

Cardio-Oncology Program

January 2020

As you may know, cardio-oncology is a medical sub-specialty dedicated to minimizing the effects of cardiovascular morbidity and mortality in people with cancer—before, during and after their treatment. Chemotherapy and radiation therapy, along with new cancer treatments, can contribute to a number of cardiovascular complications including heart failure, coronary artery disease, heart rhythm disorders, peripheral vascular disease, valvular heart disease, and other cardiovascular disorders.

Demand for cardio-oncology services continues to grow because of:

- Exponential growth of novel cancer treatment with potential to affect the CV system
- Need for CV monitoring during cancer treatment to minimize therapy interruptions and complications
- Rapidly growing population of cancer survivors
- New knowledge about synergism between CV risk, cancer and cancer treatment risk

On the following pages, you will find information on recent studies and guidelines that impact the continuum of care and provide the best cardiovascular outcomes for at-risk patients.

MedStar Heart & Vascular Institute (MHVI) is a national leader in the field of cardio-oncology treatment and research. We are committed to promoting effective methods for fighting cancer while minimizing the impact on heart function. Our multi-site consultative practice can help establish a comprehensive treatment plan for your patient, before, during, and after their cancer treatment.

We would be honored to support the care of your patients. If you would like any further information, please contact us at any time.

Washington, D.C. region, 202-360-6367

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Sincerely yours,



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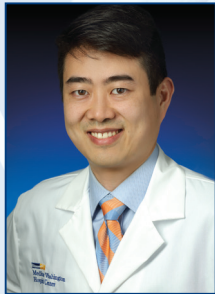
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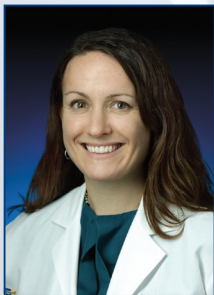
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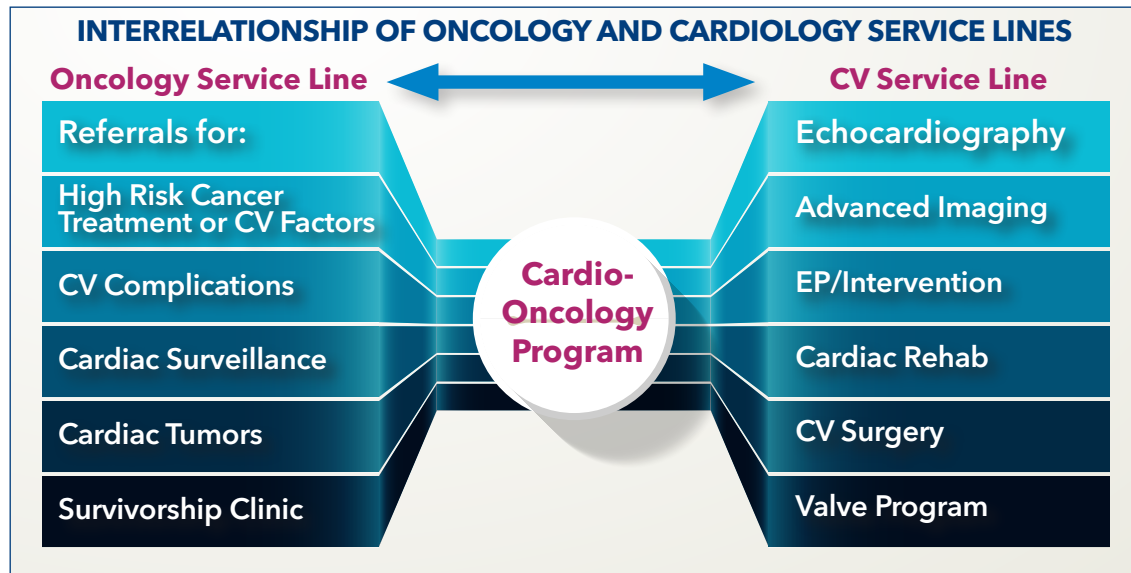
(l to r) Ian Chang, MD, Lan Anh Phan, RN , and Ana Barac MD, PhD, during Cardio-Oncology rounds.

Cardio-Oncology at MedStar Heart & Vascular Institute

Ana Barac, MD, PhD, FACC, is the founder and director of the Cardio-Oncology Program at MedStar Heart & Vascular Institute (MHVI). The program started in 2012 with a mission to advance cardiovascular care of patients with cancer and cancer survivors through collaborative clinical care, research, and education. Dr. Barac served as the founding Chair of the American College of Cardiology new Cardio-Oncology Council from 2015 to 2019 and is the director of the ACC Live course on Advancing Cardiovascular Care in Oncology patient. She also is an Associate Editor of the JACC: CardioOncology.

COLLABORATIVE, CONSULTATIVE PRACTICE

Optimal patient care is at the center of the program, supported by basic, translational and clinical research, practice guidelines, education and training of cardiology and oncology health teams, and epidemiology and registry research. These multidisciplinary teams provide consultative services to provide patients with state-of-the-art cancer treatment while minimizing their cardiac risks.



RESEARCH AND NEW DATA

New cancer therapies may pose new risks to the CV system. At MHVI, we are committed to expanding the current body of cardio-oncology knowledge. Our providers lead and participate in cutting edge research to develop new CV diagnostic and treatment protocols that are responsive to evolving oncologic approaches.

UPBEAT Study

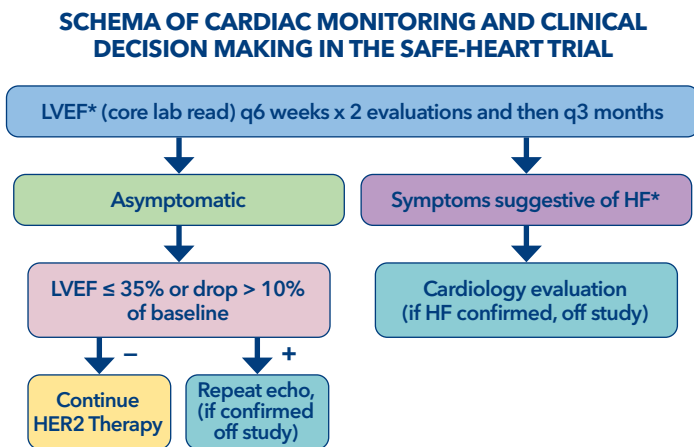
The NCI-sponsored national study “Understanding and Predicting Breast Cancer Events after Treatment” investigates long term (7-year) cardiovascular risk among survivors of breast cancer. This study will provide data about the associations between CV risk factors and cancer treatment effects on development of cardiac dysfunction, impaired exercise capacity, fatigue, disability, and CV events. This is an ongoing study. Please contact us if you have patients that would be interested to participate.

SAFE-HEaRt Trial

We conducted an investigator-initiated, prospective study to determine whether it was safe to use HER2-targeted therapies (trastuzumab, pertuzumab and T-DM1 (ado-trastuzumab emtansine) in breast cancer patients with reduced heart function.

Our results indicate that:

- Initiation or continuation of HER2-targeted therapies in patients with mildly reduced heart function was safe in 90% of women
- Patients must receive appropriate heart medications during treatment and be followed by cardiac imaging
- This approach requires close collaboration between the oncology and cardiology teams.



LVEF=left ventricular ejection fraction; HF= heart failure

Lynce F, Barac A, Geng X, Dang C, Yu AF, Smith KL, Gallagher C, Pohlmann PR, Nunes R, Herbolzheimer P, Warren R, Srichai MB, Hofmeyer M, Cunningham A, Timothee P, Asch FM, Shajahan-Haq A, Tan MT, Isaacs C, Swain SM. Prospective evaluation of the cardiac safety of HER2-targeted therapies in patients with HER2-positive breast cancer and compromised heart function: the SAFE-HEaRt study. *Breast Cancer Res Treat.* 2019 Jun;175(3):595-603.

Immunotherapy and CV Risk–Myocarditis

The rising use of new immunotherapy agents such as immune checkpoint inhibitors may cause rare but fatal acute myocarditis. Our goal is to raise awareness among all health care providers, including emergency physicians, intensivists, and primary care physicians in the area to help recognize and refer these at-risk patients for immediate treatment.

Jain V, Mohebtash M, Rodrigo ME, Ruiz G, Atkins MB, Barac A. Autoimmune Myocarditis Caused by Immune Checkpoint Inhibitors Treated With Antithymocyte Globulin. *J Immunother.* 2018 Sep;41(7):332-335

PREVENT Trial

The NCI-sponsored national study “Preventing Anthracycline Cardiovascular Toxicity with Statins” randomized patients receiving anthracycline-based therapy to atorvastatin 40mg daily and placebo and investigated changes in cardiac function by cardiac magnetic resonance. The study has completed enrollment and the results are anticipated in 2020.

Cardiovascular Function in BRCA1/2 mutation Carriers Treated with Anthracyclines

This study investigated heart function among women, BRCA1/2 carriers, who had a history of early stage breast cancer and were treated with anthracyclines. In contrast to animal study data indicating concern, there was no evidence for elevated risk of cardiac dysfunction with the use of standard-doses of adjuvant anthracyclines in treatment of BRCA1/2 mutation carriers.

Barac A, Lynce F, Smith KL, Mete M, Shara NM, Asch FM, Nardacci MP, Wray L, Herbolzheimer P, Nunes RA, Swain SM, Warren R, Peshkin BN, Isaacs C. Cardiac function in BRCA1/2 mutation carriers with history of breast cancer treated with anthracyclines. *Breast Cancer Res Treat.* 2016 Jan;155(2):285-93.

Cardiac Tumors

Accurate diagnosis and treatment of primary cardiac tumors require multidisciplinary expertise and coordination. MHVI's Cardio-Oncology Program offers integrated cardiac imaging modalities including cardiac magnetic resonance, advanced echocardiography, and cardiac CT and PET imaging. We work in collaboration with the expert interventional cardiology and cardiothoracic surgery teams to obtain biopsy and tissue diagnosis of cardiac masses and with the oncology teams to establish appropriate treatment.

Further Research and Relevant Publications

Barac A, Blaes A, Lynce F. Lessons From Primary Cardiac Prevention Trials During Trastuzumab Therapy: End of One Size Fits All. *J Am Coll Cardiol.* 2019 Jun 11;73(22):2869-2871.

Gilchrist SC, Barac A et al. Cardio-Oncology Rehabilitation to Manage Cardiovascular Outcomes in Cancer Patients and Survivors: A Scientific Statement From the American Heart Association. *Circulation.* 2019 May 21;139(21):e997-e1012.

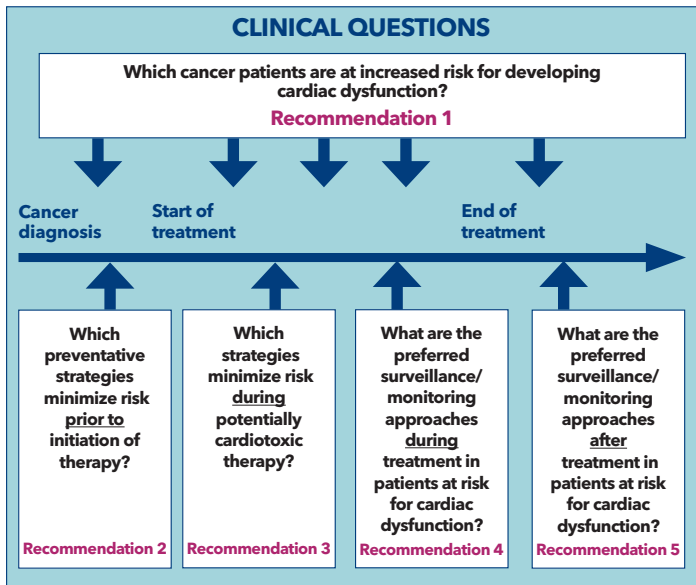
Barish R, Lynce F, Unger K, Barac A. Management of Cardiovascular Disease in Women With Breast Cancer. *Circulation.* 2019 Feb 19;139(8):1110-1120

Liu J, Banchs J, Mousavi N, Plana JC, Scherrer-Crosbie M, Thavendiranathan P, Barac A. Contemporary Role of Echocardiography for Clinical Decision Making in Patients During and After Cancer Therapy. *JACC Cardiovasc Imaging.* 2018 Aug;11(8):1122-1131.

More publications can be found at www.MedStarHeartInstitute.org/programs/cardio-oncology.

EXPANDING THE CONTINUUM OF CARE

Partnerships with patients and physicians before, during, and after treatment is necessary to ensure individual risks are managed according to current guidelines and evidence-based practice. The following chart illustrates the American Society of Clinical Oncology continuum-of-care guidelines we follow.



Reference: Armenian SH, Lacchetti C, Barac A, Carver J, Constine LS, Denduluri N, Dent S, Douglas PS, Durand JB, Ewer M, Fabian C, Hudson M, Jessup M, Jones LW, Ky B, Mayer EL, Moslehi J, Oeffinger K, Ray K, Ruddy K, Lenihan D. Prevention and Monitoring of Cardiac Dysfunction in Survivors of Adult Cancers: American Society of Clinical Oncology Clinical Practice Guideline. *J Clin Oncol.* 2017 Mar 10;35(8):893-911

EDUCATION AND PARTNERSHIPS

By prioritizing education for area providers as well as patients and their families, we develop partnerships for a lifetime of care. Our physicians can help determine if a patient with cancer may be at risk for developing a heart condition before, during, or after cancer treatment. We are available to partner with you in assessing and caring for your patient.

Patients with the following conditions may be at risk for CV complications during oncology treatment:

- History of cardiomyopathy or heart failure
- Hypertension
- High cholesterol
- Diabetes
- Current smoker
- Arrhythmia
- History of valvular disease
- Coronary artery disease
- History of myocardial infarction



MEDSTAR HEART & VASCULAR INSTITUTE Cardio-Oncology Locations

- MedStar Union Memorial Hospital
- MedStar Good Samaritan Hospital
- MedStar Franklin Square Medical Center
- MedStar Georgetown University Hospital
- MedStar Washington Hospital Center
- MedStar Southern Maryland Hospital Center
(Opening 2020)

MedStar Heart & Vascular Institute

Nationally Recognized Excellence in the Baltimore-Washington Region

MedStar Heart & Vascular Institute (MHVI) is a national leader in the research, diagnosis and treatment of cardiovascular disease, and has been recognized by *U.S. News & World Report* and The Society of Thoracic Surgeons as one of the top cardiovascular programs in the nation. MHVI and the Cleveland Clinic Heart and Vascular Institute, the nation's #1 heart program, enjoy a robust clinical and research relationship based on shared expertise. Patients benefit from rapid-cycle quality improvements and the latest treatment protocols.

Referring physicians have access to recognized national leaders in multiple cardiac and vascular sub-specialties and local access to MHVI cardiac and vascular physicians located throughout Maryland, Northern Virginia and the Greater Washington, D.C. and Baltimore regions.

For more information or to make an appointment or referral, visit MedStarHeartInstitute.org



MedStar Washington Hospital Center Awarded