

BETH FAIMAN, PhD, MSN, APRN-BC, AOCN
Nurse Practitioner, Department of Hematology and Medical
Oncology, Cleveland Clinic; Adjunct Professor, Case Western
Reserve University; Founding Member, International
Myeloma Foundation Nurse Leadership Board

MATTHEW FAIMAN, MD, MBA, FACP
Medical Director, Express Care Online; Clinical Assistant
Professor of Medicine, Department of Community Internal
Medicine, Cleveland Clinic

Living with hematologic cancer: Recommendations, solutions

ABSTRACT

Patients with hematologic cancers such as leukemia, lymphoma, and multiple myeloma are living longer than ever. The survival rate of patients with most hematologic cancers has doubled since 1974, and these once-terminal diagnoses are now chronic health conditions. This article reviews the care of patients with hematologic cancers, including those previously treated for childhood, adolescent, and young-adult cancers, discusses the role of primary care in a multidisciplinary team approach, and reviews innovative ways to deliver needed care.

KEY POINTS

The definition of survivorship is different in patients with hematologic cancer than in patients with solid tumors, as treatment is often ongoing and lacks a clear stopping point.

Routine health maintenance is especially important for patients with hematologic cancers, who face a heightened risk of secondary cancers and other conditions.

Survivorship plans can improve communication between the primary care provider, patient, and oncology team.

Physicians should emphasize the importance of a healthy lifestyle and routine health maintenance for their patients who are cancer survivors.

ADULTS WITH LEUKEMIA, lymphoma, multiple myeloma, and other hematologic cancers are living longer, and more than 1.2 million patients with these cancers are alive in the United States.¹ Most adults with nonpediatric cancers are diagnosed in the fifth to seventh decade, and many now survive more than 5 years. The survival rate of patients with most hematologic cancers has doubled since 1974, transforming once-terminal diagnoses into chronic conditions. According to one estimate, there will be 18 million cancer survivors (all types of cancer) by 2022, and nearly 2 million of these will be survivors of hematologic cancers.²

Although survivors of hematologic cancers are at risk of complications of their cancer treatment, they often do not receive routine health maintenance and see their primary care providers only for acute issues.

Primary care providers can play a major role in monitoring the health of hematologic cancer survivors. This requires staying up-to-date on diagnosis, management, and surveillance in this group and being able to address their survivorship issues.³

In this article, we focus on survivorship considerations in patients with previously treated hematologic cancers, including childhood, adolescent, and young-adult cancers. We discuss the role of primary care in the multidisciplinary approach to the continuing care of these patients, and we review innovative technologic solutions to the challenges of delivering care to this group.

■ SURVIVORSHIP BEGINS AT DIAGNOSIS

The definition of cancer survivorship has changed in the last decade, particularly with hematologic cancers.⁴

Survivorship was once considered the time after the patient successfully completed cancer treatment. But most patients with hematologic cancers will likely need to continue treatment until they die, with essentially unpredictable and intermittent periods of remission and relapse. Advances in cancer treatment and supportive care have led to longer life. Thus, a commonly recognized definition of survivorship begins at diagnosis rather than later in the disease course and continues through the balance of the patient's life.⁵

The survivorship care plan

In 2005, the Institute of Medicine released a report⁶ calling attention to cancer survivors and their special needs. At that time, a growing number of patients were not returning to their primary care physicians to receive health maintenance after completing their cancer treatment. A proposed solution was for the oncologist to develop a personalized survivorship care plan, which would help the patient understand the treatments received, the importance of health maintenance, and the need for follow-up surveillance.⁵

The survivorship care plan was originally intended for patients who had completed their cancer treatment. But patients with hematologic cancers tend to need lifelong treatment. Nevertheless, major organizations such as the American Society of Hematology and the American Society of Clinical Oncology consider a survivorship care plan an essential part of cancer care for all patients and not just those with solid tumors.⁷ The plan should consist of a written treatment summary and recommendations for follow-up care.

■ EFFECTS OF HEMATOLOGIC CANCER AND ITS TREATMENT

Hematologic cancers and their treatment put patients at risk of many complications, including endocrinopathies, such as hypothyroidism or diabetes secondary to chronic steroid and immunosuppressant use, and cardiovascular events, such as congestive heart failure and stroke due to high-dose chemotherapy. Survivors are also at risk of secondary cancers and recurrence of the primary cancer.⁸⁻¹⁵

Despite the gravity of a cancer diagnosis, cancer patients do not always adhere to

a healthy lifestyle. A survey of over 400,000 cancer survivors found that 15% were current cigarette smokers, 27.5% were obese, and 31.5% had not engaged in physical activity during the previous 30 days.¹⁶

■ THE PRIMARY CARE CLINICIAN AND SURVIVORSHIP CARE

Many hematologic oncology practices include not only medical oncologists but also ancillary team members such as nurse practitioners, nurse specialists, physician assistants, registered nurses, and in some cases a social worker or nutritionist. Patients with hematologic cancers often rely on this team for most of their care while undergoing cancer treatment.

Depending on the type of cancer, and especially after a period of stable disease or remission, some patients transition away from the oncology team, particularly if they live far away, and receive care from their local primary care clinician.

Although the Institute for Medicine intended the survivorship care plan⁶ to be a patient-focused tool, primary care providers can benefit from it too. In survey of oncologists and primary care providers in the United States,¹⁷ 49% of the 1,130 oncologists said they almost always provided care plans to patients, and 85% perceived a greater benefit for primary care providers to have these plans than for cancer survivors. However, only 13% of the 1,120 primary care providers surveyed said they consistently received a care plan from the oncologist. The study suggests that oncologists should make a better effort to share these plans with primary care providers to enhance the coordination of care.

■ COMPONENTS OF A SURVIVORSHIP CARE PLAN AND SELF-MANAGEMENT

Although personalized survivorship care plans are not routinely used in patients with blood cancers,¹⁸ they are as important in hematologic cancer survivors as in patients with solid tumors.

The plan should consist of a treatment summary and information on essential components of a healthy lifestyle and should take into consideration coordination of care among primary and other providers, health mainte-

Empowering patients to take control of their health is an essential component of survivorship care

Video technology allows patients to connect with their healthcare providers without having to leave home or take time off from work

nance recommendations, information on early detection and screening, and psychosocial welfare. Guidance on preventive screening for physical, financial, and psychosocial well-being should be generated by the oncology team or primary care provider and can be helpful to patients and caregivers as they navigate the healthcare system. (See <https://cancercontrol.cancer.gov/pdf/ASCO-Survivorship-Care-Plan.pdf> for a sample survivorship care plan.)

Although patients with hematologic cancer often have a highly variable course with multiple periods of remission and relapse, the survivorship care plan and treatment summary are essential components of their ongoing care.

Self-management of chronic illness refers to daily activities to keep the illness under control, minimize its impact on physical health and function, and help the patient cope with the psychosocial sequelae of the illness.¹⁹ Empowering patients and their caregivers to take control of their health is an essential component of survivorship care. Patients and caregivers can be valuable partners to primary care providers and the oncology team in ongoing care to ensure proper testing and monitoring for secondary illnesses.

■ INFORMATION TECHNOLOGY SOLUTIONS

Implementation of a survivorship care plan can be facilitated by integrating the plan and treatment summaries into the patient's electronic medical record and encouraging the patient to be a part of the process.²⁰ Many electronic medical record systems such as Epic can automatically fill in treatment summaries and provide patients access to a survivorship care plan tailored to their needs, but these features are not routinely used, and output can be lengthy and hard to follow.^{21,22}

There has been a surge in research in information technology and care plan delivery since the Health Information Technology for Economic and Clinical Health (HITECH) Act was passed in 2009,²³ specifically in innovative strategies to proactively screen for, assess, and manage disease- and treatment-related symptoms in cancer survivors. As a result, patients and families can be more engaged in their care, and providers can better guide survivorship concerns.

Providers can create their own survivorship care plans or use electronic resources to generate one. The American Society of Clinical Oncology and the National Comprehensive Cancer Network provide printed templates in which the patient, primary care provider, or oncology team can complete a care plan. Newer electronic platforms such as the Carevive system are also available. Brief electronic outcome questionnaires can be completed by the patient at home or in the waiting room to assess symptoms, evaluate health maintenance practices, and generate a plan of care to review with the patient.

■ EMERGING TECHNOLOGY: TELEMEDICINE, VIRTUAL VISITS

Technology can help patients and the healthcare team in survivorship monitoring. Telemedicine, the exchange of medical information via electronic communication, includes video conferencing for patient consultations, transmission of still images, patient portals, and remote monitoring of vital signs.²⁴

This technology is critical to deliver high-quality acute and chronic care to patients in remote or rural areas, locally to patients unable to travel to the clinic, and internationally.^{25–28} As patients become more technologically savvy, providers can try novel strategies to provide patients access to care. As of September 2015, there were at least 165,000 health applications (apps) for smartphones to help patients better manage aspects of their care such as diet, exercise, blood pressure, and blood sugar levels.²⁹

Video technology such as Express Care Online allows patients to connect with their healthcare providers for video and virtual visits without having to leave home or take time off from work. It also allows oncology providers to have virtual face-to-face contact with patients undergoing treatment phases, and primary care providers to have easier contact with patients during maintenance and remission phases. This technology allows for earlier detection of illness and provides broader access to care. Virtual visits may even prevent needless hospitalization in some cases or, conversely, alert the physician to tell the patient with alarming symptoms of an acute event, that it is time to go to the hospital.

TABLE 1

Follow-up beyond routine screening

AFTER HODGKIN LYMPHOMA AND ACUTE LYMPHOBLASTIC OR MYELOGENOUS LEUKEMIA^{5,30,33,36}

Risks

Subsequent neoplasms and recurrence
 Cardiac disease (after chest radiation)
 Oral cancer, osteonecrosis (after azathioprine or radiation to the jaw)
 Osteoporosis
 Chronic pain, peripheral neuropathy, Raynaud phenomenon
 Pulmonary fibrosis, interstitial pneumonitis (after mediastinal radiation and high doses of bleomycin)
 Cataracts (after high doses of radiation to head)
 Bladder fibrosis, hemorrhagic cystitis, impaired kidney function, bladder cancer (after abdominal radiation)
 Esophageal strictures, gastroesophageal reflux disease, enterocolitis, bowel obstruction
 Infections

Educate on sun exposure, signs of cancer, healthy high-fiber diet, avoidance of alcohol, smoking cessation, hand-washing, vaccination, avoidance of people with colds, need to report symptoms

Screen

For skin cancer every year
 Mammography every 2 years for women age 50 to 74³⁷
 Colonoscopy every 5 years after age 35, or 10 years after abdominal radiation
 Echocardiography at baseline and periodically
 Annual liver screening with aspartate aminotransferase, alanine aminotransferase, and bilirubin for patients who received $\geq 3,000$ cGy to upper abdomen, or received methotrexate, mercaptopurine, or thioguanine
 Dual-energy x-ray absorptiometry per World Health Organization recommendations

Vaccinate against pneumococcus (PCV 13 for immunocompromised individuals),³⁸ influenza (inactivated); live-attenuated virus vaccines (eg, herpes zoster, influenza) can be used with caution and in close contacts of cancer survivors; consider prompt antibiotics to cover gram-positive organisms in those with hypogammaglobulinemia, compromised immunity

Monitor for relapse: computed tomography (CT) to evaluate response, then chest radiography or CT every 6 to 12 months for 2 to 5 years

Specialist evaluation as appropriate

FOR OLDER PATIENTS with chronic lymphocytic leukemia, acute myelogenous leukemia, multiple myeloma and non-Hodgkin lymphoma^{22,39}

Risks

Early onset of diabetes (secondary to steroid use), hypertension (secondary to chemotherapy), osteoporosis (especially after multiple myeloma), cataracts (from steroids), and cardiovascular disease (especially with anthracycline and alkylating agent chemotherapy); reinforce healthy lifestyle, proper screening

AFTER ALL CANCERS^{33,34}

Address educational issues, emotional issues, financial issues, chronic pain, cognitive function, sleep disorders, immunizations, and healthy lifestyle (smoking cessation, weight management, diet, exercise)

SURVEILLANCE FOR LATE TREATMENT EFFECTS

Guidelines for surveillance for late treatment effects include the following:

- Children's Oncology Group Long-Term Follow-Up Guidelines for Survivors of

Childhood, Adolescent, and Young Adult Cancer³⁰

- National Comprehensive Cancer Network Guidelines for Age-Related Recommendations: Adolescent and Young Adult Oncology³¹

TABLE 2

Screening after hematopoietic cell transplant**Cardiovascular** risk-factor assessment**Immune system**

If on chronic graft-vs-host disease prevention: gram-positive encapsulated organism prophylaxis, *Pneumocystis carinii* pneumonia prophylaxis, cytomegalovirus testing

Revaccinate after stem cell transplant, yearly inactivated influenza vaccine

Ocular clinical symptom evaluation, ocular fundus examination if previously abnormal

Dental assessment

Pulmonary

Clinical pulmonary assessment

Smoking avoidance counseling

Pulmonary function testing if previously abnormal

Chest radiography if previously abnormal

Liver

Liver enzyme testing if previously abnormal

Serum ferritin testing if previously abnormal

Kidney

Blood pressure screening

Urine protein screening

Blood urea nitrogen and creatinine testing

Muscle and connective tissue

Evaluate for muscle weakness if on chronic graft-vs-host disease prevention

Physical activity counseling and routine exercise

Bone and spine

Bone density testing (adult women, all allogeneic transplant recipients and patients at high risk for bone loss), reassess if previously abnormal

Nervous system

Clinical neurologic evaluation

Evaluate for cognitive development

Endocrine system

Thyroid function testing

Growth velocity in children

Gonadal function assessment in prepubertal children and in adults if previously abnormal

Skin self-examination and sun exposure counseling

Gynecologic examination**Secondary cancers**

Vigilance counseling and screening

Psychosocial, financial, and quality-of-life clinical assessment, sexual function assessment

Based on information in references 30 and 32

- National Comprehensive Cancer Network Guidelines for Treatment of Cancer by Site and Survivorship³¹
- American Society for Blood and Marrow Transplantation, for survivors of hematopoietic cell transplantation.³²

Survivors of childhood blood cancers are at increased risk of cardiac effects of high-dose or anthracycline chemotherapy (eg, doxorubicin for lymphoma, idarubicin for leukemia), skin cancer, sex-specific cancers (breast cancer, cervical cancer, prostate cancer), and osteoporosis.^{5,30,33,34}

For adult survivors of childhood cancers, it is generally recommended to screen for secondary conditions according to the US Preventive Services Task Force. The clinician must also consider the age at cancer diagnosis (child, young adult, or adult), the length of time since chemotherapy (months vs years), and the type of chemotherapy received.

A myriad of recommendations exist according to cancer type, location, stage, and age at diagnosis, but no clear consensus for screening exists. The major survivorship surveillance guidelines of the Children's Oncology Group, National Comprehensive Cancer Network, and American Society for Blood and Marrow Transplantation are very detailed and lengthy and therefore not user-friendly for the busy clinician. While these guidelines contain minor differences as to what to test for and when to test, they differ mainly in considerations of the length of exposure to chemotherapy and radiation (eg, children, young adults, and older adults), length of time from completion of treatment to assessment of late complications, and whether the patient underwent hematopoietic stem cell transplant.^{35,36}

Table 1 reviews hematologic malignancies and conditions that blood cancer survivors are at risk for and general routine screening recommendations.^{5,22,30,33,34,36–39} In general, an assessment by a healthcare provider is recommended annually to screen for late effects of cancer and its treatment. Most important are screening for cardiac toxicity, giving immunizations, and preventing second cancers.

Table 1 reflects general recommendations for healthcare screening in childhood, adolescent, or young adult cancer survivors who see adult primary care physicians and for adult

cancer survivors (acute leukemias, lymphomas, and multiple myeloma).

Table 2 focuses on screening and prevention specifically after hematopoietic cell transplantation.^{30,32} These tables are not meant to be all-inclusive but to provide evidence-based recommendations for health surveillance at a glance.

SURVIVORS NEED ONGOING CARE

Recent successes in the treatment of hematologic cancers have led to dramatic changes in the overall health of these patients. In many instances, cancer survivors in the United States are considered to have a chronic illness with survival rates surpassing those in the past. A longer life span is counterbalanced by cumulative physical, financial, and psychosocial issues that require a multidisciplinary team to monitor and manage.

Childhood cancer survivors face the same psychosocial and financial issues as survivors of adult-onset cancers and are at heightened risk of preventable conditions. Ultimately, it is up to the survivor to self-manage many long-term treatment-related symptoms.

A survivorship care plan and treatment summary to guide the patient, primary provider, and oncology team is an essential component of quality care. Screening guidelines vary according to the age at treatment and length of time from therapy, but general screening and the use of technology and information technology solutions to deliver care can help survivors. These solutions have the potential to transform healthcare delivery in the future and provide the opportunity for ongoing, comprehensive care.

REFERENCES

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. *CA Cancer J Clin* 2015; 65:5–29.
2. Siegel R, DeSantis C, Virgo K, et al. Cancer treatment and survivorship statistics, 2012. *CA Cancer J Clin* 2012; 62:220–241.
3. Blanch-Hartigan D, Forsythe LP, Alfano CM, et al. Provision and discussion of survivorship care plans among cancer survivors: results of a nationally representative survey of oncologists and primary care physicians. *J Clin Oncol* 2014; 32:1578–1585.
4. Bell K, Ristovski-Slijepcevic S. Cancer survivorship: why labels matter. *J Clin Oncol* 2013; 31:409–411.
5. Denlinger CS, Carlson RW, Are M, et al. Survivorship: introduction and definition. Clinical practice guidelines in oncology. *J Natl Compr Canc Netw* 2014; 12:34–45.
6. National Cancer Institute. About cancer survivorship research. <http://cancercontrol.cancer.gov/ocs/>. Accessed April 28, 2017.
7. McCabe MS, Faithfull S, Makin W, Wengstrom Y. Survivorship programs and care planning. *Cancer* 2013; 119(suppl 11):2179–2186.
8. Galindo RJ, Yoon J, Devoe C, Myers AK. PEG-asparaginase induced severe hypertriglyceridemia. *Arch Endocrinol Metab* 2016; 60:173–177.
9. Pophali PA, Klotz JK, Ito S, et al. Male survivors of allogeneic hematopoietic stem cell transplantation have a long term persisting risk of cardiovascular events. *Exp Hematol* 2014; 42:83–89.
10. Armenian SH, Sun CL, Shannon T, et al. Incidence and predictors of congestive heart failure after autologous hematopoietic cell transplantation. *Blood* 2011; 118:6023–6029.
11. Duncan CN, Majhail NS, Brazauskas R, et al. Long-term survival and late effects among one-year survivors of second allogeneic hematopoietic cell transplantation for relapsed acute leukemia and myelodysplastic syndromes. *Biol Blood Marrow Transplant* 2015; 21:151–158.
12. Inamoto Y, Shah NN, Savani BN, et al. Secondary solid cancer screening following hematopoietic cell transplantation. *Bone Marrow Transplant* 2015; 50:1013–1023.
13. Robison LL, Hudson MM. Survivors of childhood and adolescent cancer: life-long risks and responsibilities. *Nat Rev Cancer* 2014; 14:61–70.
14. Wood ME, Vogel V, Ng A, Foxhall L, Goodwin P, Travis LB. Second malignant neoplasms: assessment and strategies for risk reduction. *J Clin Oncol* 2012; 30:3734–3745.
15. Bhatia S. Genetic variation as a modifier of association between therapeutic exposure and subsequent malignant neoplasms in cancer survivors. *Cancer* 2015; 121:648–663.
16. Underwood JM, Townsend JS, Stewart SL, et al; Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC). Surveillance of demographic characteristics and health behaviors among adult cancer survivors—behavioral risk factor surveillance system, United States, 2009. *MMWR Surveill Summ* 2012; 61:1–23.
17. Forsythe LP, Parry C, Alfano CM, et al. Use of survivorship care plans in the United States: associations with survivorship care. *J Natl Cancer Inst* 2013; 105:1579–1587.
18. Taylor K, Monterosso L. Survivorship care plans and treatment summaries in adult patients with hematologic cancer: an integrative literature review. *Oncol Nurs Forum* 2015; 42:283–291.
19. Faiman B. Medication self-management: important concepts for advanced practitioners in oncology. *J Adv Pract Oncol* 2011; 2:26–34.
20. Tevaarwerk AJ, Wisinski KB, Buhr KA, et al. Leveraging electronic health record systems to create and provide electronic cancer survivorship care plans: a pilot study. *J Oncol Pract* 2014; 10:e150–e159.
21. Donohue S, Sesto ME, Hahn DL, et al. Evaluating primary care providers' views on survivorship care plans generated by an electronic health record system. *J Oncol Pract* 2015; 11:e329–e335.
22. Mayer D. Integration of survivorship care plans into electronic health records. Chicago, IL: American Society of Clinical Oncology; 2015.
23. US Department of Health and Human Services. HITECH Act Enforcement Interim Final Rule, 2015. www.hhs.gov/hipaa/for-professionals/special-topics/HITECH-act/enforcement-interim-final-rule/index.html. Accessed May 5, 2017.
24. American Telemedicine Association. What is telemedicine? www.americantelemed.org/main/about/about-telemedicine/telemedicine-faqs. Accessed May 5, 2017.
25. Sabesan S. Specialist cancer care through telehealth models. *Aust J Rural Health* 2015; 23:19–23.
26. Jhaveri D, Larkins S, Sabesan S. Teletstroke, tele-oncology and teledialysis: a systematic review to analyse the outcomes of active therapies delivered with telemedicine support. *J Telemed Telecare* 2015; 21:181–188.
27. Adler E, Alexis C, Ali Z, et al. Bridging the distance in the Caribbean: telemedicine as a means to build capacity for care in paediatric can-

- cer and blood disorders. *Stud Health Technol Inform* 2015; 209:1–8.
28. **Pesec M, Sherertz T.** Global health from a cancer care perspective. *Future Oncol* 2015; 11:2235–2245.
 29. **Murphy T.** Report: health care apps available in US top 165,000. www.businessinsider.com/ap-report-health-care-apps-available-in-us-top-165000-2015-9. Accessed May 5, 2017.
 30. **Children's Oncology Group.** Long-term follow-up guidelines for survivors of childhood, adolescent, and young adult cancers. www-survivorshipguidelines.org/pdf/LTFUGuidelines_40.pdf. Accessed May 5, 2017.
 31. **Anderson KC, Alsina M, Bensinger W, et al; National Comprehensive Cancer Network.** NCCN clinical practice guidelines in oncology: multiple myeloma. *J Natl Compr Canc Netw* 2009; 7:908–942.
 32. **Majhail NS, Rizzo JD, Lee SJ, et al; Center for International Blood and Marrow Transplant Research (CIBMTR); American Society for Blood and Marrow Transplantation (ASBMT); European Group for Blood and Marrow Transplantation (EBMT); Asia-Pacific Blood and Marrow Transplantation Group (APBMT); Bone Marrow Transplant Society of Australia and New Zealand (BMTSANZ); East Mediterranean Blood and Marrow Transplantation Group (EMBT); Sociedade Brasileira de Transplante de Medula Ossea (SBTMO).** Recommended screening and preventive practices for long-term survivors after hematopoietic cell transplantation. *Biol Blood Marrow Transplant* 2012; 18:348–371.
 33. **Ligibel JA, Denlinger CS.** New NCCN guidelines for survivorship care. *J Natl Compr Canc Netw* 2013; 11(suppl):640–644.
 34. **Valdivieso M, Kujawa AM, Jones T, Baker LH.** Cancer survivors in the United States: a review of the literature and a call to action. *Int J Med Sci* 2012; 9:163–173.
 35. **Rizzo JD, Brouwers M, Hurley P, et al; American Society of Hematology and the American Society of Clinical Oncology Practice Guideline Update Committee.** American Society of Hematology/American Society of Clinical Oncology clinical practice guideline update on the use of epoetin and darbepoetin in adult patients with cancer. *Blood* 2010; 116:4045–4059.
 36. **Barthel EM, Spencer K, Banco D, Kiernan E, Parsons S.** Is the adolescent and young adult cancer survivor at risk for late effects? It depends on where you look. *J Adolesc Young Adult Oncol* 2016; 5:159–173.
 37. **US Preventive Services Task Force.** Screening for breast cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med* 2009; 151:716–726, W-236.
 38. **Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP).** *MMWR Recomm Rep* 1997; 46: 1–24.
 39. **Bilotti E, Faiman BM, Richards TA, et al; International Myeloma Foundation Nurse Leadership Board.** Survivorship care guidelines for patients living with multiple myeloma: consensus statements of the International Myeloma Foundation Nurse Leadership Board. *Clin J Oncol Nurs* 2011; 15(suppl):5–8.

ADDRESS: Beth Faiman, PhD, MSN, APRN-BC, AOCN, Department of Hematology and Medical Oncology, R33, Cleveland Clinic, 9500 Euclid Avenue, Cleveland, OH 44195; faimanb@ccf.org



Fundamental to Advanced Echocardiography

September 15 – 17, 2017
Global Center for Health Innovation
Cleveland, OH



Featuring: Reduced fees for ASE members
Hands-On Workshops in 3D EF, Cropping, and Strain

Why attend?

- Learn about the most **current clinical and research studies**
- Receive guidance and pearls on **optimal use of echocardiography** to implement into your practice
- Incorporation of **NEW 2017** Valvular Heart Disease Guideline Recommendations in Echocardiography
- Hear **experts' analysis** of cutting-edge technical innovations, including guidance of structural interventions

New This Year
MOC Points
Included

Register Today!
ccfcme.org/cardioecho17

This activity has been approved for
AMA PRA Category 1 Credit™.