



# New England Heart Institute

# Atrium

FALL 2007

*A New Era of Medicine*

## Message from the Medical Director

The New England Heart Institute offers a panoply of cardiovascular services to patients throughout the region, as exemplified in the articles featured in this issue. For patients with atherosclerosis, as well as those with subclinical atherosclerotic cardiovascular disease, we provide particular expertise in lipidology through the Cholesterol Management Center. Our interventional cardiologists have extensive experience in the diagnosis and treatment of peripheral vascular disease, including catheter-based technologies for providing symptomatic relief.



LOUIS I. FINK  
MD, FACC

We also continue to treat ST segment elevation infarction with primary angioplasty and stenting – considered the gold standard therapy – which is illustrated in a patient case study. Therapy for atrial fibrillation continues to evolve, and the latest guidelines and treatment algorithms are reviewed by our director of electrophysiology and a cardiothoracic surgeon. Finally, for patients with myocardial dysfunction, our Congestive Heart Failure Clinic provides ongoing diagnostic and therapeutic options for patients enrolled in the clinic.

To learn more about particular services or treatments provided by the New England Heart Institute, please contact me at 603.663.6782. ♥

Louis I. Fink, MD, FACC, Medical Director

## Cholesterol Management: Identifying Higher Risk Patients

For patients who have experienced a coronary event or are at high risk of developing coronary artery disease, including those who have not tolerated or seen improvement on lipid-lowering medications, the in-depth lipid screening and monitoring services of the New England Heart Institute can prove beneficial. Patients with a lower cardiovascular risk profile but with possible subclinical atherosclerosis who are at increased risk for a future cardiac event can be evaluated and aggressively treated for coronary artery disease.

### Detailed cholesterol screening

“We look beyond the typical cholesterol panel – LDL, HDL and triglycerides,” says Kristine Ziemba, MSN, ARNP, of NEHI’s Cholesterol Management Center. “Our initial focus is getting a patient’s LDL level to ATP III guideline goals, and examining the size and number of LDL particles that potentially place patients at higher risk for developing heart disease.”

Patients receive a thorough evaluation and focused treatment plan for reaching their specific lipid goals, information that is communicated to each patient’s primary care provider. Cholesterol Management Center staff may evaluate a patient’s high sensitivity C reactive protein level, or perform advanced lipid testing to identify a patient’s lipid abnormality and help tailor therapy.

“We do an extensive screening of things in a patient’s life that could alter their lipid panel – genetics, lifestyle, diet, medications – and determine what needs to be done differently,” adds Ziemba.

Time is also spent discussing the benefits of exercise and nutrition in lowering lipid levels, says Lynn Scott, MS, ARNP, who, like Ziemba, has worked in the general cardiology practice at NEHI for a number of years. She notes that in addition to using pharmacologic agents to help patients reach desired lipid levels, they may also recommend specific foods that can help lower an elevated LDL level to goal.

### Coronary Artery Disease Risk Factors

- Positive family history
- Impaired fasting glucose or diabetes
- Tobacco abuse
- Hypertension
- Lipid abnormalities
- Obesity

### Coronary calcium scoring identifies at-risk patients

A relatively new test can identify patients with near normal lipid levels who have coronary disease risk factors and subclinical atherosclerosis. “If a patient has risk factors and a high coronary calcium score, an indicator of subclinical disease, the patient is in a higher risk group, so we are more aggressive in our treatment,” says Peter T. Klementowicz, MD, FACC, medical director of the Cholesterol Management Center. “The higher the calcium score, the greater the likelihood of a cardiac event and of death from cardiac disease.”

A patient’s coronary calcium score is determined following a CT scan that demonstrates

**Cholesterol Management** continued on page 2

New England Heart Institute



# INSIDE

Cholesterol Management: Identifying Higher Risk Patients pg. 1

Heart Failure Clinic Improves Patient Quality of Life pg. 2

New Guidelines for Atrial Fibrillation Treatments pg. 3

New Cardiologists Join NEHI pg. 4 Case Study: Primary Angioplasty pg. 4

Peripheral Artery Disease Often Goes Undiagnosed pg. 4

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# Heart Failure Clinic Improves Patient Quality of Life

Although there have been significant recent advances in cardiovascular care, the prevalence of congestive heart failure (CHF) continues to climb. An estimated 500,000 patients are diagnosed each year with new onset CHF, while approximately 5 million Americans live with this condition. Moreover, quality of life as well as prognosis for these patients is often poor. The five-year mortality rate for all patients with CHF is approximately 50%, and for patients with severe CHF, the one year mortality approaches 75%. The Congestive Heart Failure Clinic at the New England Heart Institute at Catholic Medical Center functions specifically to address the significant needs of this large patient population.

## Closely supervised treatments

Enrollment in the clinic commences with an extended visit where baseline measurements of a patient's function are taken, including a 6-minute walk test and living-with-heart-failure questionnaires. Essential diagnostic studies, including an echocardiogram, which establishes the patient's left ventricular systolic function, as well as lab work are reviewed. The etiology of the patient's CHF is determined (ischemic or non-ischemic) and potentially reversible causes of cardiomyopathy are investigated.

A treatment plan is then initiated with specific goals of therapy reviewed.

"Also, relatively 'simple' ideas, such as fluid management, salt intake and exercise are discussed with each patient, giving patients with CHF essential tools to better understand the underlying disease and to take an active role in disease management," says Marilyn

Daley, MSN, ARNP, associate director of the CHF Clinic. The initial visit concludes with an introduction to the telephone triage system, where Karen Burr, RN, is available to assist patients with daily management.

The next step in CHF disease management focuses on pharmacologic therapy. Guidelines established by the American College of Cardiology and American Heart Association, as well as the Heart Failure Society of America, are closely followed. Titration of evidence-based medicine is performed, with attention paid to side effects and general tolerability.

## Latest device therapies and testing

In addition to drug-based treatments, to decrease morbidity and mortality, device-based therapy is also utilized. For example, a patient who remains symptomatic despite an optimal pharmacologic regimen may be a candidate for a biventricular pacemaker. These patients are identified

for this life-saving therapy as a function not only of their symptoms, but also of their manifestation of ventricular dyssynchrony, defined as an ineffective pattern of myocardial contraction. Dyssynchrony has historically been determined utilizing the surface EKG, specifically looking for the presence of left bundle branch block.

Echocardiography may also assist in identifying these patients. Current data suggests that echo may be a more effective way to identify these patients, and the NEHI CHF Clinic employs this advanced echocardiographic assessment when indicated. Finally, once a biventricular device is implanted, a patient may not feel a sense of improvement. In these cases, echocardiographic "fine-tuning" of the device can be performed.

Unfortunately, patients with severe heart failure also have an increased risk of sudden cardiac death. Patients with a left ventricular ejection fraction less than 35% are at an increased risk. Implantable defibrillators have been shown to significantly reduce mortality in this population.

Patients who suffer from advanced, drug-resistant CHF may warrant consideration of transplant therapy. In these specific cases, the CHF Clinic offers onsite cardiopulmonary exercise (CPX) testing, a critical component in the pre-transplant evaluation.


"An added benefit of our clinic is its participation with a consortium of hospitals throughout New England that focuses on high risk, advanced CHF patients," says Robert C. Capodilupo, MD, FACC, director of the CHF Clinic. "If a patient is felt to meet criteria for transplant evaluation, an appropriate referral is made to Boston." Within this consortium, patients are followed by NEHI medical staff, allowing for local follow-up care.

## Cutting-edge research

NEHI's CHF Clinic offers an added advantage to patient care via its participation in clinical trials, which can be accessed through NEHI's Research Department. These trials offer additional modes of treatment not regularly available to most patients.

"We are also part of a nationwide research effort sponsored by the National Institutes of Health, which is quite exciting," adds Dr. Capodilupo. "It offers our patients access to cutting-edge research that one would not expect to find in our community."

"We are encouraged by the improved quality of life that many of our patients have experienced through treatment at the Congestive Heart Failure Clinic," continues Ms. Daley. "For many, it means being able to breathe more easily and live life more fully."

*For more information on the Congestive Heart Failure Clinic at the New England Heart Institute, call 603.669.0413. *



ROBERT C. CAPODILUPO  
MD, FACC


## Cholesterol Management: Identifying Higher Risk Patients *continued from pg. 1*

calcification within the coronary arteries. An algorithm created by the Multi Ethnic Study of Atherosclerosis calculates the patient's risk using the coronary calcium score, age, gender and ethnicity relative to other individuals to determine if the patient is at high, moderate or low risk for a cardiac event.

Patients with a strong family history of coronary artery disease – those whose father had a coronary event before age 55 or whose mother experienced an event before age 65 – should be tested, as they have a

higher probability of having a high coronary calcium score, putting them at higher risk for a cardiac event, notes Dr. Klementowicz.

"Using coronary calcium scoring is a unique way that we are looking at risk stratification," he adds. "This is a unique blending of lipidology and cardiology."

*For more information on cholesterol management services at NEHI locations in Manchester, Nashua, Derry and Peterborough, contact the Cholesterol Management Center at 603.663.6549. *

# New Guidelines for Atrial Fibrillation Treatments

**A**trial fibrillation (AF) is the most common cardiac arrhythmia, affecting over 2 million people in the United States. It is frequently symptomatic and even when well-tolerated raises the risk for stroke, heart failure and death. Treatment choices for atrial fibrillation can be complex. Selection of a treatment strategy requires careful consideration of the patient's disease process and balancing of the disease's potential morbidity and mortality with potential side effects and complications.



DAVID C. CHARLESWORTH  
MD, FACS

The rapid evolution of catheter-based ablation therapy for atrial fibrillation can make this assessment even more challenging. In an effort to help clinicians navigate these challenges, the Heart Rhythm Society, in conjunction with the European Heart Rhythm Association and the European Cardiac Arrhythmia Society, recently released the Expert Consensus Statement of Catheter and Surgical Ablation of Atrial Fibrillation.

## Indications for catheter and surgical ablation

The task force concluded that pharmacologic treatment of AF should almost always precede catheter ablation. The main indicator for catheter ablation for AF is symptomatic AF refractory or intolerant to at least one Class 1 or Class 3 antiarrhythmic medication. The treatment may also be used with symptomatic patients with heart failure or a lower ejection fraction. Patients with asymptomatic AF or a left atrial thrombus are not good candidates for catheter ablation.



CONNOR J. HAUGH  
MD, FACC

Surgical AF ablation, such as the Maze procedure, should be utilized with symptomatic AF patients undergoing cardiac surgery for another condition or

with patients for whom catheter ablation has been unsuccessful. For patients with asymptomatic AF undergoing cardiac surgery, surgical ablation should be performed only if minimal risk exists.

Cardiothoracic surgeons at Catholic Medical Center have performed many concomitant Maze procedures, primarily with mitral valve surgery, with very good results, explains David C. Charlesworth, MD, FACS. Other techniques that they employ include radiofrequency ablation with or without cryotherapy. Minimally invasive techniques being evaluated include the use of microwave energy and high frequency ultrasound.

"As a complement to catheter-based ablation, minimally invasive techniques have a number of advantages," says Dr. Charlesworth. "They can have a high degree of safety and efficacy, as well as similar advantages to catheter-based procedures, including reduced morbidity. We and the electrophysiologists agree that surgical and catheter-based ablations offer different advantages to patients, and we are creating an institution-wide database for following patients. In addition, we are looking at opportunities to collaborate in hybrid techniques."

"The establishment of the guidelines is very helpful in selecting patients for atrial fibrillation treatment," adds Connor J. Haugh, director of the New England Heart Institute's electrophysiology laboratory. "It is gratifying that these guidelines essentially reflect the philosophy that has guided us since we developed the program here."

## Catheter ablation techniques

Much of the study focuses on the use of catheter ablation to treat AF, notes Dr. Haugh. Recommended treatment techniques include:

- Ablation strategies that focus on the pulmonary veins (PVs) and/or PV antrum
- Complete electrical isolation of the PVs
- Entrance and/or exit block for surgical PV isolation
- Identification of the PV ostia to avoid ablation within the PVs
- Targeting focal trigger outside PV if possible
- Mapping or pacing of additional linear lesions to demonstrate line completeness

"The non-fluoroscopic catheter-based mapping systems that we're using to help guide ablation, and our ability to integrate the new 64-slice CT scans into the mapping system, have improved the effectiveness and safety of the procedure and have helped us achieve good results," explains Dr. Haugh. "Proving that the ablation encircles the entrance to the pulmonary veins, electrically insulating the pulmonary veins from the rest of the atrium, is important. Both the integrity and durability of the lesion sets are repeatedly evaluated during the procedure."

## Importance of embolic prophylaxis

Before, during and after ablation for AF, patients should undergo anticoagulation to avoid a thromboembolic event. Following the procedure, patients should remain on coumadin for at least two months, and longer if the patient is at high risk for stroke. Data is still being assessed with regard to the appropriateness of discontinuing coumadin post AF ablation for high-risk patients, such as those with diabetes and hypertension or a prior stroke.

Recurrences of AF are common within the first three months after catheter ablation and do not necessarily reflect failure of the procedure. Continuing problems with atrial fibrillation after this time period may prompt consideration of a repeat procedure. Follow-up is recommended at three months and then every six months for at least two years.

*For more information on ablation of atrial fibrillation, contact Dr. Haugh at 603.669.0413 or Dr. Charlesworth at 603.663.6340. ❏*

## Atrial Fibrillation Classification

- **Parenchymal:** recurrent AF that terminates spontaneously within seven days
- **Persistent:** occurs longer than seven days or lasts fewer than seven days but requires pharmacologic or electrical cardioversion
- **Longstanding Persistent:** continuous AF of more than a year's duration

Patients with paroxysmal atrial fibrillation have the greatest likelihood of long-term suppression of AF, whether by drug therapy or ablation. Patients with persistent atrial fibrillation respond less readily, and the longer the persistence the less effective the response. Other variables, such as age, structural heart disease and comorbidities, can also influence the likelihood of a positive response. Estimates of single procedure success for atrial fibrillation ablation range from 38% to 78% for patients with paroxysmal AF, but drop to 22% to 45% for longstanding persistent AF, with most centers reporting a long-term success rate of less than 30% for patients with persistent atrial fibrillation.

# New Cardiologists Join NEHI



PHILLIP J. FITZPATRICK  
MD, FACC

**P**hillip J. Fitzpatrick, MD, FACC, completed his undergraduate degree in psychology and biology from Georgetown University and earned his medical degree from Georgetown University School of Medicine. He completed a Clinical Fellowship in Medicine at New England Deaconess Hospital and internship and residency at Albany Medical Center. Prior to joining the New England Heart Institute, Dr. Fitzpatrick was an attending physician with the Interventional Cardiology Program at Beth Israel Deaconess Medical Center for fifteen years. He was the Medical Director, Cardiac Catheterization Laboratory, at Blessing Hospital in Quincy, IL. Dr. Fitzpatrick is Board certified in internal medicine, cardiovascular disease and interventional cardiology. He is a Fellow of the American College of Cardiology.



STEPHEN U. HANLON  
MD, FACC

Stephen U. Hanlon, MD, FACC, is Board certified in internal medicine and cardiovascular disease, and has additional training in echocardiography, nuclear cardiology and cardiac CT. Prior to joining NEHI, he was the Chief of Cardiology Services at Malcolm Grow Medical Center, Andrews AFB, Maryland. Dr. Hanlon earned his medical degree from Georgetown University School of Medicine; completed his internship and residency in internal medicine at David Grant Medical Center, Travis AFB, CA; and completed a Cardiology Fellowship at the Naval Medical Center, San Diego, CA. He is a Fellow of the American College of Cardiology. ♥

## Case Study: Primary Angioplasty

**A** 56-year-old male with no significant medical history presented to the CMC Emergency Department with chest pain. Within 5 minutes of his arrival, an EKG was obtained that demonstrated changes consistent with an acute inferior wall ST segment elevation (STEMI) myocardial infarction. The patient was taken to the catheterization laboratory where a critical lesion in the mid right coronary artery was detected.

Although most physicians in the U.S. administer thrombolytic therapy for treatment of acute STEMI, percutaneous revascularization within 90 minutes has emerged as the preferred treatment in recent years, a treatment practiced at CMC.

*To learn more about this case study, search "Atrium" at [neheartinstitute.org](http://neheartinstitute.org).* ♥

## Peripheral Artery Disease Often Goes Undiagnosed

**D**o you have pain when you walk? The answer to this simple question can often uncover peripheral artery disease (PAD), especially in patients with risk factors for the disease, explains Jeffrey F. Bleakley, MD, FACC, interventional cardiologist at the New England Heart Institute. PAD is a common and frequently under-diagnosed medical condition.

More than half of patients with PAD do not have typical claudication or limb ischemia at rest, but have other types of

leg pain with exertion, with decreased ambulatory capacity and impaired quality of life. Most patients with PAD have a reduced functional capacity that limits their ability to perform daily activities. Noninvasive computed tomographic angiography (CTA) or magnetic resonance angiography (MRA) can be utilized to visualize a patient's blood vessels, possibly confirming the diagnosis of PAD and the specific location of a lesion.

*To read more, search "Atrium" at [neheartinstitute.org](http://neheartinstitute.org).* ♥

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We welcome your comments about this issue of *Atrium* and encourage your ideas about future stories. Please contact us at [catholicmedicalcenter.org](http://catholicmedicalcenter.org) or send e-mail to [gwinslowpine@cmc-nh.org](mailto:gwinslowpine@cmc-nh.org).

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