






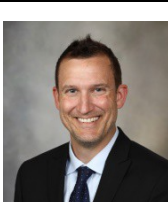











MAYO CLINIC HEART FAILURE REVIEW ONLINE PROGRAM





Presentation	Presenter	Presentation Objectives	Lecture Length
Evaluation of Heart Failure			
The Epidemiology of Heart Failure	 Veronique Roger, MD Professor of Epidemiology & Medicine	<ul style="list-style-type: none"> • Recognize the determinants of the heart failure epidemic • Master the concepts and understand the factors that cause hospitalizations in heart failure • Define the clinical implications of the heart failure epidemic 	37:32
Stage A and B Heart Failure, Risk Factor, and the Role of Prevention to Symptomatic HF	 Horng Chen, M.D. Professor of Medicine	<ul style="list-style-type: none"> • State the definition of stage A/B heart Failure • Summarize the epidemiology and natural history of stage A/B heart failure • Describe the Management of Stage A/B Heart Failure to prevent progression to stage C/D clinical heart failure 	20:30
Clinical Assessment and Prognosis in Heart Failure	 Paul McKie, M.D. Assistant Professor of Medicine	<ul style="list-style-type: none"> • Describe the clinical assessment of heart failure • Review prognosis/prognostic tools for heart failure 	31:26






<p>Biomarkers in Heart Failure</p>	 <p>Margaret Redfield, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the role of natriuretic peptide assays in the evaluation and management of Heart Failure 	<p>39:45</p>
<p>Exercise Testing and Physiology in Heart Failure</p>	 <p>Barry Borlaug, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Review the basic principles of exercise physiology at they relate to patients with HF • Review how to utilize and interpret data from CPET 	<p>33:47</p>
<p>Normal Cardiac Physiology</p>	 <p>Barry Borlaug, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the basics of normal cardiac physiology at the cellular level • Describe the basic concepts of ventricular-arterial interaction • Identify measures of normal cardiac performance and physiologic responses 	<p>37:47</p>
<p>Hemodynamics of Heart Failure with Reduced Ejection Fraction</p>	 <p>Barry Borlaug, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the hemodynamic changes that develop in HFrEF and how they contribute to morbidity and mortality • Identify mechanisms by which therapeutic interventions target these changes 	<p>35:28</p>
<p>Hemodynamics of Heart Failure with Preserved Ejection Fraction</p>	 <p>Barry Borlaug, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the abnormalities in cardiac function that lead to HFpEF • Recognize the pathophysiology and typical hemodynamic presentations for HFpEF encountered in practice • Identify hemodynamic signatures of HFpEF mimic 	<p>39:01</p>



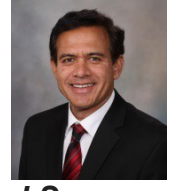
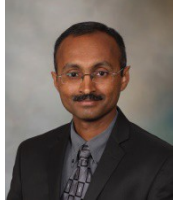
<p>Evaluation of New Onset Heart Failure Reduced Ejection Fraction</p>	 <p>Paul McKie, M.D. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Develop a comprehensive approach to the clinical evaluation for patients with heart failure with reduced ejection fraction • Choose appropriate diagnostic and laboratory testing for patients with heart failure with reduced ejections fraction 	<p>31:59</p>
<p>Evaluation of Heart Failure Preserved Ejection Fraction (HFpEF): Pathophysiology and Diagnosis</p>	 <p>Margaret Redfield, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the pathophysiology of HFpEF • Recognize HFpEF phenotypes <ul style="list-style-type: none"> - Overtly Congested - Exertional (“Unexplained”) Dyspnea • Describe how to use HFpEF diagnostic algorithms 	<p>35:16</p>
<p>Specific Etiologies of Heart Failure</p>			
<p>Cardiomyopathies</p>	 <p>Steve Ommen, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the etiology and pathophysiology of hypertrophic cardiomyopathy (HCM) and use this information to select appropriate testing and evaluate patients • Define the genetic makeup of HCM and properly advise patients and family members on proactive testing • Formulate a management plan for patients with HCM with symptoms, including medical, interventional, and/or surgical options as needed • Assess the potential for sudden cardiac death and implications for ICD placement in patients with non-compaction cardiomyopathy and HCM 	<p>36:53</p>
<p>Cardiac Amyloid</p>	 <p>Martha Grogan, M.D. Associate Professor of Medicine</p>	<ul style="list-style-type: none"> • Identify the patient with potential amyloid and perform diagnostic evaluation • Describe the different types of amyloid and their natural history • Manage the patient with documented amyloid 	<p>32:01</p>

<p>Constrictive Pericarditis</p>	 <p>Jae Oh, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> Recognize the presentation and select appropriate testing and management strategies for patients with pericardial constriction, including differentiation between constrictive pericarditis and restrictive cardiomyopathy Review diagnosis and treatment of constriction 	<p>49:01</p>
<p>Adult Congenital Heart Disease: What the Heart Failure Specialist Needs to Know</p>	 <p>Alexander Egbe, M.B.B.S. Associate Professor of Medicine & Assistant Professor of Pediatrics</p>	<ul style="list-style-type: none"> Recognize the key pathophysiologic mechanisms for heart failure in the CHD population Formulate appropriate management plan for CHD patients with heart failure Identify the risks factors for mortality in CHD patients referred for heart transplant evaluation. 	<p>32:09</p>
<p>Peripartum Cardiomyopathy</p>	 <p>Sabrina Phillips, M.D. Associate Professor of Medicine</p>	<ul style="list-style-type: none"> Describe pathophysiology of peripartum cardiomyopathy Differentiate peripartum cardiomyopathy from other causes of heart failure in women Describe appropriate treatment strategies for women with peripartum cardiomyopathy 	<p>28:41</p>
<p>Stress Induced Cardiomyopathy</p>	 <p>Abhiram Prasad, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> List variety of nomenclature used to identify stress cardiomyopathy Discuss typical case, variants, and pathophysiology Recognize clinical characteristics and complications of stress cardiomyopathy Discuss the diagnosis and differential diagnosis of stress cardiomyopathy Describe treatment and prognosis for stress cardiomyopathy 	<p>19:32</p>


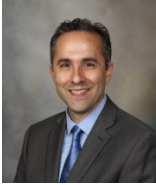


<p>Myocarditis and Sarcoid: Evaluation and Management</p>	 <p>Leslie Cooper, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the clinical significance of major causes of and clinical clues to suspect myocarditis. • Compare the use cardiac magnetic resonance and positron emission tomography to distinguish forms of myocarditis and refine prognosis in cardiac sarcoidosis. • Restate the 2016 American Heart Association scientific statement on the management of specific cardiomyopathies' recommendations for the use of endomyocardial biopsy 	<p>30:05</p>
<p>Cardio-Oncology: What the Heart Failure Specialist Needs to Know</p>	 <p>Joerg Herrmann, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Review the cardiotoxicity presentations of cancer therapies • Recognize underlying mechanisms • Develop a management grid 	<p>41:54</p>
<p>Nonischemic Dilated Cardiomyopathy: Evolving Genetics</p>	 <p>Richard Rodeheffer, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Identify the prevalence of hereditary causes of nonischemic dilated cardiomyopathy (NIDCM) • Recognize phenotypic and genotypic heterogeneity • Describe how to interpret genetic reports 	<p>30:03</p>

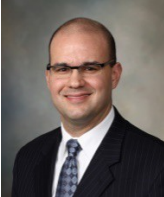



Imaging in Heart Failure			
<p>Echocardiography in Heart Failure</p>	 <p>Barry Karon, M.D. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Determine the clinical abnormalities, limitations, and characteristics of patients with heart failure and cardiomyopathies and how the results and use of echocardiography help determine the course of patient care and therapy. • Recognize proper use of echocardiography to help manage and develop therapies for patients presenting with heart failure 	<p>42:28</p>
<p>Pathologic Atlas of Heart Failure</p>	 <p>Brooks Edwards, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Summarize common pathologic findings in patients with heart failure • Identify common pathologic findings in patients with both HFrEF and HFpEF. • Describe the common peripheral manifestations of heart failure. 	<p>34:28</p>
<p>MRI and CT Imaging in Heart Failure</p>	 <p>Nandan Anavekar, M.B., B.Ch. Professor of Medicine</p>	<ul style="list-style-type: none"> • Identify imaging modalities utilized in the evaluation of cardiovascular disease and their technical considerations • Enumerate the goals of imaging in patients with heart failure • Review role of imaging in ischemic heart disease • Review role of imaging in nonischemic heart disease 	<p>44:26</p>
<p>Nuclear Imaging in Heart Failure</p>	 <p>Omar Abou Ezzeddine, M.D., C.M., M.S. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Define role of nuclear imaging in assessment of myocardial viability • Define role of ^{99m}Tc-based scintigraphy in diagnostic workup of TTR cardiac amyloidosis (TTR-CA) • Define role of cardiac PET imaging in evaluating patients with suspected cardiac sarcoidosis 	<p>45:46</p>






Treatment of Heart Failure			
Decompensated Heart Failure: Pathophysiology and Treatment	 Barry Karon, M.D. Assistant Professor of Medicine	<ul style="list-style-type: none"> Recognize the varying clinical presentations of decompensated heart failure Describe appropriate decision making steps that help determine the optimum treatment approach 	52:43
Chronic Drug Therapy for Heart Failure Reduced Ejection Fraction (HFrEF) I	 Grace Lin, M.D. Associate Professor of Medicine	<ul style="list-style-type: none"> Cite the guideline directed medical therapies (GDMT) for HFrEF <ul style="list-style-type: none"> Drug classes Interpret rationale for GDMT Summarize initiation and titration of GDMT 	35:56
Chronic Drug Therapy for Heart Failure Reduced Ejection Fraction (HFrEF) II	 Grace Lin, M.D. Associate Professor of Medicine	<ul style="list-style-type: none"> Apply diuretic therapy for heart failure Recognize new drug therapies for HFrEF 	35:42
Implantable Cardioverter Defibrillator (ICD) and Cardiac Resynchronization Therapy(CRT) in Heart Failure	 Samuel Asirvatham, M.D. Professor of Medicine & Pediatrics	<ul style="list-style-type: none"> List the indications for ICD implantation for primary prevention and select appropriate patients for this intervention List the indications for CRT implantation and select appropriate patients for this intervention Interpret pacemaker electrocardiography accurately and use the findings to guide patient management 	35:49
Treatment of Garden Variety HFpEF and Identification of Common Masqueraders	 Barry Borlaug, M.D. Professor of Medicine	<ul style="list-style-type: none"> Recognize how to evaluate & diagnose patient with suspected HFpEF Describe how to treat HFpEF 	37:40



<p>Critical Care in HF and Cardiogenic Shock</p>	 <p>Jacob Jentzer, M.D. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe pathophysiology and hemodynamic management of cardiogenic shock • Recognize beneficial evidence-based therapies for cardiogenic shock • Implement evidence-based best practices for sepsis and ARDS 	<p>43:10</p>
<p>Remote Monitoring in Heart Failure</p>	 <p>Margaret Redfield, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe how to use remote monitoring in HF management 	<p>35:01</p>
<p>Comorbidities of Heart Failure</p>			
<p>Sleep Disordered Breathing in Heart Failure</p>	 <p>Virend Somers, M.D., Ph.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the prevalence and implications of sleep apnea in patients with heart failure • List the available data regarding benefits of treating OSA in heart failure • Identify the risks/benefit of treating CSA in heart failure 	<p>26:13</p>
<p>Diabetes in Heart Failure</p>	 <p>Vinaya Simha, M.B.B.S. Associate Professor of Medicine</p>	<ul style="list-style-type: none"> • Recognize the increased risk for heart failure in patients with Diabetes Mellitus • Describe the multiple pathophysiological processes contributing to heart failure in patients with Diabetes Mellitus • Review the effect of different glucose lowering therapies on heart failure • Recognize the benefits and risks of SGLT2 inhibitor therapy in patients with heart failure 	<p>34:36</p>

<p>Obesity in Heart Failure</p>	 <p>Barry Borlaug, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe recent epidemiologic trends in Obesity and HF • Recognize the pathophysiology and potential treatments for patients with obesity and HF 	<p>25:51</p>
<p>Coronary Disease and Revascularization in Heart Failure</p>	 <p>Bernard Gersh, M.B., Ch.B., D. Phil. Professor of Medicine</p>	<ul style="list-style-type: none"> • Clarify different substrates causing left ventricular dysfunction in patients with chronic ischemic syndromes. • Summarize issues related to the difference in outcomes after revascularization in patients with viability in the STICH trial. • Formulate a clinical strategy in which viability testing may be of help in selecting patients with severe left ventricular dysfunction and heart failure for revascularization. 	<p>47:39</p>
<p>Cardiorenal Syndrome</p>	 <p>John Burnett, Jr., M.D. Professor of Medicine & Physiology</p>	<ul style="list-style-type: none"> • Describe the natriuretic peptide/renin-angiotensin-aldosterone axis in physiologic homeostasis • State definition of worsening renal function in heart failure in Cardiorenal Syndrome • Summarize mechanisms of Cardiorenal Syndrome • List biomarkers for acute kidney injury (AKI) in Cardiorenal Syndrome • Describe standard therapies for Cardiorenal Syndrome • Identify novel new therapies for AKI in heart failure 	<p>33:15</p>
<p>Atrial Arrhythmias in Heart Failure</p>	 <p>Douglas Packer, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the classification and mechanisms of atrial fibrillation/flutter and its diagnosis • Describe and choose among pharmacologic agents for rate control for specific types of patients with atrial fibrillation • Describe and choose among treatment options for rhythm control in atrial fibrillation, including medications, cardioversion, and ablation, for specific types of patients 	<p>32:56</p>

<p>Ventricular Arrhythmias, Intracardiac Electrograms and Implantable Monitors in Heart Failure</p>	 <p>Abhishek Deshmukh, M.B.B.S. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Identify ventricular arrhythmia syndromes that <u>cause</u> heart failure • Review approach to ventricular arrhythmias in inflammatory cardiomyopathies • Recognize treatment for ventricular arrhythmias in LVAD patients • Demonstrate how to interpret key ICD electrogram findings 	<p>36:36</p>
<p>Valve Disease in Heart Failure: What the HF Specialist Needs to Know</p>	 <p>Mackram Eleid, M.D. Associate Professor of Medicine</p>	<ul style="list-style-type: none"> • Identify indications for intervention of aortic stenosis • Select candidates for TAVR vs. SAVR • Discuss interventional management of mitral regurgitation • Discuss interventional approach to tricuspid regurgitation 	<p>33:22</p>
<p>Mechanical Circulatory Support</p>			
<p>Patient Selection and Evaluation for Ventricular Assist Device</p>	 <p>Richard Rodeheffer, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe the role of long term left ventricular mechanical circulatory support in management of end stage heart failure • Identify appropriate candidates for LVAD support 	<p>22:47</p>
<p>Postoperative Management of Mechanical Circulatory Device and Transplant</p>	 <p>Andrew Rosenbaum, M.D. Instructor in Medicine</p>	<ul style="list-style-type: none"> • List risk factors and management strategies for post-transplant medical complications • Evaluate approaches to induction and early immunosuppression • Describe appropriate early post-operative infectious prophylaxis • Recognize early post-operative LVAD-specific considerations, including post-operative RV failure 	<p>40:42</p>

<p>Temporary mechanical circulatory support and ECMO: Devices, Complications, and Management</p>	 <p>John Stulak, M.D. Professor of Surgery</p>	<ul style="list-style-type: none"> • List current options for ventricular support • Review indications for use • Examine strategies for short and long-term support 	<p>31:59</p>
<p>Durable Ventricular Assist Devices</p>	 <p>Andrew Rosenbaum, M.D. Instructor in Medicine</p>	<ul style="list-style-type: none"> • Describe the technical aspects of contemporary centrifugal flow LVADS • Evaluate criteria for LVAD implantation • Compare results of clinical investigations of contemporary LVADs • Recognize and manage the common complications seen after LVAD implant 	<p>36:04</p>
<p>Mechanical Circulatory Support: Intra-operative Complications and Post Implant Management</p>	 <p>John Stulak, M.D. Professor of Surgery</p>	<ul style="list-style-type: none"> • Review the device options for temporary mechanical circulatory support and ECMO in the setting of cardiogenic shock • Review the indications and complications associated with each approach • Discuss ongoing management and consideration during temporary hemodynamic support with each device 	<p>27:59</p>
<p>Heart Transplantation</p>			
<p>The Patient with Advanced Heart Failure: Left Ventricular Assist Device vs. Transplant</p>	 <p>Alfredo Clavell, M.D. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Recognize the advanced heart failure patient • Recognize the advantages and limitations of cardiac transplantation • Recognize the advantage and limitations of mechanical circulatory support that affect the selection process 	<p>36:11</p>

<p>Transplant: Patient Selection, Listing Criteria, and Evaluation</p>	 <p>Barry Boilson, M.D. Assistant Professor of Medicine</p>	<ul style="list-style-type: none"> • Review how to approach the assessment of patient referred for advanced heart failure therapies • Describe the selection process, and data driving indications and contraindications • Summarize key components of the transplant evaluation process • Identify currently UNOS listing criteria 	<p>38:48</p>
<p>Rejection Surveillance</p>	 <p>Brooks Edwards, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Identify the standard and evolving methods to diagnose cardiac allograft rejection 	<p>23:07</p>
<p>Transplant Immunology</p>	 <p>Mark Stegall, M.D. Professor of Surgery</p>	<ul style="list-style-type: none"> • Describe all aspects of the immune system that can attack an allograft • Recognize acute cellular rejection • Discuss new treatments for anti-HLA antibody 	<p>29:54</p>
<p>Immunosuppressive Therapy and Post Transplant Considerations</p>	 <p>Sudhir Kushwaha, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe immunosuppressive strategies following heart transplantation • Identify immunosuppressive drugs used both early and late following heart transplantation • Summarize long term complications and limitations to survival post-transplantation • Describe strategies to mitigate complications following heart transplantation 	<p>42:44</p>
<p>Palliative Care</p>	 <p>F. Andrew Bock, D.O. Assistant Professor of Family Medicine</p>	<ul style="list-style-type: none"> • Review heart failure prognostication tools and prognostication issues specific to heart failure • Review symptom management issues specific to heart failure. • Review palliative care timing, transitions of care and hospice issues specific to heart failure and devices. 	<p>31:22</p>

Pulmonary Hypertension			
<p>Pulmonary Arterial Hypertension: Essential Knowledge</p>	 <p>Robert Frantz, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe Definition and Classification of Pulmonary Arterial Hypertension • Recognize appropriate patients for calcium channel blocker therapy • Describe risk stratification in PAH • Recognize appropriate patients for parenteral prostanoid therapy 	<p>31:21</p>
<p>Pulmonary Hypertension: Systematic and Efficient Evaluation</p>	 <p>Robert Frantz, M.D. Professor of Medicine</p>	<ul style="list-style-type: none"> • Describe definition and classification of Pulmonary Hypertension • Recognize appropriate evaluation of pulmonary hypertension • Define fundamentals of therapy for Group 2, 3, and 4 pulmonary hypertension 	<p>26:16</p>