

VIEWPOINTS

The Evolving Challenge of Chronic Heart Failure Management

A Call for a New Curriculum for Training Heart Failure Specialists

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Chronic heart failure (HF) is a growing epidemic, and therapy options are becoming more complex. Specifically, device management of HF represents a new "class" of therapy that can reduce mortality and alleviate morbidity of the disease syndrome. Heart failure training programs seldom provide structured opportunities for trainees to gain competence in device implantation and management. This curriculum outlines a new approach to training interventional HF cardiologists and internal medicine HF specialists to meet the growing demands for specially trained health care providers. (J Am Coll Cardiol 2004;44:1354-7)
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Over the last 30 years, an evidence base that furthers our understanding of the mechanisms of mortality and morbidity associated with chronic left ventricular dysfunction has emerged (1-3). Subsequently, medical and device therapies are now available that reduce symptoms, reverse progression of left ventricular dysfunction, and, importantly, improve long-term survival without the need for heart transplantation (1-10). Just 30 years ago, the hope for survival in patients with heart failure (HF) was dismal and centered on transplantation as the ultimate therapy (11). Consequently, it is not surprising that most cardiologists with specific training in treating HF patients have had an emphasis on transplant-related medical care. In fact, while specific training requirements and a certification process exist for transplant cardiology (12), there are no published criteria describing acceptable training as a HF specialist. The realities of transplant organ availability, age at the time of transplant evaluation, and comorbidities make heart transplantation an epidemiologically insignificant intervention available to only a few HF patients. In fact, almost 80% of HF patients are over the age of 65 years (13). Most patients with HF will never be candidates for heart transplantation. The historic coupling of specialized HF management training with the limited opportunities one encounters in transplant cardiology may have unwittingly slowed important growth in the numbers of HF specialists.

Specialized training programs for HF management are increasing because more complicated treatment modalities are required, as well as available, to achieve favorable clinical outcomes without relying on protracted and expensive in-hospital management (13-16). Specialized treatment centers that provide frequent follow-up and organized delivery of standard of care therapy, for example, have a dramatic impact on hospital use, readmissions, and length of hospital stay (14-16). Most HF specialty treatment centers create a multidisciplinary team of providers that includes cardiologists who have a special interest or training in HF management and non-physician providers who follow algorithms to frequently evaluate patients and adjust their long-term medical therapy. The success of specialized treatment centers underscores the importance of applying standard of care medical therapy and demonstrates that patients with HF indeed have hope for a reduction of symptoms and enhanced survival. It also demonstrates that managing a large number of HF patients can be quite labor intensive and complicated. This makes it more difficult to achieve the results of specialty treatment centers in general cardiology or internal medicine practice settings.

To further complicate HF management, recently a new "class" of therapy for HF patients has emerged. In addition to maximal medical care (i.e., drug therapy), devices intended to prevent sudden cardiac death (implantable cardioverter-defibrillators [10]) and cardiac resynchronization devices (biventricular pacemakers [4-9]) reduce morbidity and mortality in appropriate patient populations. Devices under investigation for the treatment of HF include percutaneously applied ventricular assist devices, ultrafiltration, implantable hemodynamic monitoring systems, and others. For example, implanted monitoring systems provide continuous cardiovascular

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Abbreviations and Acronyms

HF = heart failure
 NASPE/HRS = North American Society of Pacing and
 Electrophysiology/Heart Rhythm Society

physiologic data that are still experimental, but promise to guide medical management and reduce episodes of severe decompensation in high-risk patients (17-19). As our understanding of opportunities with this new therapeutic class develops, new applications of device therapy in HF are emerging, creating substantially larger groups of patients in whom device therapy is appropriate. Although this is exciting and provides hope for a further reduction of HF morbidity and mortality, it may strain the available workforce qualified to implant devices. General cardiologists implant and follow most pacemakers, whereas most of the implantations and virtually all of the follow-up of implantable cardioverter-defibrillators are the responsibility of electrophysiologists. Electrophysiologists or cardiologists with higher volume pacemaker implant experience usually perform biventricular pacemaker system implantations aimed at cardiac resynchronization therapy. The dramatic increase in the number of implants, along with the expected epidemic of HF patients in the next 30 years, makes it clear that there is a need for larger numbers of providers that are competent in implanting the devices designed for patients with HF. Furthermore, currently an artificial and inefficient disconnect exists between implanting physicians and HF specialists. Many times, implanting physicians do not have specialized training or interest in HF management, and HF physicians do not have specialized training in implant procedures or long-term device management. Coupling an understanding of device therapy, including implantation techniques for some, with competence in HF management and pathophysiology will serve to further advance this very important and growing part of cardiovascular disease management.

Although non-cardiologist providers currently treat most HF patients, several studies demonstrate that specialist care is more likely to conform to consensus standards and produces better outcomes in HF (20-22). This suggests that current training programs for primary care providers (internal medicine and family practice) may not be delivering an adequate understanding of life-saving medical based therapeutic interventions. Device therapies are, then, another layer of complexity in which primary providers do not have expertise as a result of their training programs. That is not to say that primary care providers cannot learn the intricacies of chronic HF management, but specific training programs will be required to establish clinical competency. In the growing epidemic of HF, having more providers who have spe-

Table 1. Summary of Recommended Goals of Two-Year Interventional Heart Failure Fellowship Program Designed to Start After the First Two Years of General Cardiology Training

Interventional Heart Failure Fellowship Training Goals	Reference(s)
Two years of general cardiology training in accordance with COCATS requirements	12
Administration of a multidisciplinary heart failure treatment program	14-16
Drug/device management	
Outpatient follow-up and therapy	
Efficient inpatient care	
Level 2 echocardiography training	23
Level 2 device training	24
>75 primary operator implants for implantable electronic devices	
>100 follow-up visits for implantable electronic devices	
>30 primary operators for implantable electronic device revisions	
Transplant management	12
Research	

COCATS = Core Cardiology Training Symposium.

cialty training will only help deliver standards of care that will meet patients' needs in a cost-efficient manner.

This paper outlines a new curriculum, instituted at the University of Oklahoma Health Sciences Center and in a modified form at the Ohio State University, for training of interventional HF cardiologists and for training internists in HF management. The programs are designed to increase specially trained individuals with competency in the spectrum of complex HF management. We suggest that this pilot curriculum may provide the basis for a successful strategy to provide specially trained providers equipped to manage the growing epidemic of patients with HF. In the future, evaluation methods such as certification of special competency may be required to ensure that providers have appropriate training and clinical experience to treat this very important disease process.

The curriculum suggested calls for cardiovascular disease fellows to complete two years of general cardiology training followed by two years of training in HF management (Table 1). The general cardiology training portion of the HF fellowship conforms to requirements enunciated in accreditation and certification standards for general cardiology (12). In the third year of fellowship, HF training will consist of dedicated management of HF, including administration and supervision of inpatient and outpatient HF treatment programs. The fellow will gain expertise in advanced competency in echocardiography (23), as well as comprehensive medical management of the disease. The second year of training will ensure competency in device implantation and management. The device curriculum requirements will comply with guidelines outlined by the North American Society of Pacing and Electrophysiology/Heart Rhythm Society (NASPE-HRS) (24), including any updated training

Table 2. Summary of Suggested Training Goals for Internal Medicine-Trained Physicians Eligible for ABIM Specialty Board Examination

Internal Medicine Heart Failure Fellowship Training Goals	Reference(s)
ABIM specialty board eligibility	
Administration of a multidisciplinary heart failure treatment program	14-16
Drug/device management	
Outpatient follow-up and therapy	
Efficient inpatient care	
Level 1 echocardiography training	23
Understand telemetry information available from implanted electronic devices	24
Internal medicine aspects of transplantation	12
Research	

ABIM = American Board of Internal Medicine.

requirements published in the future. Training will be required to establish both cognitive and technical competency to implant cardiac defibrillators, pacemakers, and biventricular devices. Specific training in the future use of new devices, such as implantable hemodynamic monitoring systems, will be provided by this curriculum.

General internal medicine-trained physicians will enter the training program for one year, following internal medicine residency, and will gain competency in medical management of HF coupled with level 1 competency in echocardiography (Table 2). Although exposure to device therapy is included and important in the curriculum for general internists, device implant training is not part of the curriculum. Device management would remain the direct responsibility of those specialists trained comprehensively in this area. On the other hand, especially in the non-“electrophysiologic” aspects of device therapy, such as telemetric monitoring functions, it will be important for the specially trained internists to have substantial training. The goals will be to train a provider that can competently maximize drug therapy to reduce the need for hospitalizations, while improving survival and quality of life.

We feel strongly that the interventional HF cardiologist and the HF internist will bolster the workforce available for patients with chronic HF and, hopefully, will create a group of specialists with specific clinical competency to complement those who traditionally have implanted and managed device therapy. The proposed fellowship programs would provide the interventional HF specialist with competency in a “niche” procedural skill without prolonging overall training time. This may make HF specialization training more attractive to applicants also considering interventional cardiology or electrophysiology.

In the future, HF management will very likely involve more devices for therapy and monitoring. In that spirit, we submit the suggested training goals for HF specialty fellowship. If a thoughtful approach to meet the needs of the upcoming HF epidemic is not entertained, our health care system is destined to provide substandard, cost-inefficient

care, and many patients will continue to miss the benefit of life-saving interventions, including device management.

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