Colorectal cancer is the fourth most common cancer in the United States and has a five-year survival rate of 65%. The American Cancer Society and other experts have released guidelines on surveillance, health promotion, screening for other malignancies, and management of treatment effects. Surveillance for disease recurrence should occur every three to six months for the first two to three years, then every six months for a total of five years. Each visit should include a history and physical examination, routine care for chronic medical conditions, and screening for other primary cancers according to guidelines for the general population. Topics addressed depend on the treatment utilized but generally include gastrointestinal issues, neuropathy, pain, urinary symptoms, fatigue, psychological issues, cognitive problems, sexual symptoms, and stoma care. Carcinoembryonic antigen testing should be performed at each visit in patients who are candidates for further intervention. Chest, abdomen, and pelvic computed tomography should be performed annually for five years after treatment. Colonoscopy should be repeated one year after treatment, then three years later if no advanced adenoma is identified. (Am Fam Physician. 2018;97(5):331-336. Copyright © 2018 American Academy of Family Physicians.)

**Colorectal cancer** is the fourth most commonly diagnosed cancer in the United States.\(^1\) In 2014, the prevalence was estimated at 0.3%, representing nearly 1.2 million Americans.\(^1\) Because successful treatment of colorectal cancer has increased the five-year survival rate to 65%,\(^1\) family physicians are likely to encounter survivors in their practice. This article reviews the 2015 American Cancer Society guidelines for the care of the colorectal cancer survivor.\(^2\)

**Disease Surveillance**

Some studies suggest that there is an overall survival benefit for follow-up after curative surgery; however, the frequency of follow-up visits and testing is controversial.\(^3,4\) Five-year recurrence rates for colorectal cancer range from 17% to 42%.\(^3\) A Cochrane review of several small observational and randomized prospective studies did not find an overall survival benefit for postoperative surveillance strategies in patients with nonmetastatic disease.\(^4\)

Several organizations, including the American Cancer Society, recommend intensive postoperative surveillance based on a conservative interpretation of the available evidence.\(^2,5-7\) Beginning four to six weeks after potentially curative resection, follow-up should occur every three to six months for the first two to three years, then every six months for a total of five years.\(^2,3,5-7\) Carcinoembryonic antigen (CEA) testing is recommended at each visit. Routine CEA testing and computed tomography are not recommended beyond five years, and routine positron emission tomography to monitor for disease recurrence is not recommended.\(^2,3,5-7\)

The risk of cancer recurrence is affected by many factors, including histologic differentiation, vascular or perineural invasion, bowel obstruction or perforation, narrow resection margins, and paucity of lymph nodes examined. Patients with stage I or II disease who are at higher risk of recurrence and all patients with stage III disease should be offered computed tomography of the chest, abdomen, and pelvis every 12 months for the first five years after resection.\(^2,3,5-7\) Surveillance colonoscopy should
be performed one year after initial treatment to identify and remove new polyps. If an advanced adenomatous polyp (i.e., larger than 1 cm or with a villous component or high-grade dysplasia) is found, colonoscopy should be repeated after another year; otherwise, it should be repeated after three years, then every five years until there is no longer a benefit to the patient.²,³,⁵-⁷

Rectal cancer is more likely than colon cancer to recur locally.²,³ Patients with a history of rectal cancer whose surgery did not involve total mesorectal excision or who have a high risk of recurrence should undergo flexible sigmoidoscopy or endoscopic ultrasonography every three to six months for the first two to three years after surgery. For patients with stage I colorectal cancer who are at lower risk of recurrence, the National Comprehensive Cancer Network recommends a less intensive schedule: colonoscopy should be offered at one year, with repeat surveillance at three years, then every five years unless lesions are discovered. Computed tomography and CEA testing may be omitted.⁵,⁷

Recommendations for surveillance in patients with stage IV disease after curative surgery and/or adjuvant treatment are similar to those for patients with stage II and III disease. The only difference is the timing of follow-up testing: computed tomography and CEA testing should be offered every three to six months for the first two years, then every six to 12 months for a total of five years.

### Health Promotion and Screening for Other Primary Malignancies

Colorectal cancer survivors should be screened for other cancers according to the same guidelines used for screening in average-risk persons. The risks, benefits, and limitations of screening should be discussed in the context of the patient’s individual risk and overall health.²

Health promotion counseling for colorectal cancer survivors is similar to that for the general population, linking recommendations specifically to the risk of recurrence or poor outcomes when applicable. There is evidence that obesity increases the risk of colorectal cancer recurrence; therefore, physicians should encourage evidence-based weight-loss interventions for colorectal cancer.
survivors who are obese. Exercise interventions can improve quality of life in cancer survivors, and exercise reduces all-cause mortality in this population. Physicians should encourage colorectal cancer survivors to meet the recommended 150 minutes of exercise per week. 

The typical Western diet, particularly if it is high in refined grains and sugar, is associated with an increased risk of colorectal cancer recurrence. The role of nutrition in preventing disease recurrence should be explained to patients. Overall and cancer-related mortality rates in patients who smoke are double those of patients who do not, but quitting can reduce the risk to near baseline. Counseling, medications, and nicotine replacement therapies are effective for smoking cessation. Vitamin D deficiency is associated with increased mortality in patients with colorectal cancer, but supplementation has no proven benefit. Aspirin has been shown to reduce cancer-related and all-cause mortality in patients with stage I to III disease. Although no guidelines recommend aspirin use to prevent colorectal cancer recurrence, the U.S. Preventive Services Task Force has recommended aspirin for primary prevention in select patients. If no contraindication exists, daily low-dose aspirin for colorectal cancer survivors with a life expectancy of at least 10 years is reasonable in addition to other recurrence prevention strategies.

Management of Long-Term Treatment Effects

GASTROINTESTINAL SYMPTOMS

Nearly one-half of colorectal cancer survivors experience chronic diarrhea. Antidiarrheal medications such as loperamide (Imodium) or diphenoxylate/atropine (Lomotil) are effective treatments. Avoiding consumption of raw vegetables, eating a low-fat or elemental diet, and supplementing with probiotics may be beneficial in patients who have undergone pelvic radiation. Antidiarrheal medications can also be used to treat fecal incontinence, in addition to methylcellulose for stool bulking, biofeedback, and procedural or surgical interventions. Patients with persistent rectal bleeding from radiation proctopathy should be referred for endoscopic treatment with argon plasma coagulation. Two small randomized trials found that sucralfate enemas may also be beneficial. Promotion of oral hygiene is recommended for patients with dry mouth, mucositis, or altered taste; referral to a dentist is also recommended.

URINARY SYMPTOMS

Pelvic nerve injury resulting in urinary retention in the immediate postoperative period can be treated effectively. Patients with persistent urinary retention should be referred to a urologist. Stress and urge incontinence may be more common in colorectal cancer survivors, and these patients should be screened for urinary incontinence at scheduled health maintenance visits. Recommendations for evaluation and treatment do not differ from those for the general population. Patients who have undergone pelvic radiation may have incontinence, urinary frequency, urgency, dysuria, and hematuria, but evidence is lacking on effective treatment for these symptoms. Patients with persistent hematuria should be referred to a urologist.

PSYCHOLOGICAL AND COGNITIVE SYMPTOMS

Patients who have undergone chemotherapy may have a greater risk of cognitive problems,
although this association is not well understood. Cognitive dysfunction associated with chemotherapy is often mild and transient. Physicians should ask colorectal cancer survivors about cognitive symptoms, and the use of a validated screening tool can help identify patients who should be referred for neurocognitive evaluation (Table 1). Screening for depression, anxiety, neuropathy, fatigue, and sexual dysfunction is also recommended. Psychological symptoms are more common in patients who required a colostomy, especially if the stoma was made after the initial surgery or if the patient is male. A 2012 systematic review found that patients with stomas have an overall quality of life similar to that of patients without stomas.

### TABLE 1

<table>
<thead>
<tr>
<th>Adverse effect</th>
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</tr>
</tbody>
</table>

Information from references 2, 5, and 16 through 18.
Patients who have a stoma should be referred to a trained ostomy therapist.2

Cancer-related fatigue is common during treatment and may persist or recur for several years after treatment.20 Asking patients to rate their fatigue on a scale of zero to 10 can help identify those who would benefit from more in-depth evaluation. In patients with cancer-related fatigue, interventions focused on energy conservation, physical activity, mind-body connection, and psychosocial therapy can reduce symptoms.20 Evidence for the role of stimulant medications is lacking.2 Cognitive behavior therapy is effective in patients with insomnia.21

NEUROPATHY, PAIN, AND PELVIC FRACTURE

The chemotherapy agent oxaliplatin is commonly used to treat colorectal cancer. It and many other agents, particularly platinum compounds, are known to cause neuropathic pain. A validated tool to screen for neuropathy should be administered to patients who received oxaliplatin (Table 1).2,5,16-18 Chemotherapy-associated neuropathy usually improves with time, but can be treated with medications used for other types of neuropathy. Duloxetine (Cymbalta) is a first-line medication.22 Tricyclic antidepressants, gabapentin (Neurontin), pregabalin (Lyrica), and a compounded topical gel containing baclofen, amitriptyline, and ketamine are at least somewhat effective. Physical therapy and referral to a pain management subspecialist should also be considered.2,23

New pain, especially right upper-quadrant or pelvic pain, must be investigated as a potential symptom of recurrence.3 Chronic pain may occur after colorectal cancer treatment as a result of several mechanisms, such as radiation proctitis and incisional hernia. Chronic pain in colorectal cancer survivors should be treated similarly to that in the general population: with analgesics, behavioral therapies, physical activity, and referral to a pain management subspecialist.2,3

Women older than 65 years who have undergone pelvic radiation have a substantially increased risk of pelvic fracture compared with women who have not had radiation (five-year fracture rate = 11.2% vs 8.7%).21 Women should be counseled about this risk, and measures to prevent falls and osteoporosis should be undertaken, although no studies have evaluated preventive measures in this population.

SEXUAL DYSFUNCTION

More than one-half of women who have undergone treatment for colorectal cancer will experience dyspareunia or vaginal dryness.3 Women with stomas are more likely to experience vaginal dryness. Vaginal moisturizers can be recommended, but the safety of vaginal estrogen has not been studied in cancer survivors.2,24 Pelvic floor physical therapy was beneficial in a small study of gynecologic cancer survivors.25

Men who undergo surgery and radiation for rectal cancer are twice as likely to have erectile and ejaculatory dysfunction.26 Men treated with radiation or oxaliplatin should be asked about symptoms of hypogonadism and treated with testosterone therapy as appropriate.2 Phosphodiesterase-5 inhibitors are first-line treatments for erectile dysfunction.2

Care Coordination

Primary care physicians may not be comfortable with the complexity of surveillance guidelines and potential complications of colorectal cancer treatment. A survivorship care plan created by the oncology team can be helpful for the patient and the primary care physician. The care plan gives a detailed summary of the diagnosis and treatment history, with recommendations for follow-up and surveillance. These recommendations should detail responsibilities for the subspecialist and the primary care physician. Observational studies suggest that survivorship care plans improve patient and physician communication, knowledge, and confidence.27

Data Sources: A PubMed search was completed in Clinical Queries using combinations of the key terms colon cancer, rectal cancer, colorectal cancer, cancer survivor, treatment effects, diarrhea, cognitive function, urinary symptoms, sexual function, and survivorship care plan. The search included meta-analyses, randomized controlled trials, controlled trials, and reviews. Searches were also performed using the Cochrane database, Essential Evidence Plus, the National Guideline Clearinghouse, and the Tripp Database. Further sources were drawn from the bibliographies of these articles. Search dates: September 10, October 22, October 29, November 5, and November 11, 2016; and October 30, 2017.

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