Advanced Heart Failure & Transplantation Fellowship Program

Curriculum

I. Patient Care

When on the inpatient Heart Failure and Transplant Cardiology service, the cardiology fellow will hold primary responsibility for care of all patients on the service as well as those patients on whom the service is consulted by cardiac surgery and other services in the hospital. While at times there will be a resident or nurse practitioner on the service as well, allowing the fellow to work in a supervisory manner, at other times patients will be cared for primarily by the fellow under the supervision of the attending physician. The fellow will participate in daily rounds Monday through Friday and one weekend day.

A. Initial Patient Evaluation (for both primary service patient and consult patients)

1. Careful history-taking and physical examination skills are essential to care of the heart failure patient. Emphasis is placed on learning how to take an accurate heart failure history and how to perform a bedside physical examination for determination of volume status and perfusion.

2. Generation of written or dictated history and physical and impression with treatment plan.

3. Interaction with the attending Heart Failure/Transplant Cardiologist for refinement of history and physical and discussion of evaluation and treatment plan.

4. Review of diagnostic studies patient has had (echocardiogram, coronary angiography, stress tests) with the attending Heart Failure/Transplant Cardiologist.

5. Interaction/discussion of patient with appropriate consultants.

B. Subsequent Patient Follow Up (daily rounds)

1. Daily rounds (including bedside discussion, patient examination) with Heart Failure/Transplant Cardiologist, nurse practitioner, social worker.

2. Ordering of pertinent tests and therapies.

3. Interactions with consultants and other members of the healthcare team as care evolves.

4. Interaction with all members of the multidisciplinary team to address barriers to compliance and optimize all aspects of care.
5. Participation in discussion with the patient and family and discharge planning.

C. Procedural Skills

1. The fellow will learn how to assess volume status and perfusion at the bedside in cardiac patients using refined physical diagnosis skills.
2. The fellow will be responsible for all invasive procedures performed on inpatients on the heart failure and transplant cardiology service, including obtaining informed consent.
3. There will be opportunity to perform multiple right heart catheterizations, primarily via the right internal jugular approach but occasionally via the left internal jugular or subclavian approach. Fellows will receive instruction in sterile technique and venous access.
4. Interpretation of hemodynamics obtained from invasive monitoring and understanding of management of the heart failure patient based on invasive hemodynamics.
5. While not required, there will be opportunity for the interested fellow to become experienced in endomyocardial biopsy technique.
6. Familiarity with implantable cardiac devices used in the management of heart failure patients, including implanted cardiac defibrillators, resynchronization pacemakers, and ventricular assist devices. Emphasis will be placed on appropriate patient selection for these therapies.
7. Familiarity with cardiopulmonary exercise testing, including indications, performance and interpretation of tests.

II. Medical Knowledge

A. The fellow will become versed in all aspects of heart failure care, with expectation that the following educational goals be met:
1. Describe the pathophysiology of the heart failure syndrome.
2. Demonstrate specific knowledge of the ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult.
3. Initiate the appropriate clinical evaluation for patients with new onset heart failure.
4. Identify reversible causes of ventricular dysfunction and the appropriate interventions.
5. Demonstrate specific knowledge of the major clinical trials in heart failure and cardiac transplantation.
6. Discuss the current pharmacologic treatment of ventricular dysfunction, including the rationale for using angiotensin converting enzyme inhibitors, hydralazine/isosorbide, beta-blocking agents, digoxin, diuretics, angiotensin receptor blocking agents, and aldosterone antagonists.
7. Discuss experimental and/or controversial pharmacologic treatments for ventricular dysfunction.
8. List the indications, management and complications of hemodynamic monitoring with a pulmonary artery catheter.
9. Perform right heart catheterization.
10. Interpret cardiac pathophysiology from pressure waveform analysis.
11. Discuss the current indications for mechanical treatment of advanced heart failure, including implantation of an intra-aortic balloon pump or a ventricular assist device.
12. Participate in the post-operative care of a patient with a ventricular assist device, including complications and device management.
13. List the indications and contraindications for cardiac transplantation and discuss candidate selection.
14. Initiate the appropriate evaluation for cardiac transplantation.
15. Participate in the pre-operative, peri-operative and immediate post-operative care of the cardiac transplant patient.
16. Perform an endomyocardial biopsy.
17. Discuss the histologic and hemodynamic features of cellular and humoral cardiac allograft rejection.
18. Discuss the maintenance immunosuppressive regimen used after cardiac transplantation, including actions, interactions and toxicities.
19. Discuss the immunosuppressive regimens used to treat acute cellular and/or humoral rejection.
20. Describe the evaluation and treatment of infection in the immunocompromised patient.
21. Discuss the long-term management and expected outcomes of the cardiac transplant patient.
22. Perform and interpret a cardiopulmonary exercise test.

B. Recommended reading (all of the following are provided to the fellow in a reading packet at the beginning of the rotation):

Heart Failure


III. Practice-Based Learning and Improvement

The heart failure fellow will gain practical experience by caring for inpatients with heart failure, and being primarily responsible for their course of care, under the supervision of the attending heart failure physician. An important part of the heart failure experience is a close mentoring relationship between the attending and fellow, particularly in the area of bedside examination and physical diagnosis skills. The heart failure rotation requires the fellow to assimilate historical data, hone physical diagnosis techniques, make and assessment and formulate a plan. The fellow is expected to refer to the literature and read independently on patient problems to enhance his/her experience on the heart failure rotation. Use of evidence-based medicine is emphasized. An important part of the heart failure rotation is learning to deal with critical illness and the dying patient, with attention toward compassionate communication when giving bad news, dealing with end of life issues, and compassionate use of palliative medicine. Knowledge deficits will be self-identified at the start of the rotation. A brief quiz may be administered to identify areas of deficiency. The fellow will be expected to monitor learning and improvement during the rotation. The fellow’s performance will be reviewed by the attending heart failure cardiologist supervising the fellow’s rotation.

IV. Interpersonal and Communication Skills

During the heart failure rotation, the fellow will demonstrate effective written, verbal and non-verbal communication skills. The importance of listening and careful communication to the therapeutic relationship, particularly when dealing with chronically and severely ill patients will be stressed. Because the heart failure service uses a multidisciplinary approach, the fellow will gain understanding of communication between physicians and consultants, nurses, advanced practitioners, dieticians, social workers, exercise physiologists and many other care team members. Emphasis will be placed on compassionate and culturally aware communication with the critically-ill and/or dying patient, caregivers and loved ones, in order to maintain optimism and motivation, create a positive environment and instill hope. The fellow’s communication skills will be observed and evaluated during the rotation by the attending heart failure physician.
V. Professionalism

The fellow on the heart failure service will display professionalism in carrying out clinical responsibilities, adhere to ethical principles, and be culturally aware. The fellow will consistently respect patients, and recognize how a patient’s background affects health care choices and wishes. The fellow will involve the patient and family in decision making. The fellow will consistently act with altruism, integrity, reliability, courtesy, and empathy when caring for patients. The fellow’s professionalism will be observed and evaluated during the rotation by the attending heart failure physician.

VI. Systems-Based Practice

The fellow on the heart failure service will demonstrate an awareness of costs of various therapies and weigh that with likely benefits and risks to judge whether a given strategy is optimal for the patient. The fellow will learn to use health care resources wisely without sacrificing health care quality. The fellow’s attention to system-based practice will be observed and evaluated during the rotation by the attending heart failure physician.

Evaluation:

The rotation is evaluated using ABIM approved evaluation forms of trainees by attendings and attendings by trainees. Regular and timely verbal feedback is also given to fellows.

To aid evaluation, fellows will be asked to identify their perceived areas of strength and weakness at the beginning of the rotation. A brief quiz may be given at the beginning of the rotation, following which the fellow will be given feedback on areas requiring further study.