National Imaging Associates, Inc.*	
Clinical guideline **IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD)**	**Original Date: February 2013**
CPT Codes: 33230, 33240, 33249	**Last Revised Date: March 2020**
Guideline Number: NIA_CG_321	**Implementation Date: January 2021**

GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. All prior relevant imaging results, and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

INDICATIONS FOR ICD INSERTION

(Al-Khatib, 2017; Epstein, 2012; Ponikowski, 2016; Priori, 2015; Russo, 2013; Shen, 2017; Yancy, 2013)

Ischemic Heart Disease (CAD)

(Al-Khatib, 2017; Priori, 2015; Russo, 2013)

- Patients with documented ventricular fibrillation (VF), hemodynamically unstable ventricular tachycardia (VT), or sustained VT, after exclusion of reversible causes
- Syncope of undetermined origin, with one of the following:
    - Inducible VF or sustained VT at electrophysiological study (EPS), or
    - Left ventricular ejection fraction (LVEF) ≤ 35%
- LVEF ≤ 35% due to ischemic heart disease and NYHA class II or III, despite guideline-directed medical therapy (GDMT), and at least 40 days post myocardial infarction (MI) and 90 days post-revascularization
- LVEF ≤ 30% due to ischemic heart disease, NYHA class I, II, or III despite GDMT, and at least 40 days post-MI and 90 days post-revascularization (Al-Khatib, 2017; Russo, 2013)

Nonischemic cardiomyopathy (NICM)

* National Imaging Associates, Inc. (NIA) is a subsidiary of Magellan Healthcare, Inc.

(Al-Khatib, 2017)

- Patients with documented VF, hemodynamically unstable VT, or sustained VT, after exclusion of reversible causes
- Syncope that is presumed to be due to ventricular arrhythmia
- NICM with LVEF ≤ 35% and NYHA functional Class II or III, despite at least 3 months of GDMT
- NICM due to a *Lamin A/C* gene mutation, with ≥ 2 risk factors from the following (NSVT, LVEF < 45%, male sex, nonmissense mutation)

Advanced Heart Failure & Transplantation
(Al-Khatib, 2017; Priori, 2015)

- In non-hospitalized patients with NYHA class IV who are candidates for cardiac transplantation or left ventricular assist device (LVAD) (Al-Khatib, 2017; Priori, 2015; Russo, 2013)
- In a patient with an LVAD, sustained ventricular arrhythmias (Al-Khatib, 2017)
- In NYHA ambulatory class IV, with appropriate indications for CRT (see Background Information section for definition of ambulatory NYHA class IV)

Myocardial Diseases

- **Hypertrophic cardiomyopathy** (HCM) with ≥ 1 major risk factors for sudden cardiac death (SCD) (Al-Khatib, 2017; Epstein, 2012; Gersh, 2011; Shen, 2017):
    - Prior sudden cardiac arrest due to VT or VF
    - Documentation of sustained VT with syncope or hemodynamic compromise
    - Maximum LV wall thickness ≥ 30 mm
    - SCD in 1 or more first degree relatives
    - ≥ 1 episode of unexplained syncope within the preceding 6 months
    - Documented NSVT with an additional SCD risk modifier (age < 30 yr, delayed hyperenhancement on cardiac MRI, LVOT obstruction, or syncope > 5 yr ago) or high-risk feature (LV aneurysm or LVEF < 50%)
    - Abnormal BP response to exercise with an additional SCD risk modifier or high-risk feature (see above)
        - BP rise < 20 mmHg or fall of > 20 mmHg during exercise
- **Cardiac Sarcoidosis** with one of the following (Al-Khatib, 2017; Priori, 2015; Shen, 2017):
    - Cardiac arrest or documented sustained VT
    - LVEF ≤ 35%
    - LVEF > 35% with inducible sustained ventricular arrhythmia at EPS
    - Syncope and/or scar on CMR or positron emission tomography (PET)
    - Requires a permanent pacemaker
- **Neuromuscular Disorders** with one of the following (Al-Khatib, 2017):
    - Primary and secondary prevention, with same indications as for NICM (Priori, 2016)

    - Emery-Dreifuss or limb-girdle type I-B muscular dystrophy with progressive cardiac involvement
- **Arrhythmogenic right ventricular cardiomyopathy** and **≥ 1** of the following risk factors for SCD:
  (Al-Khatib, 2017; Calkins, 2017; Corado, 2015; Epstein, 2012; Shen, 2017)
    - Resuscitated sudden cardiac arrest
    - Sustained VT
    - Right or left ventricular systolic dysfunction with an ejection fraction ≤ 35%
    - Syncope with documented or presumed ventricular arrhythmia

Channelopathies

- **Congenital long QT syndrome** with **one** of the following (Al-Khatib, 2017; Epstein, 2012; Goldenberg, 2008; Priori, 2015; Schwartz, 2012)
    - Sudden cardiac arrest
    - Sustained VT or recurrent syncope when beta blocker is ineffective or not tolerated
    - QTc > 500 ms on a beta blocker (Al-Khatib, 2017)
    - Strong family history of SCD
    - High risk genotype (type 2 and type 3)

- **Brugada syndrome and spontaneous type 1 Brugada electrocardiographic pattern** with **one** of the following:
  (Al-Khatib, 2017; Epstein, 2012; Katsumoto, 2018; Priori, 2015)
    - Cardiac arrest
    - Documented sustained ventricular arrhythmia
    - Syncope due to ventricular arrhythmia

- **Catecholaminergic polymorphic VT** with **one** of the following (Al-Khatib, 2017; Priori, 2013, Epstein, 2012; Russo, 2013):
    - Sudden cardiac arrest
    - Syncope or sustained VT
    - Inducible VT or VF

- **Early Repolarization or Short QT Syndrome** with **one** of the following (Al-Khatib, 2017; Priori, 2015):
    - Cardiac arrest
    - Sustained ventricular arrhythmia

- **Idiopathic Polymorphic VT/VF** with **one** of the following (Al-Khatib, 2017):
    - Cardiac arrest due to polymorphic VT or VF

Miscellaneous

Adult & Pediatric Congenital Heart Disease (CHD)
(Al-Khatib, 2017; Brugada, 2013; Hernandez-Madrid, 2018; Khairy, 2014; Priori, 2015; Shen, 2017)

- Cardiac arrest due to VF or VT after exclusion of a reversible etiology

- Systemic LVEF ≤ 35%, biventricular physiology, and NYHA class II or III on GDMT.

- Tetralogy of Fallot with one of the following (Al-Khatib, 2017; Shen, 2017):
    - Spontaneous sustained VT
    - Inducible VF or sustained VT
    - ≥ 1 risk from the following list:
        - Prior palliative systemic to pulmonary shunts
        - Unexplained syncope
        - Frequent PVCs
        - Atrial tachycardia
        - Left ventricular dysfunction or diastolic dysfunction
        - NSVT
        - QRS duration ≥ 180 ms
        - Dilated right ventricle
        - Severe pulmonary regurgitation or stenosis

- Single or systemic right ventricular ejection fraction (RVEF) < 35%, in the presence of an additional risk factor such as:
    - NSVT
    - Unexplained syncope
    - NYHA class II or III, despite GDMT (Al-Khatib, 2017; Priori, 2015)
    - QRS duration ≥ 140 ms
    - Severe systemic AV valve regurgitation

- Syncope of unknown origin in the presence of either advanced ventricular dysfunction (EF < 35%) or marked hypertrophy or inducible sustained VT or VF (Al-Khatib, 2017; Shen, 2017)

- Syncope and moderate or complex CHD, with high clinical suspicion of ventricular arrhythmias

- Non-hospitalized patients with CHD awaiting heart transplantation

- Left ventricular non-compaction that meets same indications as NICM, including a familial history of SCD (Biagini, 2006; Russo, 2018)

EXEMPTIONS:
Indications for ICD with an Appropriate Pacing Modality in Special Situations

(Katsumoto, 2014; Russo, 2013)*****

- ICD criteria met, and elevated troponin is deemed not due to a myocardial infarction (Al-Khatib, 2017)
- ICD criteria met, except for myocardial infarction within 40 days or revascularization within 3 months, but a non-elective permanent pacemaker (new or replacement) is required, and recovery of left ventricular function to LVEF > 35% is uncertain or not expected (Russo, 2013)**
- ICD criteria met, except NICM or ischemic cardiomyopathy has not had 3 months' time for LVEF to improve on medical therapy, a non-elective permanent pacemaker is required, and recovery of LVEF is uncertain or not expected**
- Patient met primary prevention criteria for an ICD prior to coronary revascularization, and it is unlikely that LVEF will recover to > 35% despite a 90 day wait (Katsumoto, 2014)

*** With these ICD indications, CRT would sometimes be the appropriate pacing modality. CRT is likely to be the appropriate modality** with anticipated requirement for significant (> 40%) ventricular pacing
**** These indications avoid a second implantation procedure within less than 3 months.**

BACKGROUND:
(Al-Khatib, 2017; Epstein, 2012; Ponikowski, 2016; Priori, 2015; Russo, 2013; Shen, 2017; Yancy, 2013)

The implantable cardioverter defibrillator (ICD) has become valuable in the management of patients with ventricular arrhythmias (VA) capable of causing syncope, cardiac arrest, and sudden cardiac death (SCD).

Patient eligibility for an ICD presumes all of the following:

- Anticipated reasonable quality of life for ≥ 1 year post implantation (Katsumoto, 2018)
- Patient's ability to live with a shock-delivering device that requires management
- Absence of a *completely* reversible cause that led to VA for which an ICD is being considered (see Background Information section on reversible causes)
- Completion of ≥ 3 months of guideline directed medical therapy (GDMT) for heart failure (HF), unless an intervening indication for pacemaker implantation arises (see Background Information section for definition of GDMT)
- ICD indications are present in the vast majority of scenarios in which cardiac resynchronization therapy (CRT) is appropriate
- Sustained VT is defined as having duration > 30 seconds or requiring termination due to hemodynamic compromise in < 30 seconds

Guidelines for the pediatric population are extrapolated from the adult population, due to a lack of relevant trials (Brugada, 2013; Priori, 2015)

OVERVIEW:

General

(Al-Khatib, 2017; Epstein, 2012; Ponikowski, 2016; Priori, 2015; Russo, 2013; Shen, 2017; Yancy, 2013)

Implantable cardioverter defibrillators (ICDs) are indicated for the treatment of life-threatening ventricular tachycardia and ventricular fibrillation. An ICD system includes a pulse generator and one or more leads. ICDs are indicated both for patients who have survived life threatening rhythm disturbances (secondary prevention) and for those who are at risk for them (primary prevention)

- An ICD continually monitors heart rhythm. If a rapid rhythm is detected, the device delivers electrical therapy directly to the heart muscle in order to terminate the rapid rhythm and restore a normal heart rhythm. There are two types of therapy that can be delivered:
  - Rapid pacing OR
  - High-voltage shocks are necessary for ventricular fibrillation and also when rapid pacing has failed to correct the abnormal rhythm
- In addition, all ICDs have pacing capability, and deliver pacing therapy for slow heart rhythms (bradycardia)
- The parameters defining limits for pacing therapy and for tachycardia therapy are programmable using noninvasive radio signals on all available ICDs

NYHA Class Definitions

(Campeau, 1976; Goldman, 1981; Russo, 2013)

- **Class I:** No limitation of functional activity or only at levels of exertion that would limit normal individuals (patient can carry 24 pounds up 8 stairs, play basketball, and shovel soil).
- **Class II:** Slight limitation of activity. Fatigue, palpitation, or dyspnea with moderate exercise (patient able to dance, garden, and walk 4 MPH on level ground).
- **Class III:** Marked limitation of activity. Fatigue, palpitation, or dyspnea with minimal activity (patient able to shower, make bed, bowl or golf, dress, and walk 2.5 MPH on level ground).
- **Class IV:** Severe limitation of activity. Symptoms even at rest, worse with activity (patient unable to comfortably perform any significant activity).
- **Ambulatory Class IV:** Class IV heart failure with: 1) no active acute coronary syndrome; 2) no inotropes; and 3) on GDMT.

Guideline Directed (or Optimal) Medical Therapy for Heart Failure
(Yancy, 2013, 2017)

- Angiotensin converting enzyme (ACE-I), angiotensin receptor blockers (ARB), or combined angiotensin receptor inhibitor and neprilysin inhibitor (ARNI)
- Beta blocker (might be less critical in permanent atrial fibrillation, still recommended) (Kotech, 2017)
- Addition of loop diuretic for all NYHA class II – IV patients
- Addition of hydralazine and nitrate for persistently symptomatic African Americans
- Addition of an aldosterone antagonist, provided eGFR is > 30 ml/mi
- Normal serum sodium and potassium
- Not required for consideration of ICD: Ivabradine for NYHA class II – III, when a beta blocker has failed to reduce a sinus rate to < 70 bpm. Ivabradine listed as a class IIa recommendation, while others are class I recommendations. CRT trials antedated routine use of Ivabradine.

Abbreviations

ACE-I	Angiotensin converting enzyme inhibitor
ARNI	Combined angiotensin receptor inhibitor and neprilysin inhibitor
ARVD/C	Arrhythmogenic right ventricular dysplasia/cardiomyopathy
AV	Atrioventricular
CAD	Coronary artery disease, same as ischemic heart disease
CHD	Congenital heart disease
CHF	Congestive heart failure
CRT	Cardiac resynchronization therapy
CRT-D	Cardiac resynchronization therapy ICD system
DCM	Dilated cardiomyopathy
ECG	Electrocardiogram
EPS	Electrophysiologic Study
GDMT	Guideline-Directed Medical Therapy
HCM	Hypertrophic cardiomyopathy
HF	Heart failure
HV	His-ventricle
ICD	Implantable cardioverter-defibrillator
LBBB	Left bundle-branch block
LV	Left ventricular/left ventricle
LVAD	Left ventricular assist device, mechanical heart
LVEF	Left ventricular ejection fraction
MI	Myocardial infarction
ms	Milliseconds

NICM	Nonischemic cardiomyopathy
NYHA	New York Heart Association
RV	Right ventricular/right ventricle
STEMI	ST-elevation myocardial infarction
SND	Sinus node dysfunction
VT	Ventricular tachycardia
VF	Ventricular fibrillation

POLICY HISTORY:
Review Date: August 14, 2019
Review Summary:

- Removed indications under ischemic heart disease for NSVT due to prior MI, LVEF ≤ 40%, and inducible VT or VF at EPS
- Removed indications under ischemic heart disease for VT or VF < 48 hours post MI or elective coronary revascularization
- Under NICM, removed indication for peripartum cardiomyopathy with LVEF ≤ 35% that persists > 3 months
- Under advanced heart failure and transplantation, removed indication for severe allograft vasculopathy
- Revision to cardiac sarcoidosis indication to add cardiac arrest
- Under hypertrophic cardiomyopathy revised indications for documented NSVT to include an additional SCD risk modifier (age < 30 yr, delayed hyperenhancement on cardiac MRI, LVOT obstruction, or syncope > 5 yr ago) or high risk feature (LV aneurysm or LVEF < 50%)
- Removed indications for giant cell myocarditis and chronic Chagas cardiomyopathy
- Removed indication for hypertensive heart disease with LVH and LVEF ≤ 35%
- Under Tetrology of Fallot added the following indications :
    - Prior palliative systemic to pulmonary shunts
    - Unexplained syncope
    - Frequent PVCs
    - Atrial tachycardia
    - Left ventricular diastolic dysfunction
    - Dilated right ventricle

Review Date: March 2020
Review Summary:

- Added general information section as Introduction which outlines requirements for documentation of pertinent office notes by a licensed clinician, and inclusion of laboratory testing and relevant imaging results for case review
- Removed the statement regarding waiting period from the Overview section
- Updated and added new references

REFERENCES:

Al-Khatib SM, Stevenson WG, Ackerman MUJ, et al. 2017 AHA/ACC/HRS Guideline for Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death. *J Am Coll Cardiol.* 2018 Oct 2; 72(14):e91-e220.

Belhassen B, Viskin S. Idiopathic ventricular tachycardia and fibrillation. *J Cardiovasc Electrophysiol.* 1993; 4(3):356.

Biagini E, Ragni L, Ferlito M, et al. Different types of cardiomyopathy associated with isolated ventricular noncompaction. *Am J Cardiol.* 2006; 98(6):821.

Brugada J, Blom N, Sarquella-Brugada, et al. Pharmacological and non-pharmacological therapy for arrhythmias in the pediatric population: EHRA and AEPC-Arrhythmia Working Group Joint Consensus Statement. *Europace*. 2013; 15:1337-1382.

Burkett EL, Hershberger RE Clinical and genetic issues in familial dilated cardiomyopathy. *J Am Coll Cardiol.* 2005; 45(7):969.

Calkins H, Corrado D, Marcus F. Risk Stratification in Arrhythmogenic Right Ventricular Cardiomyopathy. *Circulation.* 2017; 136(21):2068-2082.

Campeau L. Grading of angina pectoris. *Circulation.* 1976; 54:522.

Corrado D, Wichter T, Link MS, et al. Treatment of arrhythmogenic right ventricular cardiomyopathy/dysplasia: an international task force consensus statement. *Eur Heart J.* 2015; 36(46):3227-37.

Epstein AE, DiMarco JP, Ellenbogen KA, et al. 2012 ACCF/AHA/HRS focused update incorporated into the ACCF/AHA/HRS 2008 Guidelines for Device-Based Therapy of Cardiac Rhythm Abnormalities A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Heart Rhythm Society. *Circulation*. 2013; 127:e283-e352. http://circ.ahajournals.org/content/127/3/e283.

Gersh BJ, Maron BJ, Bonow RO, et al. 2011 ACCF/AHA guideline for the diagnosis and treatment of hypertrophic cardiomyopathy: A report of the American College of Cardiology Foundation/American Heart Association. *J Am Coll Cardiol.* 2011; 58:e212– 60.

Goldenberg I, Moss AJ. Long QT Syndrome. *J Am Coll Cardiol.* 2008; 51(24):2291-2300.

Goldman L, Hashimoto B, Cook EF, et al. Comparative reproducibility and validity of systems for assessing cardiovascular functional class: Advantages of a new specific activity scale. *Circulation.* 1981; 64:1227.

Halliday BP, Gulati A, Ali A, et al. Association between mid-wall late gadolinium enhancement and sudden cardiac death in patients with dilated cardiomyopathy and mild and moderate left ventricular systolic dysfunction. *Circulation.* 2017; 135(22):2106-2115. Available at: http://circ.ahajournals.org/content/135/22/2106. Retrieved June 6, 2018.

Hernandez-Madrid A, Paul T, Abrams D, et al. Arrhythmias in congenital heart disease: A position paper of the European Heart Rhythm Association (EHRA), Association for European Paediatric and Congenital Cardiology (AEPC), and the European Society of Cardiology (ESC) Working Group on Grown-up Congenital Heart Disease, endorsed by HRS, PACES, APHRS, and SOLAECE. *Europace.* 2018; 0:1-35. Available at: https://academic.oup.com/europace/advance-article-abstract/doi/10.1093/europace/eux380/4944677.

Katsumoto FM, Bailey Kr, Chaouki AS, et al. Systematic review for the 2017 AHA/ACC/HRS Guideline for Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death. *J Am Coll Cardiol.* 2018 Oct 2; 72(14):1653-1676.

Katsumoto FM, Calkins H, Boehmer J, et al. HRS/ACC/AHA Expert Consensus Statement on the Use of Implantable Cardioverter-Defibrillator Therapy in Patients Who Are Not Included or Not Well represented in Clinical Trials. *Heart Rhythm*. 2014; 11(7):1270-1303.

Khairy P, Van Hare GF, Balaji S, et al. PACES/HRS Expert consensus statement on the Recognition and Management of Arrhythmias in Adult Congenital Heart Disease. *Heart Rhythm*. 2014; 11:e102-e165.

Kuruvilla S, Adenaw N, Katwal AB, et al. Late gadolinium enhancement on cardiac magnetic resonance predicts adverse cardiovascular outcomes in nonischemic cardiomyopathy: A systematic review and meta-analysis. *Circ Cardiovasc Imaging*. 2014; 7:250-8.

Liang JJ, Hodge DO, Mehta RA, et al. Outcome in patients with sustained ventricular tachyarrhythmias occurring within 48 h of acute myocardial infarction: when is ICD appropriate? *Europace*. 2014; 16:759-1766.

Montalescot G, Sechtem U, Achenbach S, et al. 2013 ESC guidelines on the management of stable coronary artery disease: The Task Force on the management of stable coronary artery disease of the European Society of Cardiology. *Eur Heart J*. 2013; 34(38): 2949–3003. Available at: https://academic.oup.com/eurheartj/article/34/38/2949/442952

O'Gara PT, Kushner FG, Ascheim DD, et al. ACCF/AHA guideline for the management of ST-elevation myocardial infarction: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2013; 61:e78 –140.

O'Mahony C, Jichi F, Ommen SR, et al. An international external validation study of the 2014 European Society of Cardiology guideline on sudden cardiac death prevention in hypertrophic

cardiomyopathy (evidence from HCM). *Circulation*. 2018; 137(10):1015-1023.

Ponikowski P, Voors AA, Anker SD, et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure, The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC), Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. *Eur Heart J.* 2016; 37:2129–2200.

Priori SG, Wilde AA, Horie M, et al. HRS/EHRA/APHRS expert consensus statement on the diagnosis and management of patients with inherited primary arrhythmia syndromes: document endorsed by HRS, EHRA, and APHRS in May 2013 and by ACCF, AHA, PACES, and AEPC in June 2013. *Heart Rhythm.* 2013; 10(12):1932-63.

Priori SG, Blomstrom-Lundqvist C, Mazzanti A, et al. 2015 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death, The Task Force for the Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death of the European Society of Cardiology (ESC). *Eur Heart J.* 2015; 36:2793–2867.

van Rijsingen IA, Arbustini E, Elliott PM, et al. Risk factors for malignant ventricular arrhythmias in lamin A/C mutation carriers: a European cohort study. *J Am Coll Cardiol.* 2012; 59:493–500.

Russo, AM, Stainback RF, Bailey SR, et al. ACCF/HRS/AHA/ASE/HFSA/SCAI/SCCT/SCMR 2013 appropriate use criteria for implantable cardioverter-defibrillators and cardiac resynchronization therapy: A report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, Heart Rhythm Society, American Heart Association, American Society of Echocardiography, Heart Failure Society of America, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance (endorsed by the American Geriatrics Society). *J Am Coll Cardiol.* 2013; 61(12):1318–1368.

Shen W-K, Sheldon RS, Benditt DG, et al. 2017 ACC/AHA/HRS guideline for the evaluation and management of patients with syncope: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *J Am Coll Cardiol.* 2017; 70:e39–110.

Schwartz PJ, Crotti L, Insolia R. Long QT syndrome, from genetics to management. *Circ Arrhythm Electrophysiol.* 2012; 5:868-877.

Schwartz PJ, Ackerman MJ, George AL Jr, et al. Impact of genetics on the clinical management of channelopathies. *J Am Coll Cardiol.* 2013; 62(3):169.

Schwartz PJ, Crotti L. QTc behavior during exercise and genetic testing for the long-QT syndrome. *Circulation*. 2011; 124:2181-2184. Available at: http://circ.ahajournals.org/content/124/20/2181.

Yancy CW, Jessup M, Bozkurt B, et al. 2013 ACCF/AHA guideline for the management of heart failure: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation.* 2013; 128:e240–e327.

Yancy CW, Jessup M, Bozkurt B, et al. 2017 ACC/AHA/HFSA focused update of the 2013 ACCF/AHA guideline for the management of heart failure: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. *J Am Coll Cardiol.* 2017; 70:776–803.

Reviewed / Approved by Rosalind C. Watman D.O. Rosalind C. Watman, D.O., Medical Director, Cardiology

