The Connection
THE OFFICIAL NEWSLETTER OF THE AMERICAN ASSOCIATION OF HEART FAILURE NURSES

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Cardiac Rehabilitation IN HEART FAILURE

The Road to a Healthy Heart

Integrating New Patients into Cardiac Rehabilitation Programs

Self-Care and the Benefits of Exercise
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## Features

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9, 12</td>
<td>Cardiac Rehabilitation After Definitive Therapy for Advanced Heart Failure</td>
</tr>
<tr>
<td>10</td>
<td>Cardiac Rehabilitation Case Study</td>
</tr>
<tr>
<td>11, 12</td>
<td>Integrating Patients With Heart Failure Into Cardiac Rehabilitation Programs</td>
</tr>
<tr>
<td>13</td>
<td>Medicare Reimbursement for Cardiac Rehabilitation and Heart Failure Patients</td>
</tr>
<tr>
<td>16</td>
<td>Cardiac Rehabilitation in Practice: It Works</td>
</tr>
</tbody>
</table>
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The Connection is published quarterly by the AAHFN and is distributed to approximately 2,000 AAHFN members. These members come from the full spectrum of nurses and other health professionals interested in heart failure. AAHFN serves as the interface for sharing ideas, translating research findings into practice and setting priorities for the future. AAHFN welcomes and values all professionals involved in heart failure care. AAHFN focuses on patients across all environments of care from the hospital to the clinic to home.
In February 2014, the Centers for Medicare & Medicaid Services (CMS) expanded coverage to include cardiac rehabilitation (CR) services for stable heart failure (HF) patients on optimal medical therapy. This was a big step in improving care provided to patients with HF. Prior to this change, patients with HF were only eligible for CR if they had some form of documented coronary artery disease (CAD) requiring intervention. This decision expanded coverage to approximately 60% of patients with HF, specifically patients who have heart failure with reduced ejection fraction (HFrEF). Our CR staff is disappointed that this service cannot be offered to patients who have HF with preserved ejection fractions (HFpEF), since we believe these patients would also benefit from CR.

Additionally, the coverage description is vague and difficult to interpret. A year after this coverage was expanded, those who provide CR services are still struggling to understand which patients are eligible. While meeting with our CR department to provide education on what to expect when treating some of our more advanced HF patients, the staff raised the following concerns: 1) What does a major hospitalization mean? 2) If the patient was in the hospital for 2 days for IV diureses, does the patient have to wait 6 weeks before resuming CR?

When I see patients in the clinic, many of them would like to start some sort of exercise regimen. However, giving them clearance to begin this is not as simple as seeing them in a clinic visit. There are many other factors to consider. We know that exercise is very beneficial to our patients with HF in regard to improving outcomes, but we have to be cautious due to risks for sudden cardiac death. Cardiac rehabilitation allows patients to be appropriately monitored so exercise can be stopped and adverse events prevented. It would be ideal if all of patients with HF could benefit from this specialized therapy.

Providing appropriate care to patients with HF requires many different services, and CR is one that plays a crucial role. I am looking forward to the ways in which we can continue to impact and expand the care that is being provided to these patients.
On Feb. 18, 2014, the Centers for Medicare & Medicaid Services (CMS) approved cardiac rehabilitation (CR) for patients with heart failure (HF). This is something to celebrate! It was the perfect time for CMS to make this announcement because HF Awareness Week had just concluded Feb. 15, 2014. Cardiac rehabilitation is a necessary part of HF care for patients who qualify. Specific exercise prescriptions monitored by CR exercise physiologists and nurses provide our patients with a safe exercise environment. Additionally, exercise tolerance in patients with HF can be safely increased in the CR setting.

The American Association of Heart Failure Nurses (AAHFN) is dedicated to providing up-to-date information to our members. The spring issue of The Connection provides you, the HF nurse, with a plethora of information regarding CR for our patients with HF. You will find a variety of timely articles, including one from the patient perspective. It is our responsibility as AAHFN members to be informed, ensure that our patients with HF who qualify for CR services are referred and work to make appropriate referrals for CR a rule rather than the exception.

Enjoy this issue of The Connection and keep CR in mind as you provide care with excellence and dedication to our patients with HF.

References

Dawn of a New Day for Patients with Heart Failure
Karen S. Yehle, PhD, MS, RN, FAHA • Editor • Purdue University, West Lafayette, IN

In patients with heart failure (HF), participation in cardiac rehabilitation (CR) improves functional capacity and quality of life. Exercise-based rehabilitation, including counseling for self-care, can improve health-related, quality-of-life outcomes for patients with HF, especially in comparison to patients who don’t engage in exercise.

This issue of The Connection focuses on CR for patients with HF. This topic is timely given the recent CMS policy changes and the significant improvements to be gained by patients with HF who participate in CR. Care of patients with HF is indeed a journey of many steps. By familiarizing ourselves, our patients and our teams with these significant and exciting developments, we can take the first step toward successfully incorporating these changes into ongoing HF care.

Several areas of focus include the patient CR experience; integrating patients with HF into mainstream CR programs; considerations for patients in CR with implantable cardiac defibrillators (ICD), left ventricular assist devices (LVAD) or who are post heart transplant; and the recent CMS CR policy changes. My sincere thanks to our contributors.

I am very grateful for their enthusiasm, compassion and ongoing commitment to our patients with HF.

References
Aacute decompenated heart failure (ADHF) is complex. There are many factors that can initiate pathophysiologic cardiac, renal or neuroendocrine/other hormone changes that lead to clinical events and ultimately excess morbidity and mortality. Management of ADHF is not currently pre-specified, as there is no single or bundle of treatments known that reduce symptoms and improve clinical outcomes. The Heart Failure Society of America1 and the American College of Cardiology Foundation/American Heart Association2 guideline recommendations, as well as the Heart Failure Society of America update on ADHF,3 are largely based on expert opinion. Although the roles of intravenous loop diuretics and ultrafiltration in patients with heart failure (HF) and renal dysfunction are clearer, cardiac rehabilitation expectations after discharge are stated4 there are also many papers, including a scientific statement,5 that discuss considerations related to transitional care from hospital to home.

ADHF refers to a heterogeneous syndrome in which patients with chronic HF present with acute, rapidly or slowly developing symptoms requiring aggressive or immediate acute care management, since most patients with ADHF have a history of chronic HF, rather than a de novo presentation.6 Typically, patients are elderly, approximately half are women, many have comorbidities, approximately 25% are nonwhite, about half have HF with preserved ejection fraction (HF-pEF) and the majority are admitted with congestion or hypervolemia7 that may present as weight gain about 1 week before hospitalization.

CONTINUED ON PAGE 17

IN REMEMBRANCE

In Honor of One of AAHFN’s Beloved Members: Carol (Mickey) Midei

Rhonda Weller Moore, ANP-BC, PhD, CHFN • Past Editor of The Connection

A bright smile and gentle manner greeted each person she met as a friend. In fact, Carol “Mickey” Midei gave new meaning to the word friend. She had a special way of cultivating many friendships across the miles and over the years. She had a kind, compassionate and generous spirit that she shared with all. She had a unique gift for making each individual feel respected, honored and, most importantly, cared for.

Despite a serious illness 5 years ago, Mickey overcame many obstacles to stubbornly maintain her profession. Mickey’s career encompassed many roles. She was a consummate professional practitioner, teacher and innovator. She practiced as a heart failure (HF) nurse practitioner in Ephrata, Pennsylvania, for over 10 years. She disliked the name Heart Failure Clinic, so Mickey changed it to the Center for Heart Care. She set high standards for herself and for others as she nurtured special relationships with local residents. She was admired and respected by her patients who benefitted from her many talents. In Ephrata, Mickey set up and maintained a low-salt food bank and established an annual ceremony of remembrance for families who lost a loved one to HF. She was instrumental in obtaining the center’s certification by The Joint Commission for Disease Management in Heart Failure. Mickey not only knew the guidelines for the care of patients with HF, she lived them. Mickey was a staunch supporter of the AAHFN and served on several national committees. She was among the first group of nurses to become certified by the AAHFN. She also shared her knowledge and experience. Her patience is fondly remembered by novice nurses, along with her ability to translate complex concepts in a way that was easily understood.

Mickey died in a tragic motor vehicle accident in January. The AAHFN has lost a consummate professional. HF patients everywhere have lost a staunch advocate and HF nurses have lost an educator. Those of us who knew her have lost a dear friend. To all of you, Mickey would want me to say this: maintain your own gentle spirits and carry on. There are patients everywhere who need your HF care.

CONTINUED ON PAGE 17
Purpose Statement
The purpose of this activity is to increase knowledge of cardiac rehabilitation (CR) for heart failure (HF) patients including special considerations for this population.

Objectives
1. Identify at least two challenges integrating the HF population with mainstream CR population.
2. Identify at least two special considerations for heart failure patients in cardiac rehabilitation.
3. Define at least two components of the new CMS regulatory guidelines for CR and heart failure patients.
4. Describe the cardiac rehab experience from the patient with heart failure’s perspective.

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1. Read the issue in its entirety and the accreditation information; the articles that have the education logo next to it are part of the enduring educational activity Cardiac Rehabilitation and the Heart Failure Patient.
2. Go to aahfn.org/educationcenter and click on CE Activities.
3. Click on the activity title Cardiac Rehabilitation and the Heart Failure Patient
4. Access the post test, successfully pass it with a minimal score of 70 percent and submit an evaluation and receive a certificate of completion.
Despite controversy regarding whether physical limitations in advanced heart failure (HF) predominantly result from adverse adaptations in the central circulatory system, peripheral vasculature or the skeletal muscle, exercise training and cardiac rehabilitation (CR) have increasingly been shown to improve physical recovery in patients receiving definitive therapies like heart transplantation (HT) and left ventricular assist devices (LVAD). In the case of HT patients, substantial improvements in exercise capacity are often coupled with improvements in steroid-related side effects like osteoporosis and skeletal muscle myopathy. While technically not considered a definitive treatment, cardiac resynchronization therapy (CRT) has been consistently associated with improved quality of life and is often the only available option for many patients with progressive HF who do not qualify for HT or LVAD. As beneficial as rehabilitation has proven, important questions remain related to patient selection, methodology and appropriate timing for initiation.

**Patient Selection**

By definition patients receiving HT, LVADS and CRT must have severe, symptomatic HF to qualify for treatment. Many of these patients suffer extended periods of inactivity related to illness, poor nutritional status, multiple organ dysfunction and progressive loss of muscle mass and strength. In addition to these considerations, therapy-specific issues are also important when referring such patients for rehabilitation. Patients receiving HT can have a variety of post-operative complications and early infections or rejection. The adverse effects of immunosuppressant drugs, particularly steroids, are a constant drawback. Implantation of an LVAD introduces its own important considerations, including risks of bleeding, infection, thrombosis, stroke and persistent threat of device malfunction. In particular, special attention is required for assessment of driveline integrity and assurance of normal device parameters. CRT patients have less post-operative and device-related issues, however, they have the distinct disadvantage of still having the same poorly functioning heart without the immediate augmentation of cardiac output seen after HT and LVAD placement. These patients should be at their dry weight with no evidence of progressive symptoms or weight gain suggestive of fluid overload. Additionally, the device should be optimized and rate cutoffs set appropriately for the expected heart rates with exercise.

**Rehabilitation Protocols**

Early mobilization after surgery and effective inpatient physical therapy can substantially increase the likelihood of a successful outpatient program. Both resistive and endurance protocols have been shown to be effective but must be highly individualized. Typical rehabilitation protocols for this population are not substantially different from those for other cardiac surgery patients. However, a higher intensity of monitoring is required, due to distinctive responses to exercise. It is important to recall that the transplanted heart lacks all neural regulatory and feedback controls and, as such, the resting heart rate is high with a delayed increase with exercise. The rate response to exercise in HT patients can also be erratic and unpredictable and use of symptom-based monitoring such as the Borg scale or other rating of perceived exertion is required. Heart rate response to exercise remains intact in LVAD and CRT patients, but simultaneous correlation with a perceived exertion scale is also recommended and can help detect any device-patient discrepancies. Importantly, a Doppler ultrasound device is the only reliable method of assessment of blood pressure in LVAD patients.

**Conclusion**

Exercise-based CR is a safe and effective approach to helping patients with advanced HF realize the full benefits of rehabilitation. Patients receiving HT can have a variety of post-operative complications and early infections or rejection. Patients receiving HT can have a variety of post-operative complications and early infections or rejection.
In October 2012, Mr. B presented to the ED a 5-week history of progressive shortness of breath, orthopnea and lower extremity swelling and redness.

**Subject Outline**
- 53-year-old African American male
- Single
- Unemployed, former college administrator
- Independent, lives with a friend, family out of state
- Able to drive
- Uninsured

**Subject’s Medical History**
Past medical history of hypertension (HTN), diabetes mellitus (DM), sickle cell trait, hypothyroidism and tobacco abuse.

**Discussion**
Following hospital discharge, Mr. B presented to the heart failure (HF) clinic for longitudinal management of his HF enrollment in the cardiac rehabilitation (CR) program. At the time, he complained of marked limitation of activity. He underwent a 6MWT and experienced moderate exertional dyspnea, reporting his rate of perceived exertion (RPE) as 2/10. VS at rest was HR 66; BP 112/77. VS at completion of the walk was HR 72; BP 108/76. Due to the severity of his condition, he was referred for transplant evaluation, although he was deemed ineligible due to lack of health insurance. Cardiac rehabilitation and GDMT were determined to be his best treatment options. Six months after his initial event, he began the CR program.

He attended a total of 36 sessions and progressed in both time and activity intensity. At the completion of CR, he was evaluated with a 6MWT. He demonstrated a significant improvement in the distance he walked at 1,200 feet with no symptoms, RPE 0/10. VS at rest was HR 81; BP 119/75.

Four months later, Mr. B had a subsequent hospital admission with decompensated HF. He demonstrated a 20-pound weight gain and MUGA revealed a decline in EF to 12%. One month after discharge, he was re-evaluated for the CR program, this time walking a distance of 940 feet, while rating his perceived exertion (RPE) as 2/10. VS at rest was HR 66; BP 112/77. VS at completion of the walk was HR 72; BP 108/76. Due to the severity of his condition, he was referred for transplant evaluation, although he was deemed ineligible due to lack of health insurance. Cardiac rehabilitation and GDMT were determined to be his best treatment options. Six months after his initial event, he began the CR program.

Mr. B has returned to the CHF clinic every 3 months for follow-up care. He continues to exercise on his own at a local gym, 1 hour a day, 3 days a week. He is able to climb a flight of stairs without shortness of breath. He has traveled out of state to visit his children. BNP level was 31.8 in April 2014. He is considering returning to work on a part-time basis. Unfortunately, he has yet to obtain health insurance, so a repeat echocardiogram to evaluate for improvement in EF has not been completed. He has had no subsequent hospital admissions in 21 months.

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**Cardiac Rehabilitation Case Study**

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<table>
<thead>
<tr>
<th>VS</th>
<th>Admit: HR 122; BP 139/118 Discharge: HR 78; BP 109/78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Admit: 231 pounds Discharge: 215 pounds</td>
</tr>
<tr>
<td>BNP</td>
<td>Admit: 1298 Discharge: 1215</td>
</tr>
<tr>
<td>CXR</td>
<td>Cardiomegaly</td>
</tr>
<tr>
<td>CT angiogram of chest</td>
<td>Bilateral lower lobe pulmonary emboli, small right pleural effusion</td>
</tr>
<tr>
<td>Doppler study (Upper extremities)</td>
<td>Occlusive thrombus RIJ, RSC vein</td>
</tr>
<tr>
<td>Doppler study (Lower extremities)</td>
<td>Non-occlusive thrombus to left popliteal vein</td>
</tr>
<tr>
<td>Echocardiogram</td>
<td>Severe dilated CM with two mural thrombi to left ventricular apex, LVEF 15%</td>
</tr>
</tbody>
</table>

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Approximately 5.8 million individuals in the United States are diagnosed with heart failure (HF) each year. Heart failure (HF) is a multifaceted disease that can be a product of any structural or functional disorder that hinders the ventricle capacity to fill or eject blood properly. This can be due to diastolic dysfunction (e.g., inability to properly fill ventricles), which is often referred to as heart failure with preserved ejection fraction (HFpEF), systolic dysfunction (e.g., reduced contractility), which is often referred to as heart failure with reduced ejection fraction (HFrEF) or a combination of both.

HF is characterized by reduced exercise tolerance, dyspnea and pulmonary and peripheral edema. Patients with HF are at increased risk for morbidity and mortality. As a result of increasing evidence, in 2014 the Centers for Medicare & Medicaid Services (CMS) included HF with reduced ejection fraction in the list of diagnoses eligible for outpatient cardiac rehabilitation (CR). This article briefly reviews considerations for integrating these patients into CR.

Patients with HF may be anxious about undertaking exercise and often have a low self-efficacy of their ability to exercise and improve their exercise tolerance. Prior to starting CR it is recommended that functional limitations and contraindications to exercise be assessed. A sign- and symptom-limited maximal exercise and/or a 6-minute walk test can be helpful in this assessment.

Before each CR session, staff should measure body weight, blood pressure and heart rate. An increase in body weight of more than 3 pounds (1.4 kg) in 3 days or 5 pounds (2.3 kg) in 1 week, low blood pressure with symptoms of hypo-perfusion, elevated heart rate or complaints of worsening dyspnea or fatigue should trigger further inquiry and possible follow up by the referring physician. These changes may indicate non-adherence with prescribed medications, nutrition recommendations or disease progression.

The exercise prescription for patients with HF is similar to other patients with heart disease. This includes exercise intensity at 40-80% of measured heart rate reserve, based on a recent maximal exercise test. In the absence of an exercise test, or when heart rate may not be a reliable guide (e.g., atrial fibrillation), staff may rely on subjective measures to guide intensity, such as rating of perceived exertion or the talk test. The majority of exercise time should be spent on aerobic activities, such as walking, biking or recumbent stepping. Patients may also benefit from the addition of resistance (strength) training.

Initially, the focus should be on exercise duration with a gradual progression of intensity over the subsequent sessions. For patients who are unable to perform 20-30 minutes of continuous exercise, interval training with rest periods is an alternative. The goal is to gradually increase the total volume (i.e., intensity, duration and frequency) of exercise to 150 minutes or more per week. Due to increased risk for sudden cardiac death, an implantable cardiac defibrillator (ICD) is not uncommon among patients with HF. Patients with an ICD can exercise safely, but should avoid upper extremity exercises for the first four weeks after implantation. Staff should be aware of the device’s sequence of therapy, along with the intervention heart rate threshold. For patients with a left ventricular assist device (LVAD), the exercise prescription remains the same, except it is not clear if heart rate is a valid guide of intensity so exercise should be guided by subjective methods. It is important to note that patients with an LVAD will likely not have a palpable pulse, so blood pressure (i.e., mean pressure) should be measured using a handheld Doppler device and should be between 70-90 mmHg for safe exercise.
Appropriately prescribed and supervised exercise training is safe and improves exercise tolerance by 10–30%.[1, 11] Supervised exercise training also reduces the risk of hospitalization by about 36% and cardiac mortality by about 32%.[2] Due to recent changes for Medicare beneficiaries (see Table 1), more patients with HF are now eligible and can be easily integrated into the typical outpatient CR program.[3, 4]

### References


**Cardiac Rehabilitation After Definitive Therapy for Advanced Heart Failure**

CONTINUED FROM PAGE 9

therapies like HT, LVADs and CRT. An understanding of patient- and therapy-specific issues and early recognition of potential problems before, during and after exercise can assure a successful outcome.

### References

Medicare Reimbursement for Cardiac Rehabilitation and Heart Failure Patients

Kelley H. Pattison, PhD, RN • Contributing Author
Western Michigan University, Bronson School of Nursing, Kalamazoo, MI

Heart failure (HF) is the No. 1 diagnosis for Medicare recipients and the leading cause of hospitalization and 30-day readmissions.1 Heart failure is also the principal cause of morbidity, mortality and disability in older adults.2 Owing to these alarming statistics, the Centers for Medicare & Medicaid Services (CMS) re-examined its stance of not reimbursing for cardiac rehabilitation (CR) services for patients with this diagnosis. With overwhelming data from numerous studies, most importantly the HF- ACTION trial,3 along with support from the American College of Cardiology, American Association of Cardiovascular and Pulmonary Rehabilitation, the American Heart Association and the Heart Failure Society of America, CMS issued a decision memo on Feb. 18, 2014, which stated there was sufficient evidence to expand coverage for Medicare recipients to include CR.4 Cardiac rehabilitation must include an exercise prescription, be physician supervised and include HF-related, self-care management education.

Patients must meet eligibility requirements to participate in CR for CMS reimbursement. These requirements include stable, chronic HF, defined as patients with left ventricular ejection fraction ≤35%, and NYHA class II to IV symptoms despite being on optimal HF therapy for at least 6 weeks and no recent (≤6 weeks) or planned (≤6 months) major cardiovascular hospitalization or procedures. Reimbursement coverage will include 36 sessions of early outpatient (formerly called Phase II) over 36 weeks.4

Now that it’s covered, how do we get Medicare beneficiary patients deemed appropriate for this benefit referred to CR programs? Referrals to these programs need to become automatic on discharge from the hospital. Nurses and care managers need to assess patients to determine if they meet the eligibility criteria and obtain the necessary order prior to discharge. Discharge order sets, which include a referral for CR, are a successful tool.3 Examples of such order sets are available online at heart.org.

The use of an Inpatient Nurse Navigator, who assesses and follows each patient with HF from admission through their return home, has increased adherence to medical regimes and follow-up appointments, and has decreased readmissions.5,6 Partnering CR personnel and inpatient cardiology nurses, who provide education and support for patients with HF, will also help increase the necessary referrals.

Although it is too early to tell how successful this new benefit will prove to be, CMS estimates providing CR to this patient population group has the potential to reduce readmissions by up to 30%.4 The Readmission Reduction Program will increase the reimbursement penalty for 30-day HF readmission to 3% in 2015.4 Reimbursement reduction and improvement in patient outcomes are key factors in implementing CR programs for patients with HF who meet eligibility criteria.

Nurses who work with these patients may wish to not only seek AAHFN certification in care of patients with HF, but also seek certification as a Certified Cardiopulmonary Rehabilitation Professional (CCRP), which is offered by the American Association of Cardiovascular and Pulmonary Rehabilitation and became available September 2014.7 Improving the lives of patients with HF remains the ultimate goal.

References
WEDNESDAY, JUNE 24, 2015

PRE-CONFERENCE WORKSHOPS
8:00 am – 5:00 pm
• The Pharmacology of Drugs for Common Co-Morbidities: Will they Impact HF Treatment?
• Thinking Outside the Box: Creative Strategies for Heart Failure Disease Management
• Nursing Research and Practice: Innovation, Impact and All that Jazz

1:00 pm – 5:00 pm
Heart Failure Nursing Certification Review Course

THURSDAY, JUNE 25, 2015

8:00 am – 10:00 am
Heart Failure Certification Exam
(Deadline to register is May 15th)

8:45 am – 9:00 am
Opening Remarks: Sharon Fabbri, RN, NP, CHFN
Loma Linda University Medical Center, Loma Linda, CA

9:00 am – 9:30 am
Presidential Address: Connie Lewis, MSN, ACNP-BC, NP-C, CCRN, CHFN, Vanderbilt Medical Center, Nashville, TN

9:30 am – 10:30 am
Keynote Address: A Patient’s Guide to Living Confidently With Chronic Heart Failure
Samuel F. Sears, PhD
East Carolina University, Greenville, NC

1:00 pm – 3:00 pm
Oral Abstract Session & Awards

1:15 pm – 2:15 pm
Concurrent Sessions:
• ADVANCED Peripartum Cardiomyopathy: Lessons Learned
  Kismet Rasmussen, DNP, FNP-BC
  Intermountain Medical Center, Salt Lake City, UT
  Denise Buonoore, MSN, CCRN, ACNPC, CHFN
  St. Vincent’s Multispecialty Group, Milford, CT
• BEGINNER Percutaneous Circulatory Support—Temporary, Short Term Devices
  Beth Towsley Davidson, DNP, ACNP, CHFN, CCRN
  TriStar Centennial Medical Center, Nashville, TN
• GLOBAL Management of HF in CHD Patients

2:00 pm – 3:00 pm
Concurrent Sessions:
• GLOBAL The Co-Morbidity Conundrum
  Johnn Lindenfeld, MD, FACC
  Vanderbilt Medical Center, Nashville, TN

THURSDAY, JUNE 25, 2015

4:00 pm – 5:00 pm
Great Debate: Tele-Monitoring: Does it Have Value in Preventing Readmission?
PRO: Linda Wick, MSN, CNP, CHFN
University of Minnesota, Duluth MN
CON: Roy Small, MD
Lancaster General Health, Lancaster, PA

FRIDAY, JUNE 26, 2015

8:35 am – 8:45 am
Opening Remarks: Sharon Fabbri, RN, NP, CHFN
Loma Linda University Medical Center, Loma Linda, CA

8:45 am – 9:15 am
Keynote: A Patient’s Perspective: Heart Transplant Recipient Story
CJ Spraggins
Nashville, TN

9:15 am – 9:45 am
What's New and Upcoming in the Treatment of Heart Failure

10:00 am – 11:00 am
Concurrent Sessions:
• BEGINNER The Future of Heart Failure in the Era of Value Based Care
  Nancy Albert, PhD, MSN, BSN, RN, CHFN
  Cleveland Clinic, Cleveland, OH

• GLOBAL It is Not All About the LV: Assessing and Treating RV Failure
  J. Thomas Heywood, MD, FACC
  Scripps, La Jolla, CA

MEMBERS: Register before April 13th to save $50
FRIDAY, JUNE 26, 2015 (Continued)

1:30 pm – 3:30 pm Concurrent Power Hours:

ADVANCED Mechanical Circulatory Support
- Choosing the Right Candidate for LVAD – Sapna Desai, MD Oschner Medical Center, New Orleans, LA
- Arrhythmia Burden and Management in the LVAD Patient
- Managing Complications in the LVAD Patient - JoAnn Lindenfield, MD, FACC Vanderbilt Medical Center, Nashville, TN

INTERMEDIATE Readmission Strategies: Transition to Home after Hospitalization For HF: Reducing Hospital Readmissions
- An Update on CMS and The Hospital Readmissions Reduction Program, Karen Joynt, MD, MPH, Brigham and Women's Hospital, Boston, MS
- How to Effectively Measure Readmission Metrics and Assembling a HF Team — Alto Reigle, RN, MSN, ACNP-BC, CHFN, University of Virginia Hospital, Charlottesville, VA
- Key Strategies for Establishing Successful Patient Discharge and Planning – Cheri Basso BSN, RN-BC, CHFN, Washington Mary Hospital, Southbury, WA
- The Outpatient Setting: Keeping Patients Out of the Hospital – Sabrina White, DNP, APRN, ACNP-BC, Oschner Medical Center, New Orleans, LA

INTERMEDIATE Palliative and Hospice Care of HF Patients
- Integration of Palliative Care and HF Teams
  - Carolyn Moffa, RN, BSN, MSN, FNP, CHFN, Christiana Care Health System, Newark, DE
  - Discussing Prognosis with HF Patients and Their Families
  - Denise Buonocore, MSN, CRNP, ACNPC, CHFN, St. Vincent's Multispecialty Group, Milford, CT
  - Breathe Easy: Partnering with Palliative Care and Hospice
  - Tasha Frietag, MSN/MPH, WellSpan, York, PA

4:00 pm – 5:00 pm Concurrent Sessions:

BEGINNER How to Successfully Complete a Research Project
- Carole Ballew, BSN, MSN, ACNP-BC, CCTC, CHFN, University of Virginia Hospital, Charlottesville, VA

GLOBAL Hemodynamics for the Provider: Making Sense of the Right Heart Pressures
- Cindy Bither, MSN, ANP, ACNP, CHFN, Western Piedmont Heart Centers, Hickory, NC

GLOBAL Palliative Care: How to Deliver a Dynamic Presentation
- Sara Paul, DNP, FNP, Cleveland Clinic, Cleveland, OH

INTERMEDIATE Acute Care of Decompensated Heart Failure Patients
- Who are Hospitalized: The MD Perspective, and the Bedside Nurse Perspective
- Hector Ventura, MD, FACC, FACP, Oschner Medical Center, New Orleans, LA

INTERMEDIATE Managing the Adverse Effects of Common Heart Failure Medications
- Linda Wick, MSN, CNP, CHFN, University of Minnesota, Duluth, MN

INTERMEDIATE Managing the Adverse Effects of Common Heart Failure Medications
- Shawn Merhaut, RN, MSN, CNP, CHFN, Cleveland Clinic, Cleveland, OH

SCHEDULE AT A GLANCE

FRIDAY, JUNE 26, 2015

8:45 am – 9:00 am Opening Remarks: Sharon Fabrier, RN, NP, CHFN
Loma Linda University Medical Center, Loma Linda, CA

9:00 am - 10:00 am Keynote: Health Care Policy Impacting the Roles of Nurses; Focusing on Readmission and Public Reporting
Karen Joynt, MD, MPH
Brigham and Women’s Hospital, Boston, MA

10:10 am – 11:10 am AAHFN Membership Meeting & Awards Ceremony

11:10 am – 11:40 am Incoming President’s Address: Marilyn Prasun, RN, PhD, CHFN, CCNS, NL, FAHA
Memorial Medical Center, Springfield, IL

11:45 am – 12:45 pm Great Debate: Cardiac Biomarkers: Are They Useful in Managing HF?
PRO: Alan Maisel, MD
VA Medical Center, San Diego CA
CON: Hector Ventura, MD, FACC, FACP
Ochsner Medical Center, New Orleans, LA

2:15 pm – 3:15 pm Concurrent Sessions:

ADVANCED Inpatient and Outpatient Biomarkers for HF: What do they tell you?
- Alan Maisel, MD
  - VA Medical Center, San Diego, CA

INTERMEDIATE From Telemarketing to Tele-Management
- Nancy Albert, PhD, MSN, BSN, RN, Cleveland Clinic, Cleveland, OH

BEGINNER How to Deliver a Dynamic Presentation
- Sara Paul, DNP, FNP, Western Piedmont Heart Centers, Hickory, NC

INTERMEDIATE Managing the Adverse Effects of Common Heart Failure Medications
- Linda Wick, MSN, CNP, CHFN, University of Minnesota, Duluth, MN

BEGINNER Acute Care of Decompensated Heart Failure Patients
- Who are Hospitalized: The MD Perspective, and the Bedside Nurse Perspective
- Hector Ventura, MD, FACC, FACP
  - Oschner Medical Center, New Orleans, LA

GLOBAL Pain: An Overview of the Disease and Current Management
- J. Thomas Heywood, MD, FACE
  - Scripps, La Jolla, CA

BEGINNER Acute Care of Decompensated Heart Failure Patients
- Who are Hospitalized: The MD Perspective, and the Bedside Nurse Perspective
- Hector Ventura, MD, FACC, FACP
  - Oschner Medical Center, New Orleans, LA

INTERMEDIATE Managing the Adverse Effects of Common Heart Failure Medications
- Linda Wick, MSN, CNP, CHFN
  - University of Minnesota, Duluth, MN

4:45 pm – 5:00 pm Concurrent Sessions:

GLOBAL PAH: An Overview of the Disease and Current Management
- J. Thomas Heywood, MD, FACE
  - Scripps, La Jolla, CA

BEGINNER Acute Care of Decompensated Heart Failure Patients
- Who are Hospitalized: The MD Perspective, and the Bedside Nurse Perspective
- Hector Ventura, MD, FACC, FACP
  - Oschner Medical Center, New Orleans, LA

INTERMEDIATE Managing the Adverse Effects of Common Heart Failure Medications
- Linda Wick, MSN, CNP, CHFN
  - University of Minnesota, Duluth, MN

INTERMEDIATE Managing the Adverse Effects of Common Heart Failure Medications
- Shawn Merhaut, RN, MSN, CNP, CHFN
  - Cleveland Clinic, Cleveland, OH

Go to AAHFN.org to register and for discounted hotel room rates
“Call Dr. S. I mean it, call Dr. S.” This is all I remember that July in the cath lab. When I awakened, a balloon pump was in my right groin, my family huddled around, and I felt like I had been kicked in the chest by a Percheron work horse. The cardiologist came in to apologize and tell me that he had ruptured my left anterior descending artery (LAD). The good news was the left internal mammary artery graft (LIMA) opened instantly.

In December 2008, I had a stress test because my nurse practitioner (NP) had recognized that I was at high risk for heart disease: overweight, premenopausal, hypertensive with a high-stress lifestyle and a strong family history of heart disease. The product of that stress test was a triple coronary bypass due to severe triple vessel disease including a 95% proximal LAD, 90% circumflex and a 99% right coronary artery (RCA) blockage. As with most women, I didn’t have time for this. The surgery was done in January 2009, and in February I began my first encounter with the cardiac rehabilitation (CR) staff.

Because I am an NP in the health system I was fairly well known because of my referrals for CR, though I never thought that I would need it myself. During those sessions three times per week I learned about trust, faith, target heart rates and how to warm up and cool down with exercise. I reviewed the changes I would have to integrate into my life and the little tips and suggestions on how to make those changes. I was the only woman in my CR group, let alone the only person under age 70. Those were lonely days, with the exception of Rita, Kelly, Deb, Thomas and Tonya. They became my mentors and teachers regarding heart health and the possibility of heart failure (HF).

After rehab was over, I returned to work full-time as an NP. I kept in touch with the CR staff, as I was very interested in the use of exercise to reduce cardiac plaques. On July 2, after a 3-mile walk and a 10-mile bike ride, I felt a popping sensation in my chest. Afraid of the wires fracturing, I went into the emergency department to discover that I was having a heart attack. I had developed scar tissue at the graft site, but exercise had strengthened my collateral circulation, the lesion in the LAD was reduced and the LIMA hadn’t developed.

The young cardiologist was concerned about the LIMA and LAD lesion and felt that I needed angioplasty and stenting to open the LAD. Little did I know that the artery would rupture. I was devastated. I had worked very hard to improve my weight, blood pressure, blood glucose and exercise levels. With one opening of the balloon all that was destroyed, or so I thought. My experience with the balloon pump was that it was a last ditch effort to save a failing heart. My expectation was that my heart would not mend and I would have to decide on treatment for an ischemic congestive myopathy at age 50.

Fortunately, I was angry enough to demand to be referred back to CR — back to where those people who were like angels to me would fix my heart and my soul. I knew that they would supervise my exercise program, answer my questions, help me through the anger and frustration and, most importantly, care about me as a person with heart disease. Without those people I would have never completed a doctoral program, gotten married, participated in 5K races or become a WomenHeart Champion. Cardiac rehabilitation works.
of short and long-term morbidity and mortality.\(^5\,^9\)

Patients with ADHF may develop acute symptoms at home, prompting emergency care or an urgent HF clinic/primary care visit. Over time, emergency department visits for ADHF have not decreased,\(^10\) reflecting a need for better methods of patient self-assessment and recognition of a worsening status. In cases where healthcare providers were notified in advance, treatment may include administration of intravenous diuretics and laboratory monitoring in an ambulatory setting,\(^11\) or patients may be admitted to the hospital. Current Accountable Care Organizations (ACO) and patient-centered medical home models encourage transformational care that shifts initial management of ADHF toward outpatient clinics or observation units. Further, subclinical changes in intracardiac pressures\(^12\) and thoracic impedance\(^13\) are known to occur days before symptoms escalate. As new implantable and external devices (including smartphone apps) become more commonplace, there is hope that patients with subclinical changes of hypervolemia can be managed to prevent symptoms and ADHF hospitalizations. In research involving ongoing monitoring of pulmonary artery pressures and management of hypervolemia, patients with both HF-reduced ejection fraction\(^12\) and HF-pEF\(^14\) had significant reductions in outcomes, but, in recent studies, there was no evidence of improvement.\(^18\,^19\)

However, when sodium nitroprusside was administered as a continuous infusion in ADHF patients with low cardiac output, along with diuretics and other standards of therapy, patients achieved greater improvement in hemodynamic measurements during hospitalization, had higher rates of oral vasodilator prescription at discharge, lower all-cause mortality rates and no increase in rehospitalization.\(^20\)

More research is needed to determine the feasibility of using sodium nitroprusside in ADHF, regardless of cardiac output status. Finally, there is some worry that high-dose intravenous diuretics might cause intravascular depletion and hemoconcentration and worsen renal function. In one trial of 336 patients with ADHF, patients with hemoconcentration had a 69% lower 180-day mortality rate that became stronger after adjustment for baseline characteristics (hazard ratio, 0.16; \(p<0.001\)). Thus, aggressive fluid removal leading to hemoconcentration, even in a setting of worsening renal function, could substantially improve survival and should not be rational to limit diuresis when needed.\(^21\,^22\)

References


In our day-to-day work, we don’t always think of ourselves as leaders. However, many of us exhibit qualities of leadership to ensure the best care for our patients. I perused a few different definitions of leadership and came across this definition from Kevin Kruse: “Leadership is a process of social influence, which maximizes the efforts of others toward the achievement of a goal.” This definition is often the experience of nurses who work in both inpatient and outpatient settings.

In the care of patients with heart failure (HF), generally our goal is to optimize their health and minimize their symptoms. To do this, we need to use all treatment modalities that are available to our patients. On Feb. 18, 2014, the Centers for Medicare & Medicaid Services (CMS) issued a decision memorandum that stated the eligibility requirements to participate in CR, which include “…patients with left ventricular ejection fraction of 35% or less and New York Heart Association (NYHA) class II to IV symptoms despite being on optimal heart failure therapy for at least six weeks. Stable patients are defined as patients who have not had recent (<6 weeks) or planned (<6 months) major cardiovascular hospitalizations or procedures.”

We all celebrated the February 2014 decision of the CMS to expand coverage of cardiac rehabilitation (CR) to beneficiaries with chronic HF. Now that patients with HF have another evidence-based treatment available to them that is covered by insurance, how do we ensure that our patients benefit from this opportunity? We can go back to a portion of our definition of leadership, the process of social influence. We as nurses practice social influence daily. A major component of social influence is advocacy.

Advocacy is defined as “the act or process of supporting a cause or proposal.” An advocate is defined as “a person who argues for or supports a cause or policy.” An integral part of nursing is patient advocacy and there are many ways in which nurses can advocate for patients with HF to receive CR. These ways include:

- Patient education of the benefits of CR for patients with HF while the patient is hospitalized for an acute exacerbation.
- Referral for CR as part of discharge planning.
- Continued patient education of the benefits of CR during post-hospitalization follow-up programs.
- Referral or prescription for qualified patients by advanced practice nurses during the 3-5 day post-discharge appointment or during the management of patients with chronic HF.

Other ways in which nurses can advocate for their patients with HF occur on the systems level. Nurses can have the CR referral included in the discharge order set on the electronic health record. Additionally, we can act to make our own CR programs more visible throughout the healthcare system.

References
“Slow and steady wins the race” is a motto that may be used in regard to an activity program for patients with a heart failure (HF) diagnosis. Individuals may have experienced decreased activity tolerance and increased fatigue when they become decompensated or after hospitalization. Fear and uncertainty about what the right activity is may be overshadowing the start of an activity program. The key to becoming more active is to start slowly and gradually increase.

There are two main types of activity: aerobic (with oxygen) and anaerobic (without oxygen) exercise. Aerobic exercise is an activity that raises heart rate and breathing, but not so much that the activity cannot be sustained for more than a few minutes. Aerobic activity focuses on large muscles, including the heart. When teaching patients about this exercise, refer to the “ing” activities: walking, swimming, biking and rowing, but not sitting, lying or sleeping! Getting a good pair of walking shoes with adequate support, a pedometer to track steps or mileage and finding a safe area to walk are the keys to success. In good weather, these activities can be enjoyed outdoors in parks, neighborhoods or at an outdoor festival. In the winter time, or during cold, windy weather, walking in an enclosed mall, indoor track or even the hallway of a condo building is possible! Several indoor shopping malls have mall-walking programs. Some churches, schools, workplaces and even hospitals have mapped out walking tracks as well.

• An aerobic exercise program should have several goals:
  • Use large muscle groups repetitively for a sustained amount of time.
  • Perform at least 30 minutes for 5 days a week. This does not need to be at the same time!
  • Meet the cardiovascular goals the provider has recommended.
  • The activity is something the patient with HF will enjoy doing for an extended period of time.

The type of exercise chosen is a personal decision. Certain factors may be taken into consideration to reduce the risk of injury or complications and make exercise more enjoyable before starting. Remember to think about safety first!

Tips for success in the activity for patients with HF include:

• Always speak to the provider prior to beginning any new exercise program.
• Choose a type of exercise that may be more appealing to stay with long term.
• Perform the activity at a level in which an individual can carry on a conversation or speak clearly while exercising. This “talk test” provides a general rule of thumb to help determine if a particular activity is too strenuous.

So, once approved, encourage your patient with HF to grab a pair of shoes, a pedometer and start on the road to a healthy heart, one step at a time.

References
SELF-CARE FOR THE HEART FAILURE NURSE: BENEFITS OF EXERCISE

Linda Rohyans, RN, MSN, CNS, APN, CHFN • Editorial Board Member
Indiana University Health, Indianapolis, IN

Activity can be spread out during the week, typically 30 minutes a day in 10-15 minute intervals 5 days a week. Choose activities that bring enjoyment and that can be performed regularly within daily work routines.

I like to move it, move it. In the animated movie, “Madagascar,” King Julien sang this to his followers, encouraging them to move it…move it — he clearly understood the benefits of being physically active! In today’s fast-paced and ever-demanding world of health care, heart failure (HF) nurses are not only challenged with engaging and supporting positive self-care behaviors for their patients, they are also challenged with adopting the same behaviors for a healthy lifestyle.

Self-care requires taking a daily preventative approach in caring for your body. So how does exercise fit into this strategy? Though often overlooked, exercise is a form of self-care, one of the most important steps you can take to improve your health and an essential underpinning for a healthy lifestyle. Research shows that even a minimal level of exercise is better than none.

The benefits of physical activity are bountiful. Benefits include increased energy level, muscle strength and endurance; achievement or maintenance of a healthy body weight; and enhancement of mood, serotonin levels and optimism. Being physically active promotes falling asleep faster and more soundly; improves cognitive function, mental acuity, memory, self-esteem, self-confidence and quality of life; provides a positive coping strategy and the opportunity to serve as a role model for patients, families and peers; and reduces stress and tension. There is strong evidence to support physical activity can lower the risk of many adverse health outcomes, such as heart disease, stroke, high blood pressure, type 2 diabetes, metabolic syndrome, breast and colon cancer, osteoporosis, abdominal obesity, high cholesterol level, nurse burnout, depression and anxiety.

Nurses experience high levels of stress and burnout. When exposed to chronic and significant stressors, nurses who use effective coping strategies are at lower risk for developing burnout. Exercise is a stress management intervention that can reduce stress and promote resilience. Successful coping can be promoted through belief in one’s ability to control life situations, create achievable goals and engender a positive mood. Be sure to set SMART (Specific, Measureable, Attainable, Relevant and Time-bound) goals.

Get moving Physical activity is anything that causes the body to move and burn up calories. Current guidelines recommend performing 150 minutes (2.5 hours) of activity per week for adults. That is about the same amount of time spent watching a movie. Activity can be spread out during the week, typically 30 minutes a day in 10-15 minute intervals 5 days a week. Choose activities that bring enjoyment and that can be performed regularly within daily work routines — take a brisk, 10-minute walk from the parking lot into work or during lunch. Focus on activities that include family or friends.

Get personal Similar to engaging with HF patients by utilizing motivational interviewing techniques, the HF nurse should discern personal, intrinsic motivations with exercise. While a desire for weight loss and increased strength is a common extrinsic motivator for exercise, enhanced self-esteem will maintain motivation in the long run. Examination of personal views on health can be insightful. One negative predictor for being “stuck” in the precontemplation stage of change is having the perception that good health has already been attained and the importance of physical activity is not recognized.

Get repetitive We are what we repeatedly do. Excellence, then, is not an act, but a habit. Allow time to create and
maintain a consistent routine with exercise, as acquiring skills and integrating behavior change requires repetition over an extended period of time.

The HF nurse should consider being physically active as an opportunity to reap healthy benefits, benefits that can be shared with patients, peers, family and friends. So, be encouraged to just move it…move it!

References
Did you know that proper patient and caregiver education can help prevent early readmission by up to 25 percent? AAHFN has a wonderful Patient Education section on the website, and you don’t have to be a member to access this content!

The Patient Education Committee was created by the AAHFN Board in the summer of 2013 with the initial goals to develop patient education tip sheets and to review and revise the website. This has been a very busy and successful group! The first big project was to develop the food-related tip sheets. The committee, under the leadership of Committee Chair Carolyn Miller Reilly, then developed and introduced the 2014 Heart Failure Awareness Week theme of "Keep Your Heart at Home." This 1-year program included posters for both patients and nurses.

2015 Heart Failure Awareness Week
The 2015 Heart Failure Awareness Week’s theme focused on: Destination Healthy Heart: A Road Map to Managing Heart Failure. This initiative included several new patient tip sheets related to the causes of heart failure (HF). A collaborative effort with the Publications Committee provides nurse tip sheets to coincide with each patient tip sheet. Sometimes nurses are hesitant to provide patient education because they are not confident in their own knowledge. The nurse tip sheets provide education to help nurses feel more comfortable providing patient teaching. A total of 10 etiology-based patient and nurse tip sheets are expected in 2015.

Locating Patient Education Resources
Patients and non-members may access these free resources online at aahfpatienteducation.com. Scroll over the Self-Care tab and click on the Patient Tip Sheets. You will be directed to a page full of helpful resources. Going back to the home-page of aahfpatienteducation.com, the buttons across the top of the page provide a drop-down menu of topics for each category.

What is Available?
- The Exercise and Activity section includes information on starting an exercise program. It also has the latest guidelines on HF and cardiac rehabilitation (CR) and information about sexual activity and functional capacity.
- The Self Care section has food-related patient tip sheets, such as ethnic and regional food choices, healthy snacking, eating out and a holiday guide. These tip sheets can help patients eat foods they enjoy and participate in family and social gatherings without excess sodium intake.
- The Diagnosing and Treatment of HF section provides information on advanced directives and advanced treatments, in addition to standard diagnostic and treatment details and an easy-to-understand explanation of evidence-based medications.
- Common co-morbidities and conditions in patients with HF, such as atrial fibrillation, depression, sleep apnea, high and low potassium diets, pulmonary hypertension and stress, are explained in the Other Conditions segment.
- Research and Resources has material related to participating in a research study, in addition to a multitude of links to websites and articles for more information.
- Naturally, there is also information about HF in What is Heart Failure?

Joining the Committee
Volunteers for this committee are AAHFN members. Each committee member serves a 2-year term. If you are interested in being part of an active committee, please contact information@aahfn.org.
Brief Statement: CRT IPGs and CRT ICDs

Indications: Cardiac Resynchronization Therapy (CRT) IPGs are indicated for NYHA Functional Class II or III patients who remain symptomatic despite optimal medical therapy and have an LVEF ≤ 35% and a prolonged QRS duration and for NYHA Functional Class II or III patients who have an LVEF ≤ 50%, are on stable, optimal heart failure medical therapy if indicated and have an atrioventricular block (AV block) who are expected to require a high percentage of ventricular pacing that cannot be managed with algorithms to minimize right ventricular pacing. Optimization of heart failure medical therapy that is limited due to AV block or the urgent need for pacing should be done post-implant. Rate adaptive pacing is provided for those patients developing a bradycardia indication who might benefit from increased pacing rates concurrent with increases in activity. Dual chamber and atrial tracking modes are indicated for patients who may benefit from maintenance of AV synchrony. Antitachycardia pacing (ATP) is indicated for termination of atrial tachyarrhythmias in patients with one or more of the above pacing indications.

CRT ICDs are indicated for ventricular antitachycardia pacing and ventricular defibrillation for automated treatment of life-threatening ventricular arrhythmias and for providing cardiac resynchronization therapy in heart failure patients who remain symptomatic despite optimal medical therapy if indicated, and meet any of the following classifications: New York Heart Association (NYHA) Functional Class II or III, and who have a left ventricular ejection fraction ≤ 35% and a QRS duration > 180 ms, left ventricular ejection fraction ≤ 30%, and NYHA Functional Class II, II or III and who have left ventricular ejection fraction ≤ 35% and antitachycardia ventricular block (AV block) who are expected to require a high percentage of ventricular pacing that cannot be managed with algorithms to minimize right ventricular pacing. Optimization of heart failure medical therapy that is limited due to AV block or the urgent need for pacing should be done post-implant. Some CRT ICDs are also indicated for use in patients with atrial tachyarrhythmias, or those patients who are at significant risk for developing atrial tachyarrhythmias. The RV Lead Integrity Alert (LIA) feature is intended primarily for patients who have a Medtronic ICD or CRT-D device and a Sprint Fidelis lead. (Models: 6948, 6948, 6931, and 69130) based on performance data. The RV LIA feature may not perform as well with a St. Jude Medical Ria™(Durata™) or a Boston Scientific Endotak lead as it does when used with a Medtronic Sprint Fidelis lead. This is because different lead designs may have different failure signatures and conditions that may or may not be detected early by the RV LIA feature. Contraindications: CRT IPGs are contraindicated for concomitant implant with another bradycardia device and concomitant implant with an implantable cardioverter defibrillator. There are no known contraindications for the use of pacing as a therapeutic modality to control heart rate. The patient’s age and medical condition, however, may dictate the particular pacing system, mode of operation, and implant procedure used by the physician. Rate-responsive modes may be contraindicated in those patients who cannot tolerate pacing rates above the programmed lower rate. Dual chamber sequential pacing is contraindicated in patients who have chronic persistent supraventricular tachycardias, including atrial fibrillation or flutter. Asynchronous pacing is contraindicated in the presence of pacemaker or defibrillator modes of competition between paced and intrinsic rhythms. Single chamber pacing is contraindicated in patients with an AV conduction disturbance. Antitachycardia pacing (ATP) therapy is contraindicated in patients with an accessory pathway. CRT ICDs are contraindicated in patients experiencing tachyarrhythmias with transient or reversible causes including, but not limited to, the following: acute myocardial infarction, drug intoxication, drowning, electric shock, electrolyte imbalance, hypoxia, or sepsis; patients who have a unipolar pacemaker/implanted patients with incessant ventricular tachycardia (VT) or ventricular fibrillation (VF), and patients whose primary disorder is chronic atrial tachyarrhythmia with no concomitant VT or VF. Warnings and Precautions: Changes in a patient’s disease and/or medications may alter the efficacy of the device’s programmed parameters. Patients should avoid sources of magnetic and electromagnetic radiation to avoid possible underdetection, inappropriate sensing and/or delivery, tissue damage, induction of an arrhythmia, device electrical rest, or device damage. Do not place thoracic defibrillation paddles directly over the device. Additionally, for CRT ICDs and CRT IPGs, certain programming and device operations may not provide cardiac resynchronization. Also for CRT IPGs, Effective Replacement Indicator (ERI) results in the device switching to VVI pacing at 65 ppm. In this mode, patients may experience loss of cardiac resynchronization therapy and/or loss of AV synchrony. For this reason, the device should be replaced prior to ERI being set. Use of the device should not change the application of established anticoagulation protocols. Potential Complications: Potential complications include, but are not limited to, rejection phenomena, erosion through the skin, muscle or nerve stimulation, oversensing, failure to detect and/or terminate arrhythmia episodes, and surgical complications such as hematoma, infection, inflammation, and thrombosis. An additional complication for CRT ICDs is the acceleration of ventricular tachycardia.

References

*Please note that travel, the certification exam and pre-conference workshop expenses are not included.
ONLY Devices with AdaptivCRT Improve Outcomes as compared to echo-optimized CRT.\(^1-6\)

**AdaptivCRT\(^{\circledR}\) Algorithm Reduced Risk of Heart Failure Hospitalization or Death\(^1\)**

for Patients with Normal AV Conduction

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**Time to Heart Failure Hospitalization or All-Cause Death**

- **HR = 0.52, 95% CI: 0.27-0.98, p = 0.044**

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**AdaptivCRT Reduced 30-Day HF Hospital Readmissions by 47\%\(^2\)**

Evidence Presented at Heart Rhythm Society 2014

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Ask your electrophysiologist about cardiac resynchronization devices with AdaptivCRT

\(\ast\) as compared to echo-optimized CRT.