, as well as other factors related to treatment outcomes.4,5

• Older age:

  The great majority of people diagnosed with colon cancer are older than 50. Colon cancer can occur in younger people, but it occurs much less frequently.

• Ethnicity:

  African-Americans have a greater risk of colon cancer than do people of other races.
• **Personal history:**
  A personal history of colorectal cancer or polyps is important to consider. People that have already had colon cancer, or adenomatous polyps, have a greater risk of colon cancer in the future.

• **Inflammatory intestinal conditions:**
  Chronic inflammatory diseases of the colon, such as ulcerative colitis and Crohn's disease, can increase the risk of colon cancer.

• **Inherited syndromes that increase colon cancer risk:**
  Genetic syndromes passed through generations of family can increase the risk of colon cancer. These syndromes include familial adenomatous polyposis and hereditary nonpolyposis colorectal cancer, which is also known as Lynch syndrome.

• **Family history of colon cancer and colon polyps:**
  People are more likely to develop colon cancer if they have a parent, sibling or child with the disease. If more than one family member has colon cancer or rectal cancer, the risk is even greater. In some cases, this connection may not be hereditary or genetic. Instead, cancers within the same family may result from shared exposure to an environmental carcinogen or from diet or lifestyle factors.

• **Low-fiber, high-fat diet:**
  Colon cancer and rectal cancer may be associated with a diet low in fiber and high in fat and calories. Research in this area has had mixed results. Some studies have found an increased risk of colon cancer in people who eat diets high in red meat.
• Sedentary lifestyle:
  People who are inactive are more likely to develop colon cancer. Getting regular physical activity may reduce the risk of colon cancer.

• Diabetes:
  People with diabetes and insulin resistance may have an increased risk of colon cancer.

• Obesity:
  People who are obese have an increased risk of colon cancer and an increased risk of dying of colon cancer when compared with people considered normal weight.

• Smoking:
  People who smoke cigarettes may have an increased risk of colon cancer.

• Alcohol:
  Heavy use of alcohol may increase the risk of colon cancer.

• Radiation therapy for cancer:
  Radiation therapy directed at the abdomen to treat previous cancers may increase the risk of colon cancer.

**Diagnosis Of Colorectal Cancer**

If signs and symptoms indicate colon cancer, a health care provider may recommend one or more tests and procedures. These are outlined in this section.
**Colonoscopy**

Colonoscopy is a procedure that involves use of an endoscope to examine the inside of the colon. Preparation involves administration of laxatives to clear the colon and generally a clear liquid diet prior to colonoscopy. The procedure uses a long, flexible and slender tube attached to a video camera and monitoring equipment to view the entire colon and rectum. If any suspicious areas are found, the endoscopist can pass surgical tools through the tube to take tissue samples (biopsies) for analysis.⁴

**CT Colonography**

CT colonography is a radiological procedure, also called virtual colonoscopy, that combines multiple CT scan images to create a detailed picture of the inside of the colon. If a patient is unable to undergo colonoscopy, the medical provider may recommend virtual colonoscopy.⁴ Preparation is similar to standard endoscopy; the patient is provided laxatives usually over several days to clear the colon prior to virtual colonoscopy. The patient may still need to undergo colonoscopy or other surgical procedure to remove polyp(s) and/or to biopsy tissue.
**Staging Colon Cancer**

Once someone has been diagnosed with colon cancer, the health care provider will order tests to determine the extent (stage) of the cancer. Staging helps determine what treatments are most appropriate.

Staging tests may include imaging procedures such as abdominal and chest CT scans. In many cases, the stage of the cancer may not be determined until after colon cancer surgery. The stages of colon cancer are outlined below.4

- **Stage I**
  The cancer has grown through the superficial lining (mucosa) of the colon or rectum but hasn't spread beyond the colon wall or rectum.

- **Stage II**
  The cancer has grown into or through the wall of the colon or rectum but hasn't spread to nearby lymph nodes.

- **Stage III**
  The cancer has invaded nearby lymph nodes but has not affected other parts of the body yet.

- **Stage IV**
  The cancer has spread to distant sites, such as other organs — for instance, to the liver or lung.
Treatment Of Colorectal Cancer

The type of treatment a medical provider recommends will depend largely on the stage of the colon cancer. The three primary treatment options are surgery, chemotherapy and radiation.

Surgery for Early-Stage Colon Cancer

If the cancer is small, localized in a polyp and in a very early stage, the medical provider may be able to remove it completely during a colonoscopy. Larger polyps may be removed using endoscopic mucosal resection. If the pathologist determines that it's likely that the cancer was completely removed, there may be no need for additional treatment.

Polyps that can't be removed during colonoscopy may be removed using laparoscopic surgery. In this procedure, a surgeon performs the operation through several small incisions in the abdominal wall, inserting instruments with attached cameras that display the colon on a video monitor. The surgeon may also take samples from lymph nodes in the area where the cancer is located.4

Surgery for Invasive Colon Cancer

If the colon cancer has grown into or through the colon, the surgeon may recommend a partial colectomy to remove the part of the colon that contains the cancer, along with a margin of normal tissue on either side of the cancer. Nearby lymph nodes are usually also removed and tested for cancers.
The surgeon is often able to reconnect the healthy portions of the colon or rectum. But when this is not possible, for instance if the cancer is at the outlet of the rectum, the patient may need to have a permanent or temporary colostomy. This involves creating an opening in the wall of the abdomen from a portion of the remaining bowel for the elimination of body waste into a special bag. Sometimes the colostomy is only temporary, allowing the colon or rectum time to heal after surgery. In some cases, however, the colostomy may be permanent.4

**Surgery for Advanced Cancer**

If the cancer is very advanced, or if the patient’s overall health is very poor, the surgeon may recommend an operation to relieve a blockage of the colon or other conditions in order to improve symptoms. This surgery isn't done to cure cancer, but instead to relieve signs and symptoms, such as bleeding and pain.

In specific cases where the cancer has spread only to the liver and if the patient’s overall health is otherwise good, the medical provider may recommend surgery to remove the cancerous lesion from the liver. Chemotherapy may be used before or after this type of surgery. This treatment may improve the prognosis.4
Chemotherapy

Chemotherapy uses drugs to destroy cancer cells. Chemotherapy for colon cancer is usually given after surgery if the cancer has spread to the lymph nodes. In this way, chemotherapy may help reduce the risk of cancer recurrence. Chemotherapy can also be given to relieve symptoms of colon cancer that has spread to other areas of the body. It may be used before surgery to shrink the cancer before an operation. In people with rectal cancer, chemotherapy is typically used along with radiation therapy.  

Radiation Therapy

Radiation therapy uses powerful energy sources, such as X-rays, to kill cancer cells that might remain after surgery, to shrink large tumors before an operation so that they can be removed more easily, or to relieve symptoms of colon cancer and rectal cancer.  

Radiation therapy is rarely used in early-stage colon cancer, but is a routine part of treating rectal cancer, especially if the cancer has penetrated through the wall of the rectum or traveled to nearby lymph nodes. Radiation therapy, usually combined with chemotherapy, may be used after surgery to reduce the risk that the cancer may recur in the area of the rectum where it began.  

Targeted Drug Therapy

Drugs that target specific defects that allow cancer cells to grow are available to people with advanced colon cancer, including bevacizumab (Avastin), cetuximab (Erbitux), panitumumab (Vectibix) and regorafenib
(Stivarga). Targeted drugs can be given along with chemotherapy or alone. Targeted drugs are typically reserved for people with advanced colon cancer.

Targeted drugs help some people while others are not helped by this approach. Researchers are working to determine who is most likely to benefit from targeted drugs. Until then, medical providers carefully weigh the limited benefit of targeted drugs against the risk of side effects and the expensive cost when deciding whether to use these treatments.4

**Prevention Of Colorectal Cancer**

Screening is the most effective method to catch colorectal cancer early, thus preventing further complications. People with an average risk of colon cancer can consider screening beginning at age 50. But people with an increased risk, such as those with a family history of colon cancer, should consider screening sooner. African-Americans and American Indians may consider beginning colon cancer screening at age 45.4

Several screening options exist — each with its own benefits and drawbacks. Patients should talk about their options with their health care providers to decide which tests are appropriate.

**Lifestyle Changes to Reduce Risk**

Steps can be taken to reduce the risk of colon cancer by making changes in everyday life. One can take steps to do the following.4
• Eat a variety of fruits, vegetables and whole grains:
  Fruits, vegetables and whole grains contain vitamins, minerals, fiber and antioxidants, which may play a role in cancer prevention. It is wise to choose a variety of fruits and vegetables in order to get an array of vitamins and nutrients.

• Drink alcohol in moderation, if at all:
  If choosing to drink alcohol, it is wise to limit the amount of alcohol to no more than one drink a day for women and two for men.

• Stop smoking:
  People who smoke should talk to their health care providers about ways to quit that may work for them.

• Exercise most days of the week:
  It is important to get at least 30 minutes of exercise on most days. If people have been inactive, they should start slowly and build up gradually to 30 minutes. Also, individuals should talk to their health care provider before starting any exercise program.

• Maintain a healthy weight:
  For people with a healthy weight, they should work to maintain that weight by combining a healthy diet with daily exercise. Those who need to lose weight should ask their care providers about healthy ways to achieve their goals. It is wise to aim to lose weight slowly by increasing the amount of exercise and reducing the number of calories consumed.
Colon Cancer Prevention for People With a High Risk

Some treatments, including medications and surgery, have been found to reduce the risk of precancerous polyps or colon cancer. However, not enough evidence exists to recommend these medications to people who have an average risk of colon cancer.

For those with an increased risk of colon cancer, it is best to discuss the benefits and risks of these preventive treatments with a health care provider.

- Aspirin:
  Some evidence links a reduced risk of polyps and colon cancer to regular aspirin use. However, studies of low-dose aspirin or short-term use of aspirin have not found this to be true. It's likely that one may be able to reduce the risk of colon cancer by taking large doses of aspirin over a long period of time. However, using aspirin in this way carries a risk of side effects, such as gastrointestinal bleeding and ulcers.

- Celecoxib (Celebrex)
  Celecoxib and other drugs known as COX-2 inhibitors provide pain relief. Some evidence suggests COX-2 drugs can reduce the risk of precancerous polyps in people who have been diagnosed with these polyps in the past. But COX-2 drugs carry a risk of heart problems, including heart attack. Two COX-2 inhibitor drugs were removed from the market because of these risks.
• Surgery to prevent cancer

In cases of rare, inherited syndromes such as familial adenomatous polyposis, or inflammatory bowel disease, such as ulcerative colitis, health care providers may recommend removal of the entire colon and rectum in order to prevent cancer from occurring.

Summary

In summary, colon and rectal cancer is a common and lethal disease. It is estimated that approximately 132,700 new cases of large bowel cancer are diagnosed annually in the United States, including about 93,090 colon and 39,610 rectal cancers. Approximately 49,700 Americans are expected to die of large bowel cancer each year. Although colorectal cancer mortality has been progressively declining since 1990 at a rate of about 3 percent per year, it still remains the third most common cause of cancer death in the United States.

This course has described the symptoms, causes, risk factors, diagnosis, treatment and prevention of colon and rectal cancer. While a very serious disease that still takes the lives of many, if detected early, colon and rectal cancer can be curable.

Please take time to help NurseCe4Less.com course planners evaluate the nursing knowledge needs met by completing the self-assessment of Knowledge Questions after reading the article, and providing feedback in the online course evaluation.

Completing the study questions is optional and is NOT a course requirement.
1. Colon cancer is most often found in people _____ years or older.
   a. 40
   b. 50
   c. 58
   d. 60

2. True/False. Colon cancer, when discovered early, is very treatable.
   a. True
   b. False

3. Colon cancer remains the ________ most common cause of cancer death in the United States.
   a. second
   b. fourth
   c. third
   d. None of the above

4. If everyone 50 years or older had a regular screening test, as many as _____ % of deaths from colon cancer could be prevented.
   a. 50
   b. 62
   c. 70
   d. 80
5. Most cases of colon cancer begin as
   a. familial polyposis
   b. adenomatous polyps
   c. pre-cancerous inflammation
   d. answers a and c above

6. Signs and symptoms of colon cancer may include:
   a. Rectal bleeding or blood in stool
   b. Unexplained weight loss
   c. Stools that are more narrow than usual
   d. All of the above

7. A colon polyp typically appears
   a. mushroom-shaped
   b. flat and recessed
   c. purple-black cauliflower shaped
   d. Answers a and b above

8. Inherited gene mutations
   a. is not a significant risk of cancer
   b. cause cancer to inevitably occur
   c. increase risk of cancer significantly
   d. Answers b and c above
9. People with HNPCC, or Lynch syndrome, tend to develop colon cancer before _______.
   a. age 35
   b. age 40
   c. age 50
   d. age 60

10. FAP is a rare disorder that greatly increases risk of developing colon cancer before _______.
   a. age 40
   b. age 45
   c. age 50
   d. age 60

11. The following is NOT considered a risk factor of colon cancer:
   a. gender
   b. age
   c. ethnicity
   d. obesity

12. These procedure(s) allows colon tissue samples to be taken:
   a. virtual colonoscopy
   b. CT colonography
   c. endoscopy
   d. Answers a and b above
13. Colon cancer not found to spread beyond the colon wall is
   a. stage II
   b. stage III
   c. stage IV
   d. None of the above

14. A difference between stage III and stage IV colon cancer is
   a. nearby lymph nodes are invaded
   b. spread to other organs
   c. tissue adhesions
   d. None of the above

15. In __________ several small incisions are made in the abdominal wall for insertion of instruments to view the colon on a video monitor.
   a. CT colonography
   b. laparoscopic surgery
   c. endoscopy
   d. Answers a and b above

16. True/False. Cancer at the outlet of the rectum may require a permanent or temporary colostomy.
   a. True
   b. False
17. For advanced colon cancer, surgery may be done for
   a. curative purpose
   b. symptom relief
   c. prevention and screening
   d. None of the above

18. Chemotherapy may be used to
   a. prevention of cancer when there is genetic predisposition
   b. relieve symptoms for cancer spread to other areas of the body
   c. shrink cancer before an operation
   d. Answers b and c above

19. Radiation therapy is ________ used in early-stage colon cancer.
   a. rarely
   b. commonly
   c. never
   d. None of the above

20. Targeted drugs are never a stand-alone treatment.
   a. True
   b. False
21. Targeted drugs are typically reserved for people with _______ colon cancer.

   a. early
   b. advanced
   c. stage II – III, not stage IV
   d. only stage III

22. True/False. Screening is the most effective method to catch colorectal cancer early

   a. True
   b. False

23. African-Americans and American Indians may consider beginning colon cancer screening at ______.

   a. age 35
   b. age 45
   c. age 55
   d. None of the above.

24. Prevention of colon cancer includes a diet with

   a. poultry instead of red meat
   b. variety fruits and vegetables
   c. whole grains
   d. Answers b and c above
25. Smoking is not considered a risk factor for colon cancer because
   a. it causes lung cancer and may or may not spread to the colon
   b. it depends on the age and gender of the person
   c. it is influenced more by family history associated with risk
   d. None of the above; it is a risk for colon cancer.

26. Exercise and maintaining weight are recommended
   a. to reduce risk of colon cancer
   b. avoid side effects of chemotherapy induced metabolic syndrome
   c. certain ethnic groups at increased hereditary risk of colon cancer
   d. to include at least 10 minutes of walking a day

27. True/False. Low-dose aspirin reduces the risk of colon polyps.
   a. True
   b. False

28. __________ has been found to reduce the risk of precancerous polyps.
   a. COX-2 inhibitor drugs
   b. Citalopram
   c. Aspirin high dose
   d. None of the above
29. True/False. In certain conditions, such as FAP and colitis, the patient may be recommended to remove the entire colon.
   a. True
   b. False

30. True/False. Because colorectal cancer mortality has been progressively declining at a rate of about 3 percent per year since 1990, it is now considered the 5th most common cause of cancer death.
   a. True
   b. False

Correct Answers:
   1. Colon cancer is most often found in people ______ years or older.

   Correct answer: 50

   2. True/False. Colon cancer, when discovered early, is very treatable.

   Correct answer: True

   3. Colon cancer remains the _________ most common cause of cancer death in the United States.

   Correct answer: third

   4. If everyone 50 years or older had a regular screening test, as many as ___ % of deaths from colon cancer could be prevented.

   Correct answer: 80
5. Most cases of colon cancer begin as

**Correct answer:** adenomatous polyps

6. Signs and symptoms of colon cancer may include:

**Correct answer:** All of the above

7. A colon polyp typically appears

**Correct answer:** Answers a and b above

8. Inherited gene mutations

**Correct answer:** increase risk of cancer significantly

9. People with HNPCC, or Lynch syndrome, tend to develop colon cancer before ________.

**Correct answer:** age 50

10. FAP is a rare disorder that greatly increases risk of developing colon cancer before ________.

**Correct answer:** age 40

11. The following is NOT considered a risk factor of colon cancer:

**Correct answer:** gender

12. The following procedure(s) allows colon tissue samples to be taken:

**Correct answer:** endoscopy

13. Colon cancer not found to spread beyond the colon wall is

**Correct answer:** None of the above

14. A difference between stage III and stage IV colon cancer is

**Correct answer:** spread to other organs
15. In ______________ several small incisions are made in the abdominal wall for insertion of instruments to view the colon on a video monitor.

   **Correct answer:** laparoscopic surgery

16. True/False. Cancer at the outlet of the rectum may require a permanent or temporary colostomy.

   **Correct answer:** True

17. For advanced colon cancer, surgery may be done for

   **Correct answer:** symptom relief

18. Chemotherapy may be used to

   **Correct answer:** Answers b and c above

19. Radiation therapy is _______ used in early-stage colon cancer.

   **Correct answer:** rarely

20. Targeted drugs are never a stand-alone treatment.

   **Correct answer:** False

21. Targeted drugs are typically reserved for people with _______ colon cancer.

   **Correct answer:** advanced

22. True/False. Screening is the most effective method to catch colorectal cancer early

   **Correct answer:** True

23. African-Americans and American Indians may consider beginning colon cancer screening at _______.

   **Correct answer:** age 45
24. Prevention of colon cancer includes a diet with
   Correct answer: Answers b and c above

25. Smoking is not considered a risk factor for colon cancer because
   Correct answer: None of the above; it is a risk for colon cancer.

26. Exercise and maintaining weight are recommended
   Correct answer: to reduce risk of colon cancer

27. True/False. Low-dose aspirin reduces the risk of colon polyps.
   Correct answer: False

28. __________ has been found to reduce the risk of precancerous polyps.
   Correct answer: COX-2 inhibitor drugs

29. True/False. In certain conditions, such as FAP and colitis, the patient may be recommended to remove the entire colon.
   Correct answer: True

30. True/False. Because colorectal cancer mortality has been progressively declining at a rate of about 3 percent per year since 1990, it is now considered the 5\textsuperscript{th} most common cause of cancer death.
   Correct answer: False
Reference Section

The reference section of in-text citations include published works intended as helpful material for further reading. Unpublished works and personal communications are not included in this section, although may appear within the study text.


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