

Rotation: Heart Failure/VAD/Cardiac Transplantation

The Heart Failure rotation is designed to teach comprehensive care to patients with advanced heart failure and cardiac transplant. During the second year, the fellow will spend 2 weeks in the CVICU and 2 weeks on inpatient VAD/transplant service.

2 weeks CVICU, Surgical VAD/Transplant rounds

- pre-round on patients (share with Advanced HF fellow)
- participate in daily rounds
- write daily notes on patients
- attend VAD/Transplant clinic two afternoons per week
- review day's events on patients in CVICU in late afternoon
- split HF consults with Advanced HF fellow
- participate in a donor run
- no weekend responsibilities

2 weeks on floor/VAD service

- round on patients with attending and NPs
- help lead rounds
- present at transplant selection meeting
- attend VAD/Transplant clinic two afternoons per week
- review day's events on patients with NPs in late afternoon
- split HF consults with Advanced HF fellow
- no weekend responsibilities

For the entire 4 week rotation, all fellows will attend HF conferences

- Monday weekly HF meeting
- Tuesday 4PM selection committee meeting
- Friday multidisciplinary conference

During the third year and for select fellows during the second year, an additional two weeks can be spent on the general heart failure service as team leader.

- Lead work rounds
- Daily teaching: during rounds and afternoons
- Work-up and present any general HF consults
- For two-week rotation, round at least one weekend day

Learning Objectives

Medical Knowledge	
Objective	Teaching Method
Understand pathophysiology, history and physical exam findings, differential diagnosis, stages and natural history of various heart failure syndromes,	<ul style="list-style-type: none">- Clinical Teaching- Didactics- Self directed learning activities

including ischemic, infiltrative, restrictive, postpartum and chemotherapy induced cardiomyopathies	
Know the indications, contraindications, adverse effects and pharmacology of drugs of the treatment of chronic heart failure, acute heart failure, and cardiogenic shock	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Know the appropriate therapies, pharmacologic and non-pharmacologic, for prevention of heart failure in patients with risk factors or structural heart disease	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Develop a basic understanding of immunosuppressive medications and other interventions for acute rejection in heart transplant patients	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Understand types, indications and contraindications for mechanical circulatory support	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Understand which heart failure patients should be considered for ICDs, CRT, or advanced therapies such as cardiac transplant or mechanical circulatory support	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities

Patient Care	
Objective	Teaching Method
Evaluate and manage patients with new diagnosis, acutely decompensated, and chronic heart failure.	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Evaluate and manage patients with severe heart failure refractory to therapies	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Evaluate and manage patients with mechanical circulatory support and after heart transplantation	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities

Ability to interpret imaging modalities and incorporate findings in diagnosis and treatment of heart failure patients, including rare and advanced forms	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Ability to obtain a complete history and physical, understanding the limitations, in heart failure syndromes with the ability to assess volume status and perfusion	<ul style="list-style-type: none"> - Clinical Teaching - Role Modeling - Performance feedback
Management of heart failure with multiple comorbidities	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Ability to incorporate the results of hemodynamic monitoring to make appropriate decisions in heart failure patients of all etiologies and severity, including with mechanical circulatory support	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Appropriately use initial screening studies to determine patient eligibility for advanced therapies of individuals at non-transplant/non-MCS	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Perform assessments of quality of life, psychological problems, cognitive impairment, literacy problems, social isolation, financial problems and other barriers to adherence and risks for hospitalization	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Self directed learning activities
Participation in discussions on end-of-life issues with patients, family members and other providers	<ul style="list-style-type: none"> - Clinical Teaching - Didactics - Role modeling
To observe and participate in donor organ procurement, ventricular assist device implantation and heart transplantation	<ul style="list-style-type: none"> - Clinical experience

Professionalism	
Objective	Teaching Method
Demonstrate accountability and professional behavior towards patients, family members, and members of the health care team and adherence to	<ul style="list-style-type: none"> - Role modeling - Performance feedback

ethical principles	
Demonstrate compassion and respect for others, including patients from a diverse cultural, social, and religious backgrounds	<ul style="list-style-type: none"> - Role modeling - Performance feedback

Interpersonal and Communication Skills	
Objective	Teaching Methods
Communicate effectively with patients, families, and members of the health care team, including findings and diagnoses when appropriate to both patients and consulting physicians	<ul style="list-style-type: none"> - Role modeling - Performance feedback
Engage in share decision making with patients	<ul style="list-style-type: none"> - Clinical teaching - Role modeling
Effectively lead and communicate with the interdisciplinary team involved in heart transplant and MCS	<ul style="list-style-type: none"> - Role modeling - Performance feedback

Practice Based Learning and Improvement	
Objective	Teaching Method
Identify knowledge and performance gaps, set appropriate learning goals	<ul style="list-style-type: none"> - Role modeling - Clinical Experiences - Performance feedback
Utilize decision support tools for accessing guidelines and pharmacologic information	<ul style="list-style-type: none"> - Clinical teaching and role modeling

Systems Based Practice	
Objective	Teaching Methods
Work effectively as a member of the health care team, including coordination of patient care	<ul style="list-style-type: none"> - Clinical teaching - Performance feedback - Role modeling
Incorporate risk/benefit as well as cost analysis into decision making	<ul style="list-style-type: none"> - Clinical teaching - Self directed learning - Role modeling
Identify system errors and implement systems	<ul style="list-style-type: none"> - Clinical teaching

solutions	<ul style="list-style-type: none"> - Didactics - Role modeling
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Recommended Reading:

HEART FAILURE

- Gheorghiade M and Pang PS. Acute heart failure syndromes. *J Am Coll Cardiol*. 2009.
- Heart Failure: A Companion to Braunwald's Heart Disease, 2003. Douglas L. Mann. Saunders WB.
- Treatment of Advanced Heart Disease, 2006. Kenneth L. Baughman, William A. Baumgartner. Taylor & Francis.
- Seward JB and Casacang-Verzosa G. Infiltrative cardiovascular diseases: cardiomyopathies that look alike. *J Am Coll Cardiol*. 2010.
- Mandawat A and Rao SV. Percutaneous Mechanical Circulatory Support Devices in Cardiogenic Shock. *Circ Cardiovasc Interv*. 2017
- Abrams D, Combes A and Brodie D. Extracorporeal membrane oxygenation in cardiopulmonary disease in adults. *J Am Coll Cardiol*. 2014.
- Gustafsson F and Rogers JG. Left ventricular assist device therapy in advanced heart failure: patient selection and outcomes. *Eur J Heart Fail*. 2017

HEART TRANSPLANTATION

- Lindenfeld J, Miller GG, Shakar SF, Zolty R, Lowes BD, Wolfel EE, Mestroni L, Page RL, 2nd and Kobashigawa J. Drug therapy in the heart transplant recipient: part I: cardiac rejection and immunosuppressive drugs. *Circulation*. 2004.
- Lindenfeld J, Miller GG, Shakar SF, Zolty R, Lowes BD, Wolfel EE, Mestroni L, Page RL, 2nd and Kobashigawa J. Drug therapy in the heart transplant recipient: part II: immunosuppressive drugs. *Circulation*. 2004.
- Lindenfeld J, Page RL, 2nd, Zolty R, Shakar SF, Levi M, Lowes B, Wolfel EE and Miller GG. Drug therapy in the heart transplant recipient: Part III: common medical problems. *Circulation*. 2005.
- Page RL, 2nd, Miller GG and Lindenfeld J. Drug therapy in the heart transplant recipient: part IV: drug-drug interactions. *Circulation*. 2005.