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Strategies for caring for the well cancer survivor

Surveillance of existing cancer, management of treatment-related adverse effects, and screening for second cancers are key to the care you'll provide.

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PRACTICE RECOMMENDATIONS

› *Provide normal age-related cancer screening for cancer survivors because of their high risk of a second cancer.* (B)

› *Strongly encourage lifestyle changes for cancer survivors, especially smoking cessation.* (B)

› *Recommend exercise, which alleviates pain, depression, anxiety, and (more effectively than any other intervention) fatigue, for cancer survivors.* (B)

› *Remain vigilant for the development in cancer survivors of cardiovascular disease, including heart failure, which can appear long after therapy.* (B)

Strength of recommendation (SOR)

(A) Good-quality patient-oriented evidence

(B) Inconsistent or limited-quality patient-oriented evidence

(C) Consensus, usual practice, opinion, disease-oriented evidence, case series

Cancer survivors represent a rapidly increasing population. In 1971, there were 3 million cancer survivors; this number increased to 15.5 million in 2016 and will reach 20 million by 2026.[1] **TABLE 1**[1] shows the percentage of survivors by type of cancer. Cancer survivors tend to be older,* comprising nearly 1 of every 5 people older than 65 years.[2]

The Institute of Medicine (IOM) identified 3 key characteristics of cancer survivors[3]:

- Trajectories of survivorship are variable; many cancer patients have periods of relative health between episodes of their disease.
- Survivors require careful cancer monitoring; in addition to the risk that their primary cancer will recur, they have an elevated risk for another, second cancer.
- Both cancer and its treatments increase the risk of other medical and psychiatric problems.

Family physicians (FPs) have optimal skills for navigating the chronic risks and health concerns of the well cancer survivor. This article reviews the primary care management of the functional cancer survivor, focusing on the management of chronic conditions and preventive care.

Survivorship follows any of 6 paths

Cancer survivorship is increasing in importance as treatment has steadily reduced mortality. Six trajectories of cancer survivors have been identified[1]:

- living cancer-free after treatment with minimal effects
- living cancer-free but suffering serious treatment complications

**Cancer survivor care in the pediatric patients, including application of a survivorship care plan (also discussed later in this article), is reviewed in "Partnering to optimize care of childhood cancer survivors," The Journal of Family Practice, April 2017 (https://www.mdedge.com/jfponline/article/134412/oncology/partnering-optimize-care-childhood-cancer-survivors).*

- Suffering late recurrence
- Developing a second cancer
- Living with intermittent cancer recurrences
- Living with cancer continuously.

Only patients in the last 2 groups are likely to be managed primarily by oncologists.

Survivors look to their FPs for ongoing care

Cancer survivors routinely see their primary care physician after initial treatment. A study of 30,000 Canadian breast cancer survivors demonstrated that follow-up care was limited to an oncologist in only 2%; 84% saw a primary care provider and an oncologist; and 14% saw a primary care provider only.[4] A study of colorectal cancer survivors showed that primary care visits *increased* in each of the 5 years after diagnosis, during which time oncology visits *decreased* steadily[5]; in that study, primary care physicians delivered more preventive care than oncologists did.[5] Similar to what is done in other chronic conditions, the various effects of cancer are best managed as a whole.

The IOM recommends that cancer survivor care comprise 4 elements[2]:

1. coordination between oncologist and primary care physician
2. surveillance for recurrence or spread of existing cancer
3. screening for new cancer
4. intervention for the effects of cancer and treatment.

The following discussion summarizes evidence and recommendations for each element of the IOM recommendations for survivor care.

TABLE 1

Estimated prevalence of cancer survivors by type[1]

Cancer*	Survivors, 2016, millions (percentage of all cancer survivors)	5-year survival
Breast	3.56 (23%)	91%
Prostate	3.31 (21%)	99%
Colon and rectum	1.45 (9%)	93%
Melanoma	1.23 (8%)	66%
Uterine	0.76 (5%)	83%
Thyroid	0.73 (5%)	98%
Bladder	0.70 (4%)	79%
Non-Hodgkin lymphoma	0.69 (4%)	73%
Lung	0.53 (3%)	19%
Kidney	0.51 (3%)	75%
Leukemia	0.39 (3%)	61%
Oral cavity and pharynx	0.35 (2%)	65%
Total	— (92%†)	—

*The 12 most common cancer diagnoses.

†After rounding.

Implementing the 4 elements of cancer survivor care

1. Coordinate care through a unified survivorship care plan

The IOM has noted that the needs of cancer survivors are rarely met[2]; communication between oncology and primary care is often deficient during transition of care. The IOM has recommended that oncologists provide a survivorship care plan that details the cancer (ie, tumor characteristics), the type of treatment (ie, enrollment in a clinical trial; medical, surgical, or radiation), support services, and follow-up recommendations for the primary care provider. (Examples of elements of a survivorship care plan can be found at www.mskcc.org/hcp-education-training/survivorship/survivorship-care-plan[6] and http://sma.org/southern-medical-journal/article/cancer-survivors-history-physical/[7]).

Regrettably, survivorship care plans have been rarely and poorly employed. Studies show that fewer than one-half of oncologists provide a plan, and that when they do, the plan often lacks recommended information.[8,9] Survivorship care plans may soon become common practice, however; the Commission on Cancer of the American College of Surgeons has required their use in all certified cancer centers since 2015.[10]

2. Provide surveillance of existing cancer

Cancer follow-up is challenging after the initial treatment phase. Although there are many conflicting guidelines for surveillance after

TABLE 2

Surveillance recommendations for the 10 most common cancers*[11]

Cancer	Recommendations
Breast	• Clinic evaluation every 3-6 months for 5 years, then annually • Mammography annually • If taking tamoxifen: Cervical cancer screening annually, US and endometrial biopsy for any vaginal spotting • If taking an aromatase inhibitor or in ovarian failure: bone density scan every 2-3 years
Prostate	**Active surveillance (no treatment)** • PSA test no more than every 6 months • Digital rectal exam and prostate biopsy no more than every 12 months **Monitoring after treatment** • PSA test every 6-12 months for 5 years, then annually • Digital rectal exam annually; can exclude if prostate-specific antigen is undetectable • If taking androgen-deprivation therapy: Dual-energy X-ray absorptiometry at baseline and after 1 year of treatment
Colon and rectum	**All patients** • Colonoscopy at 1 year (at 3-6 months if colonoscopy was not performed preoperatively due to obstructing lesion) • Advanced adenoma found: Repeat colonoscopy in 1 year • No advanced adenoma: Repeat colonoscopy in 3 years, then every 5 years **Stage II or higher disease** • Clinic evaluation every 3-6 months for 2 years, then every 6 months until 5 years • Carcinoembryonic antigen test with every clinic evaluation • Chest, abdominal, and pelvic CT every 6-12 months for 5 years • If rectal cancer with transanal excision, perform proctoscopy (with endoscopic US or MRI) every 3-6 months for 2 years, then every 6 months for 5 years
Melanoma	• Skin and lymph node exam every 3-6 months for 2 years, then every 3-12 months for 3 years, then annually • Consider imaging every 3-12 months based on location of metastases • Consider brain MRI for certain high-risk patients for asymptomatic metastases
Uterine	**Endometrial Ca** • Clinic evaluation every 3-6 months for 2-3 years, then every 6-12 months • CA-125 test at each clinic evaluation, only if elevated at initial evaluation • Imaging: For stage III-IV disease, consider chest/abdominal/pelvic CT every 6 months for 3 years, then every 6-12 months for 2 years; repeat pelvic MRI at 6 months if failed medical treatment for fertility-sparing **Sarcoma** • Clinic evaluation every 3-4 months for 2-3 years, then every 6-12 months • Imaging: Chest/abdominal/pelvic CT every 3-6 months for 3 years, then every 6-12 months for at least 2 years • Consider adding abdominal/pelvic MRI and noncontrast chest CT every 6 months for 2 years, then every 6-12 months for at least 3 years

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cancer, guidelines of the National Comprehensive Cancer Network (NCCN) (summarized in **TABLE 2**[11] for the 10 most common cancers in survivors) are the ones generally accepted.[12,13]

Although individual surveillance recommendations are based on limited evidence, studies confirm the importance of surveillance. A systematic review showed that sur-

TABLE 2

Surveillance recommendations for the 10 most common cancers*[11] (*cont'd*)

Cancer	Recommendation
Thyroid	**Follicular, Hürthle cell, or papillary Ca**
	• Clinic evaluation with thyroid-stimulating hormone, thyroglobulin, and antithyroglobulin antibody tests at 6 and 12 months, then all 3 tests annually
	• Periodic neck US
	• If receiving radioactive iodine treatment, obtain ultrasensitive thyroglobulin test
	• If high risk or previous metastases, consider thyroid-stimulating hormone-stimulated whole-body radio-iodine imaging
	Medullary Ca
	• Serum calcitonin and carcinoembryonic antigen tests every 6-12 months
	• If multiple endocrine neoplasia type 2A or 2B, annual urinary or plasma metanephrines test and plasma parathyroid hormone test
Bladder	**Non-muscle-invasive Ca**
	• Cystoscopy every 3-12 months for first 2 years, then every 6-12 months
	• CT/magnetic resonance urography and abdominal/pelvic scan at baseline; annually if high risk
	• Urine cytology every 3-6 months for 2 years, then every 6-12 months if intermediate risk or high risk
	Invasive Ca
	• Cystoscopy every 3 months for 2 years, every 6 months to 4 years, then every 12 months (if bladder is spared)
	• CT/magnetic resonance urography and abdominal/pelvic scan every 3-6 months for 1-2 years, then every 12 months to 5 years
	• Complete blood count and CMP every 3-6 months, then every 12 months
	• Urine cytology every 6-12 months for 2 years
Non-Hodgkin lymphoma	**Chronic lymphocytic leukemia/small lymphocytic lymphoma**
	• Surveillance not applicable (treatment is continuous)
	B-cell lymphoma
	• Clinic evaluation every 3-6 months for 5 years, then annually
	• Chest/abdominal/pelvic CT with contrast every 6 months for as long as 2 years, then no more than annually
	Hairy-cell leukemia
	• Clinic evaluation with CBC (interval not specified)
	Primary cutaneous B-cell lymphoma
	• Not specified
	T-cell lymphoma
	• Periodic clinic evaluation with unspecified positron-emission tomography/CT and Epstein-Barr viral load

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veillance mammography after breast cancer reduces breast cancer mortality by 36%.[14] A study showed that bladder cancer recurrence diagnosed by surveillance instead of by symptoms led to a 35% increase in 5-year survival.[15]

Yet adherence to cancer surveillance recommendations is poor. A study of patients with colon cancer demonstrated that only 12% met all recommended surveillance guidelines.[16] A study of patients with bladder cancer after radical cystectomy showed that only 9% met recommended surveillance more than 2 years after diagnosis.[17] Those dismal statistics may be the result of provider oversight—not patient reluctance.

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TABLE 2

Surveillance recommendations for the 10 most common cancers*[11] (*cont'd*)

Cancer	Recommendations
Lung	**Non-small-cell Ca** • Stage I-II (no radiation therapy) - Clinic evaluation and chest CT with contrast every 6 months for 2-3 years, then clinic evaluation and low-dose noncontrast chest CT annually • Stage I-II with radiation therapy or stage III/IV - Clinic evaluation and chest CT with contrast every 3-6 months for 3 years, then every 6 months to 5 years; then clinic evaluation and low-dose noncontrast chest CT annually **Small-cell Ca** • Clinic evaluation and chest/liver/adrenal CT with contrast every 3-4 months for 2 years, then every 6 months to 5 years, then every 12 months • If no prophylactic cranial irradiation, contrast brain MRI every 3-4 months for 2 years
Kidney	**Stage I** • Clinic evaluation every 6 months for 2 years, then every 12 months to 5 years • CMP with every clinical evaluation • Imaging: Abdominal CT or MRI annually (first scan: 3-6 months after ablation; 3-12 months after nephrectomy; at 6 months with surveillance), chest radiography or CT annually for 5 years **Stage II/III** • Clinic evaluation every 3-6 months for 3 years, then every 12 months to 5 years • CMP every 6 months for 2 years, then every 12 months to 5 years • Imaging: Abdominal CT or MRI and chest CT 3-6 months after nephrectomy, then every 3-6 months for 3 years, then annually to 5 years **Stage IV** • Oncology evaluation every 6-16 weeks

*This **TABLE** is current as of August 1, 2018. Note, however, that National Comprehensive Cancer Network (NCCN) guidelines are revised often; refer to the NCCN Web site by cancer type (www.nccn.org/professionals/physician_gls/default.aspx#site) for the latest revisions to guidelines.

CA, cancer; CBC, complete blood count; CMP, comprehensive metabolic panel; CT, computed tomography; MRI, magnetic resonance imaging; PSA, prostate-specific antigen; US, ultrasonography.

In the colon cancer study, for example, compliance with follow-up colonoscopy was 80% but compliance with carcinoembryonic antigen testing was only 22%.[16] In the bladder cancer study, follow-up urine cytology was obtained in only 23% of patients, although 75% completed recommended imaging.[17]

Although surveillance remains the oncologist's responsibility, visits to the FP provide an opportunity to review surveillance and order needed laboratory testing and other studies, including imaging.

3. Screen for new cancers

The risk of a second cancer is elevated for cancer survivors compared with the risk of a primary cancer in the healthy general population; some survivors have a lifetime risk of a second cancer as high as 36%.[18] Risk varies by cancer type (**TABLE 3**[19]). Some of this variation is due to the impact of smoking: Smoking-related cancers have the highest risk of second malignancy.[19] Genetic predisposition to malignant transformation is also theorized to contribute to increased risk. Second malignancies are dangerous; 55% of patients die of the second cancer compared with only 13% of their initial cancer.[19]

Studies show that cancer survivors display varying adherence with recommended screening for second cancers. In a study of Latina cancer survivors, depressive symptoms were associated with lower screening compliance.[20] A study of survivors of hematologic

TABLE 3
Relative risk of second cancer after primary cancer[19]

Primary cancer	Second cancer RR	Common sites of second cancer
Increased risk		
Oral cavity and pharynx	1.8-2.1	No data
Lung	1.4-1.6	Prostate, breast, colon
Bladder	1.3-1.4	Lung, prostate
Melanoma	1.3	Prostate, breast, lung
Kidney	1.3	Prostate, lung
Breast	1.2	Lung, colon
Non-Hodgkin lymphoma	1.2	Lung, prostate
Leukemia	1.2	No data
Thyroid	1.1	Breast, prostate
Colon and rectum	1-1.1	Lung, prostate
Decreased risk		
Uterine	0.9	Breast, colon
Prostate	0.6	Lung, colon

RR, relative risk.

A study of colorectal cancer survivors showed that primary care visits *increased* in each of the 5 years after diagnosis, during which time oncology visits *decreased* steadily.

cancer showed a low rate of cancer screening and high fear of cancer recurrence—suggesting avoidance due to fear.[21] Other studies, however, show similar or increased compliance with screening in cancer survivors.[22,23] A meta-analysis of 19 studies determined that, overall, cancer survivors receive 25% to 38% more recommended screening than the general population.[24]

Few guidelines exist to guide FPs in adjusting screening for the cancer survivor. For women who received radiation therapy for a tumor in the chest, for example, the recommendation offered by several groups is to start breast cancer screening 8 to 10 years after treatment or by 30 years of age, and to consider combining magnetic resonance imaging and mammography.[25] Recommendations for breast cancer screening do *not* account for a history of other gynecologic cancers unless genetic markers are present.[25] On the other hand, the impact of a history of cancer on the risk of prostate cancer and on screening decisions has not been studied,[26] and cervical cancer screening guidelines, which recommend that screening continue after 65 years of age for patients who are immunocompromised, do not address a history of other cancer.[27]

4. Manage the effects of both the cancer and the treatment

Medical issues faced by cancer survivors are familiar to FPs, but there are some specific recommendations regarding evaluation and treatment that stand in contrast to what would be considered for a healthy, or non-cancer, patient. For example, each chemotherapeutic agent has characteristic adverse effects; **TABLE 4**[7] lists the principal adverse effects of common agents and recommendations for testing when these problems develop. Common long-term problems in cancer survivors include fatigue, chronic pain, cognitive dysfunction, psychiatric illness, and cardiovascular disease. Although these symptoms and manifestations are common, the physician must be careful: New or changing symptoms could signal the spread or recurrence of disease. Fear of recurrence can lead patients to exaggerate or minimize symptoms.

Fatigue is the most common symptom seen in cancer survivors during treatment and following remission.[28] More than 40% of

TABLE 4

Toxicities of common cancer therapies[7]

Drug class and examples	Toxicity	Laboratory testing and other studies*
Platinum carboplatin, cisplatin, oxaliplatin	Delayed nausea Neurotoxicity (sensory, hearing) Nephrotoxicity	 BMP
Alkylating agent Cyclophosphamide, ifosfamide, melphalan, nitrosoureas	Hemorrhagic cystitis Myelosuppression Sterility Heart failure (cyclophosphamide) Neurotoxicity, Fanconi-like syndrome (renal tubular acidosis, hypophosphatemia) (ifosfamide)	Urinalysis CBC Echocardiography BMP, phosphate
Anthracycline Daunorubicin, doxorubicin, epirubicin, idarubicin	Cardiomyopathy (often delayed) Myelosuppression Pulmonary toxicity	Echocardiography CBC PFT
Peptide antibiotic Bleomycin	Pulmonary toxicity or fibrosis	PFT
Topoisomerase inhibitor Etoposide, irinotecan, topotecan	Myelosuppression Diarrhea Rare leukemias (etoposide)	CBC
Vinca alkaloid Vinblastine, vincristine, vinorelbine	Neuropathy (sensory, motor, autonomic) Ileus	
Taxane Docetaxel, paclitaxel	Neuropathy (sensory, motor, autonomic) Pulmonary toxicity	 PFT
Antimetabolite 5-Fluorouracil	Cardiac (heart failure, ischemia, arrhythmias)	Electrocardiography, echocardiography
Antivascular endothelial growth factor Bevacizumab, regorafenib, sorafenib, sunitinib	Hypertension Bleeding, delayed wound healing Thrombosis Bowel perforation (rare)	
Anti-epidermal growth factor Cetuximab, erlotinib, lapatinib, panitumumab, trastuzumab	Diarrhea Skin rash and photosensitivity Delayed wound healing Reversible cardiomyopathy (trastuzumab) Hypomagnesemia (cetuximab and panitumumab)	 Echocardiography Magnesium

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cancer survivors report significant fatigue.[29] Although fatigue is concerning for cancer recurrence, other causes are common in cancer survivors. Both depression and anxiety commonly present with worsened fatigue.[30] Sleep disturbances are common, even without a

TABLE 4

Toxicities of common cancer therapies[7] (*cont'd*)

Immune modulator Ipilimumab, nivolumab, pembrolizumab	Autoimmune thyroiditis Autoimmune colitis	Thyroid-stimulating hormone
Other Cytarabine, gemcitabine, methotrexate	Myelosuppression (cytarabine) Pulmonary toxicity (cytarabine) Neurotoxicity (cytarabine) Pulmonary toxicity (gemcitabine) Nephrotoxicity (methotrexate)	CBC PFT PFT BMP

*There are no recommendations for periodic screening after exposure to these medications; however, the primary care physician can consider these tests and studies after completion of treatment.

BMP, basic metabolic panel; CBC, complete blood count; PFT, pulmonary function testing.

psychiatric diagnosis.[31] Effects of treatment, including nausea, anemia, heart failure, and medication adverse effects can cause or worsen fatigue. Pain is associated with fatigue, but to a lesser extent than are depression, anxiety, and nausea.[32]

Pharmacotherapy of cancer-related fatigue is challenging. Psychostimulants have been most studied. A recent systematic review shows that methylphenidate produces mild or moderate improvement in fatigue, whereas modafanil has minimal effectiveness.[33] Antidepressants have not been shown to relieve fatigue.[33]

A recent meta-analysis showed that nonpharmaceutical treatments for cancer-related fatigue are more effective than pharmacotherapy. In this review, both exercise and pharmacotherapy had a mild-to-moderate effect on fatigue.[35] Exercise is best studied in this regard, and has shown the most consistent results.[31]

Chronic pain. Pain is common in cancer survivors: As many as 40% experience pain for years after initial therapy.[36] Treatment of some cancers—eg, thoracotomy (80%), amputation (50%-80%), neck dissection (52%), and surgical management of breast cancer (63%)—increase the likelihood of chronic pain.[37] Reports of pain in cancer survivors that should be considered red flags that might signal recurrence of cancer include new or worsening pain; pain worse at night or when recumbent; new neurologic symptoms; and general symptoms of systemic illness[37] (**TABLE 5**[37]).

Management of pain is best approached by its cause, with neurologic, rheumatologic (including myofascial pain and arthralgia), lymphatic, and genital causes most common.[37] Across all types of pain, complete relief is unlikely; functional goals provide a more effective target.

For neuropathic cancer pain, duloxetine is the only medication with evidence of benefit; anticonvulsant and topical medications are recommended on the basis of the findings of studies of noncancer pain.[38] There are few data on the value of treatments for cancer-related rheumatologic and lymphatic pain, although exercise has shown benefit in both types.[38] For dyspareunia and sexual dysfunction (common after gynecologic and nongynecologic cancers), vaginal lubricants and pelvic-floor physiotherapy have shown benefit.[39] There is significant overlap in psychiatric comorbidities, sleep, and pain, and addressing all of a patient's problems can reduce pain and improve function.[40]

Opioids are often prescribed for pain in cancer survivors. Cancer survivors have a higher rate of opioid prescribing compared with that of non-cancer patients, even 10 years after diagnosis.[41] Guidelines of the Centers for Disease Control and Prevention for using opioids to manage chronic pain specifically exclude cancer patients.[42] Regrettably, there is no evidence that opioids have long-term efficacy in chronic pain; in fact, evidence is accumulating that chronic opioid therapy exacerbates chronic pain.[43]

Cognitive dysfunction is present in 17% to 75% of cancer survivors as memory

disturbance, psychological disorder, sleep dysfunction, or impairment of executive functioning.[44] Cognitive deficits appear to be secondary to both cancer and treatment modalities[45]; as many as one-third of patients have cognitive dysfunction prior to receiving chemotherapy.[46]

Chemotherapies that are more likely to cause cognitive symptoms include methotrexate, 5-fluorouracil, cyclophosphamide, and hormone antagonists.[47] More powerful regimens and repetitive chemotherapy regimens tend to cause more cognitive effects.[47]

Cognitive training interventions show evidence of likely benefit,[44,48] leading to recommendations for self-treatment strategies, such as written lists, wordplay, crossword puzzles, jigsaw puzzles, playing a musical instrument, and new hobbies. Small studies suggest a benefit from cognitive behavioral therapy.[44,49] A study of breast cancer survivors showed that yoga led to improvement in patient-reported cognitive dysfunction.[50] Physical exercise yields cognitive benefit in healthy older adults and is supported by limited evidence in cancer survivors.[51]

There is no effective pharmacotherapy for cancer- and cancer chemotherapy-related cognitive dysfunction unless a treatable underlying cause is found.[44] Symptoms tend to subside with time after completion of chemotherapy, which might be reassuring to patients and families.[45]

Psychiatric problems. The most common psychiatric issues in cancer survivors are anxiety and depression; the prevalence of anxiety is nearly double that of depression.[52] Anxiety often presents as fear of a recurrence of cancer or a feeling of lack of control over present or future circumstances.[53] Screening for anxiety and depression is recommended at each visit, using standardized screening questionnaires.[54]

A small study suggests that psychiatric treatment reduces the risk of early mortality.[55] Small studies also suggest that mindfulness-based therapy and cognitive behavioral therapy delivered by telehealth offer benefit.[56] A meta-analysis shows that exercise interventions improve depression and anxiety in breast cancer patients.[57]

There are few studies of pharmacotherapy of anxiety or depression in cancer survivors[56]; it is known that cancer survivors are nearly twice as likely as the general population to be taking medical therapy for anxiety and depression.[58] A Cochrane systematic review of 7 small studies showed uncertain improvement in depressive symptoms in patients with cancer from antidepressant medication; however, an earlier systematic review did show benefit.[59,60]

In a trial of patients without depression who were being treated for head and neck cancer, escitalopram, 20 mg/d, reduced the risk of subsequent depression compared with placebo.[61] A study of 420 breast cancer survivors showed that 300 mg/d and 900 mg/d dosages of gabapentin were both superior to placebo, and nearly equivalent to each other, at reducing anxiety scores.[62] In both studies, however, the evidence is nonetheless insufficient to make specific recommendations about these medications.

Cardiac risk. The risk of cardiovascular morbidity in cancer survivors is, in fact, higher than the risk of recurrence of cancer.[63] Cancer survivors have 5 times the risk of heart failure and 10 times the risk of coronary artery disease and cerebrovascular disease than patients without cancer.[63] Most of this risk is incurred because of the physiologic effects of chemotherapy and radiation.

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TABLE 5
Red flags for cancer-related pain[37]

General malignancy
Difficulty swallowing or speaking
Enlarging masses
Excessive bruising or bleeding
Night sweats, fevers, and chills
Unexplained weight loss >10 lb
Worsening fatigue
Malignant spinal-cord compression
Bowel or bladder incontinence
New or worsening pain in a specific area, especially the thoracic spine
Pain that is worse at night or when recumbent
Progressive neurologic deficit

Second malignancies are dangerous; 55% of patients die of the second cancer, compared to only 13% of their initial cancer.

Among chemotherapeutic agents, anthracyclines, such as doxorubicin, cause the most rapid and striking myocyte damage. This damage is dose-dependent and nearly irreversible, with 98% of injury occurring within the first year of chemotherapy.[64] More than one half of cancer patients taking an anthracycline have cardiac dysfunction on imaging; 5% will be in overt heart failure 10 to 20 years, or longer, after chemotherapy.[63] Following monitoring at 1 year post-therapy, regular cardiac imaging is *not* recommended in the absence of symptoms.[62]

Because other cardiotoxic chemotherapeutic agents cause partially reversible damage, imaging is *not* recommended in the absence of symptoms in patients taking those agents.[64]

Radiation therapy to the chest leads to many cardiac complications, including cardiomyopathy, valvular disease, pericardial disease, and arrhythmias. Development of cardiomyopathy can be delayed 20 to 30 years after radiation; screening echocardiography is therefore recommended every 5 to 10 years after radiation therapy.[65] Recent adjustments to the dosages and delivery of radiation therapy should reduce cardiac damage, but will require decades to validate.[63]

For patients at risk of cardiovascular disease prior to treatment of cancer, there is evidence to support preventive treatment with angiotensin II-receptor antagonists, beta-blockers, and statins to prevent cardiomyopathy.[63] Treatment of diagnosed cardiomyopathy and heart failure follows standard guidelines, with significant emphasis on aerobic exercise and smoking cessation.[63]

Evidence is accumulating that chronic opioid therapy exacerbates chronic pain.

Cancer survivorship care: Your critical role

Cancer survivors constitute a large population who frequent the practices of primary care physicians. Primary care visits provide an opportunity to monitor key elements of survivorship, including surveillance of the current cancer and screening for second cancers. Similar to what is seen with diabetes and coronary artery disease, cancer increases cardiac risk, which requires preventive care and chronic management. FPs are well placed to treat common issues in cancer survivors—issues that mirror concerns seen in the general population. JFP

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The risk of cardiovascular morbidity in cancer survivors is, in fact, higher than the risk of recurrence of cancer.