

Care of the Colorectal Cancer Survivor

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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

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COLORECTAL CANCER

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.^{6,7}

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.

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	Evidence rating	References
Follow-up visits with colorectal cancer survivors should occur every three to six months for the first two to three years after curative treatment, then every six months for a total of five years.	C	2, 3, 5-7
CEA testing should be performed every three to six months for five years after curative treatment for colorectal cancer.	C	2, 3, 5-7
CT and CEA testing are not recommended beyond five years after curative treatment for colorectal cancer.	C	2, 3, 5-7
Routine positron emission tomography is not recommended in colorectal cancer survivors.	C	2, 3, 5-7
Patients with stage I or II disease who are at higher risk of recurrence and all patients with stage III disease should be offered annual CT of the chest, abdomen, and pelvis for five years after curative treatment for colorectal cancer.	C	2, 3, 5-7
Colonoscopy should be performed one year and three years after initial treatment for colorectal cancer, then every five years until there is no longer a benefit to the patient.	C	2, 3, 5-7
Physicians should screen for other malignancies in colorectal cancer survivors based on guidelines for average-risk patients.	C	2

CEA = carcinoembryonic antigen; CT = computed tomography.

A = consistent, good-quality patient-oriented evidence; **B** = inconsistent or limited-quality patient-oriented evidence; **C** = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to <http://www.aafp.org/afpsort>.

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.^{2,3} Exercise interventions can improve quality of life in cancer survivors, and exercise reduces all-cause mortality in this population.^{2,8} Physicians should encourage colorectal cancer survivors to meet the recommended 150 minutes of exercise per week.^{2,3}

The typical Western diet, particularly if it is high in refined grains and sugar, is associated with an increased risk of colorectal cancer recurrence.^{3,9} 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.^{2,10} 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.^{6,7} Aspirin has been shown to reduce cancer-related and all-cause mortality in patients with stage I to III disease.¹¹ 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.¹² 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.² 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.² Antidiarrheal medications can also be used to treat fecal incontinence, in addition to methylcellulose for stool bulking, biofeedback, and procedural or surgical interventions.^{2,13} Patients

BEST PRACTICES IN ONCOLOGY

Recommendations from the Choosing Wisely Campaign

Recommendation	Sponsoring organization
Do not obtain routine blood tests (e.g., complete blood count, liver function tests) other than a carcinoembryonic antigen level during surveillance for colorectal cancer.	Society of Surgical Oncology
Do not perform routine positron emission tomography-computed tomography in the initial staging of localized colon or rectal cancer, or as part of routine surveillance for patients who have been curatively treated for colon or rectal cancer.	Society of Surgical Oncology

Source: For more information on the Choosing Wisely Campaign, see <http://www.choosingwisely.org>. For supporting citations and to search Choosing Wisely recommendations relevant to primary care, see <http://www.aafp.org/afp/recommendations/search.htm>.

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.¹⁴ Promotion of oral hygiene is recommended for patients with dry mouth, mucositis, or altered taste; referral to a dentist is also recommended.²

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.² 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.² 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.²

PSYCHOLOGICAL AND COGNITIVE SYMPTOMS

Patients who have undergone chemotherapy may have a greater risk of cognitive problems,

COLORECTAL CANCER

although this association is not well understood.^{2,3} Cognitive dysfunction associated with chemotherapy is often mild and transient.¹⁵ 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).^{2,5,16-18} Screening for depression,

anxiety, neuropathy, fatigue, and sexual dysfunction is also recommended.² 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.² A 2012 systematic review found that patients with stomas have an overall quality of life similar to that of patients without stomas.¹⁹

TABLE 1

Validated Screening and Assessment Tools for Adverse Effects of Cancer Treatment

Adverse effect	Screening/assessment tool	Available at
Cognitive symptoms	Functional Assessment of Cancer Therapy – Cognitive (FACT-Cog) ²	http://www.facit.org/facitorg/questionnaires
	Mini-Mental State Examination ²	https://www.parinc.com/products/pkey/237
Depression, anxiety, and other psychological effects	Center for Epidemiologic Studies Depression Scale – Revised ²	http://cesd-r.com
	Generalized Anxiety Disorder 7-item scale ¹⁶	http://www.integration.samhsa.gov/clinical-practice/GAD708.19.08Cartwright.pdf
	Hospital Anxiety and Depression Score ²	http://www.bgs.org.uk/pdfs/assessment/hads_mood.pdf
	National Comprehensive Cancer Network Distress Thermometer and Problem List for Patients ²	https://www.nccn.org/patients/resources/life_with_cancer/pdf/nccn_distress_thermometer.pdf
	Patient Health Questionnaire ¹⁶	http://www.cqaimh.org/pdf/tool_phq2.pdf or http://www.cqaimh.org/pdf/tool_phq9.pdf
Fatigue	Brief Fatigue Inventory ⁵	https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/symptom-research/symptom-assessment-tools/brief-fatigue-inventory.html
	Fatigue Symptom Inventory ²	http://www.cas.usf.edu/~jacobsen/FSI%20English%20Version.pdf
	Functional Assessment of Cancer Therapy – Colorectal (FACT-C) ²	http://www.facit.org/facitorg/questionnaires
	Functional Assessment of Cancer Therapy – General (FACT-G) ²	http://www.facit.org/facitorg/questionnaires
	MD Anderson Symptom Inventory ²	https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/symptom-research/symptom-assessment-tools/md-anderson-symptom-inventory.html
	Multidimensional Fatigue Symptom Inventory – Short Form ²	http://www.cas.usf.edu/~jacobsen/FSI&MFSIpage.htm
Neuropathy	Functional Assessment of Cancer Therapy/Gynecologic Oncology Group – Neurotoxicity (FACT/GOG-NTX) ²	http://www.facit.org/facitorg/questionnaires
Sexual dysfunction	Sexual Health Inventory for Men ¹⁸	https://www.med.unc.edu/urology/archives/files/forms/SEXUAL%20HEALTH%20INVENTORY%20FOR%20MEN.pdf
	Sexual Symptom Checklist for Women ¹⁷	http://www.aafp.org/afp/2011/0915/p705.html

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.^{2,22}

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%).²³ 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.² 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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References

- National Institutes of Health; National Cancer Institute; Surveillance, Epidemiology, and End Results Program. SEER cancer statistics review, 1975-2014. June 28, 2017. https://seer.cancer.gov/csr/1975_2014. Accessed October 30, 2017.
- El-Shami K, Oeffinger KC, Erb NL, et al. American Cancer Society colorectal cancer survivorship care guidelines. *CA Cancer J Clin*. 2015;65(6):428-455.
- Earle C, Annis R, Sussman J, Haynes AE, Vafaei A. Follow-up care, surveillance protocol, and secondary prevention measures for survivors of colorectal cancer: guideline recommendations. March 2016. <https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/256>. Accessed January 29, 2018.
- Jeffery M, Hickey BE, Hider PN, See AM. Follow-up strategies for patients treated for non-metastatic colorectal cancer. *Cochrane Database Syst Rev*. 2016;(11):CD002200.
- Kahi CJ, Boland CR, Dominitz JA, et al. Colonoscopy surveillance after colorectal cancer resection: recommendations of the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2016;150(3):758-768.e11.
- Benson AB, Venook AP, Cederquist L, et al. NCCN clinical practice guidelines in oncology (NCCN guidelines): rectal cancer. NCCN evidence blocks, version 3.2017. March 13, 2017. https://www.nccn.org/professionals/physician_gls/pdf/rectal_blocks.pdf [registration required]. Accessed October 30, 2017.
- Benson AB, Venook AP, Cederquist L, et al. NCCN clinical practice guidelines in oncology (NCCN guidelines): colon cancer. NCCN evidence blocks, version 3.2017. March 13, 2017. https://www.nccn.org/professionals/physician_gls/pdf/colon_blocks.pdf [registration required]. Accessed October 30, 2017.
- Mishra SI, Scherer RW, Geigle PM, et al. Exercise interventions on health-related quality of life for cancer survivors. *Cochrane Database Syst Rev*. 2012;(8):CD007566.
- Meyerhardt JA, Sato K, Niedzwiecki D, et al. Dietary glycaemic load and cancer recurrence and survival in patients with stage III colon cancer: findings from CALGB 89803. *J Natl Cancer Inst*. 2012;104(22):1702-1711.
- Yang B, Jacobs EJ, Gapstur SM, Stevens V, Campbell PT. Active smoking and mortality among colorectal cancer survivors: the Cancer Prevention Study II nutrition cohort. *J Clin Oncol*. 2015;33(8):885-893.
- Li P, Wu H, Zhang H, et al. Aspirin use after diagnosis but not prediagnosis improves established colorectal cancer survival: a meta-analysis. *Gut*. 2015;64(9):1419-1425.
- Bibbins-Domingo K. Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2016;164(12):836-845.
- Omar MI, Alexander CE. Drug treatment for faecal incontinence in adults. *Cochrane Database Syst Rev*. 2013;(6):CD002116.
- Hanson B, MacDonald R, Shaikat A. Endoscopic and medical therapy for chronic radiation proctopathy: a systematic review. *Dis Colon Rectum*. 2012;55(10):1081-1095.
- Cruzado JA, López-Santiago S, Martínez-Marín V, José-Moreno G, Custodio AB, Feliu J. Longitudinal study of cognitive dysfunctions induced by adjuvant chemotherapy in colon cancer patients. *Support Care Cancer*. 2014;22(7):1815-1823.
- Kroenke K, Spitzer RL, Williams JB, Löwe B. The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: a systematic review. *Gen Hosp Psychiatry*. 2010;32(4):345-359.
- Hatzichristou D, Rosen RC, Derogatis LR, et al. Recommendations for the clinical evaluation of men and women with sexual dysfunction. *J Sex Med*. 2010;7(1 pt 2):337-348.
- Cappelleri JC, Rosen RC. The Sexual Health Inventory for Men (SHIM): a 5-year review of research and clinical experience. *Int J Impot Res*. 2005;17(4):307-319.
- Pachler J, Wille-Jørgensen P. Quality of life after rectal resection for cancer, with or without permanent colostomy. *Cochrane Database Syst Rev*. 2012;(12):CD004323.
- Berger AM, Mooney K, Banerjee C, et al. NCCN clinical practice guidelines in oncology (NCCN guidelines): cancer-related fatigue, version 2.2017. April 10, 2017. https://www.nccn.org/professionals/physician_gls/pdf/fatigue.pdf [registration required]. Accessed October 30, 2017.
- Peoples AR, Garland SN, Perlis ML, et al. Effects of cognitive behavioral therapy for insomnia and armodafinil on quality of life in cancer survivors: a randomized placebo-controlled trial. *J Cancer Surviv*. 2017;11(3):401-409.
- Piccolo J, Kolesar JM. Prevention and treatment of chemotherapy-induced peripheral neuropathy. *Am J Health Syst Pharm*. 2014;71(1):19-25.
- Baxter NN, Habermann EB, Tepper JE, Durham SB, Virnig BA. Risk of pelvic fractures in older women following pelvic irradiation. *JAMA*. 2005;294(20):2587-2593.
- Denlinger CS, Carlson RW, Are M, et al.; National Comprehensive Cancer Network. Survivorship: sexual dysfunction (female), version 1.2013. *J Natl Compr Canc Netw*. 2014;12(2):184-192.
- Yang EJ, Lim JY, Rah UW, Kim YB. Effect of a pelvic floor muscle training program on gynecologic cancer survivors with pelvic floor dysfunction: a randomized controlled trial. *Gynecol Oncol*. 2012;125(3):705-711.
- Den Oudsten BL, Traa MJ, Thong MS, et al. Higher prevalence of sexual dysfunction in colon and rectal cancer survivors compared with the normative population: a population-based study. *Eur J Cancer*. 2012;48(17):3161-3170.
- Mayer DK, Birken SA, Check DK, Chen RC. Summing it up: an integrative review of studies of cancer survivorship care plans (2006-2013). *Cancer*. 2015;121(7):978-996.