CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all plans administered by CIGNA Companies including plans administered by Great-West Healthcare, which is now a part of CIGNA.

Subject **Biventricular Pacing/Cardiac Resynchronization Therapy (CRT)**

Effective Date 8/15/2009
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Coverage Policy Number 0174

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Hyperlink to Related Coverage Policies

Implantable Cardioverter Defibrillator (ICD)
Wearable Cardiac Defibrillator and Automatic External Defibrillator

INSTRUCTIONS FOR USE

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Coverage Policy

CIGNA covers the use of biventricular pacemakers alone or combined with a defibrillator for cardiac resynchronization therapy (CRT) as medically necessary for the treatment of individuals with congestive heart failure (CHF) when ALL of the following criteria are met:

- New York Heart Association (NYHA) classification of heart failure III or IV (See Appendix A)
- left ventricular ejection fraction (LVEF) ≤ 35%
- QRS duration ≥ 120 milliseconds (ms)
- sinus rhythm or chronic atrial fibrillation (AF)
- individual on an optimal pharmacologic regimen before implantation, which may include the following, unless contraindicated:
    - aldosterone antagonists
    - angiotensin-converting enzyme (ACE) inhibitor
    - angiotensin receptor blocker (ARB)
    - beta blocker
    - digoxin
    - diuretics

General Background

Congestive heart failure (CHF), or heart failure, is a clinical condition characterized by the heart's inability to generate a cardiac output sufficient to meet the body's circulatory demands. Approximately 20–30% of patients with heart failure may have intra-ventricular conduction delays, evidenced by a wide QRS interval on electrocardiogram (EKG), which can worsen left ventricular systolic dysfunction through asynchronous ventricular contraction. This abnormality appears to be associated with increased morbidity and mortality. The most frequently used index of cardiac function is the left ventricular ejection fraction (LVEF). Normal LVEF ranges from 50–75% at rest. Severe heart failure can reduce LVEF to < 35%. Treatment for heart failure includes: pharmacological therapy, which can include a combination of diuretics, digoxin, angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARB), beta-blockers and aldosterone antagonists. Some patients may remain symptomatic despite drug therapy. The definitive therapy for end-stage heart failure patients is heart transplantation.

Atrial fibrillation (AF) is the most common arrhythmia encountered in clinical practice, accounting for approximately one third of hospitalizations for cardiac rhythm disturbance. AF is prevalent in patients with CHF or valvular heart disease and increases in prevalence with the severity of these conditions. There are a number of AF treatment options. The first line of treatment involves medications, but there are other treatments which may be appropriate (e.g., catheter ablation, an atrioventricular node ablation, cardiac surgical ablation, or cardioversion).

Cardiac Resynchronization Therapy (CRT)
Despite the combination of various therapies for heart failure, some patients remain refractory to full medical treatment. Of the various nonpharmacological approaches, biventricular pacing or CRT has gained interest since its introduction in the early 1990s. CRT is the term applied to reestablishing synchronous contraction between the left ventricular free wall and the ventricular septum in an attempt to improve left ventricular efficiency and, subsequently, to improve functional class. Generally, CRT has been used to describe biventricular pacing, but cardiac resynchronization can be achieved by left ventricular pacing only in some patients (Hayes, 2008). Selected patients with moderate to severe heart failure may benefit from CRT or biventricular pacing. CRT, in combination with stable optimal medical therapy, may help the lower chambers of the heart beat together and improve the heart's ability to supply blood and oxygen to the body. CRT is designed to help the right and left ventricle (LV)s beat at the same time in a normal sequence treating ventricular dyssynchrony.

An implantable biventricular pacemaker is an advanced version of a standardized implantable pacemaker. The biventricular pacemaker is implanted in the muscle tissue of the chest, below the collarbone, or in the abdomen. Three leads or wires, one atrial lead and two ventricular leads, are transvenously connected from the pacemaker to both sides of the heart. In a small percentage of cases, it may not be possible to place the left ventricular lead transvenously. In such situations, some centers are opting for an epicardial approach if the transvenous approach is unsuccessful. The pacemaker sends out electrical impulses to the heart through the leads. Placement of a biventricular pacemaker can usually be accomplished in an outpatient setting under sedation or general anesthesia. A short inpatient stay may be required for epicardial left ventricular lead placement. Once the pacemaker is implanted, it is programmed so that both ventricles are stimulated to contract after atrial contraction with the goal of improving left ventricle function, reducing presystolic mitral regurgitation and improving LV diastolic filling time. The most frequently reported complication of CRT is lead dislodgement, which occurs in approximately 9% of patients.

CRT plus Implantable Cardioverter Defibrillator (ICD) System (CRT-D)
Some individuals with heart failure are also at high risk for life-threatening heart rhythms, ventricular tachycardia or ventricular fibrillation. Patients with heart failure who are at high risk for ventricular tachycardia and ventricular fibrillation may require a CRT system that includes implantable cardioverter defibrillator (ICD) therapy. The CRT plus ICD system (CRT-D) is designed to help the two lower heart chambers, the right and LVs, beat at the same time in a normal sequence, treating ventricular dyssynchrony. Additionally, should an individual experience an episode of ventricular tachycardia or ventricular fibrillation, the CRT-D system will detect the life-threatening arrhythmia and automatically correct the heart's rhythm.

Contraindications
Contraindications to biventricular pacemakers (CRT) or combination resynchronization-defibrillator devices are:

- Asynchronous pacing is contraindicated in the presence or likelihood of competitive paced and intrinsic rhythms.
- Unipolar pacing is contraindicated in individuals with an ICD because it may cause unwanted delivery or inhibition of defibrillator or ICD therapy.
- CRT-D devices are contraindicated for patients whose ventricular tachyarrhythmias may have transient or reversible causes and for patients with incessant ventricular tachycardia or ventricular fibrillation.
- CRT-D devices are contraindicated for dual chamber atrial pacing in patients with chronic refractory atrial tachyarrhythmias.

Echocardiography for CRT Therapy
Echocardiographic and Doppler imaging techniques have emerged to play a potential role in the care of the patient with CRT. Since some patients do not respond favorably after undergoing CRT, it has been suggested that one reason for nonresponse to CRT is that the ECG widened QRS is a suboptimal marker for dyssynchrony. The echocardiographic quantification of dyssynchrony may potentially play a role in improving patient selection for CRT (Gorscan, et al., 2008).

U.S. Food and Drug Administration (FDA)
Multiple biventricular pacemakers have been approved by the U.S. Food and Drug Administration (FDA) through the Premarket Approval (PMA) process for biventricular pacing alone (CRT) or biventricular pacing and defibrillation (CRT-D). Manufacturers of biventricular devices include St. Jude Medical (Sunnyvale, CA), Medtronic (Minneapolis, MN), Guidant Corp. (St. Paul, MN), and ELA Medical, Inc. (Plymouth, MN). FDA labeled indications include providing ventricular antitachycardia pacing and ventricular fibrillation for automated treatment of life-threatening ventricular arrhythmias. The systems are also intended to provide a reduction of the symptoms of moderate to severe heart failure (New York Heart Association [NYHA] Functional Class III or IV) in those patients who remain symptomatic despite stable, optimal heart failure drug therapy, an LVEF ≤ 35%, and a prolonged QRS duration. St Jude manufactures the Frontier® and Frontier® II biventricular pacing systems which has the additional indication for patients with chronic AF who have undergone atrioventricular node ablation and who have NYHA Class II or III heart failure.

Literature Review CRT in Heart Failure
Evidence in the published peer-reviewed literature, including randomized controlled trials and meta-analysis and systematic reviews, indicates that biventricular resynchronization therapy is effective at improving quality of life, patient functional capacity and heart failure symptoms among a subgroup of patients with advanced heart failure (NYHA Class III and IV), with or without ICD indications, left ventricular ejection fraction (LVEF) ≤ 35%, QRS duration ≥ 120 milliseconds (ms), sinus rhythm or chronic atrial fibrillation (AF), on an optimal pharmacologic regimen before implantation (Cleland, et al., 2009; Upadhyay, et al., 2008; Auricchio, et al., 2007; McAlister, et al., 2007; Lindenfeld, et al.,. 2007; Delnoy, et al., 2007; Sutton, et al., 2006; Gasparini, et al., 2006; Cleland, et al., 2005; Molhoek, et al., 2005; Doshi, et al., 2005; Molhoek, et al., 2004; Bristow, et al., 2004; Garrigue, et al., 2003; Abraham, et al., 2002; Leclercq, et al., 2002; Leone, et al., 2002; ECRI, 2002).

The 2007 National Institute for Health and Clinical Excellence (NICE) (United Kingdom) technology appraisal guidance document titled “Cardiac Resynchronisation Therapy for the Treatment of Heart Failure” recommends CRT as a treatment option for people with heart failure who meet the following criteria:

- currently or have recently experienced NYHA Class III–IV symptoms
- in sinus rhythm either with a QRS duration of 150 ms or longer estimated by standard electrocardiogram or with a QRS duration of 120–149 ms estimated by electrocardiogram and mechanical dyssynchrony that is confirmed by echocardiography.
- LVEF $\leq$ 35%
- receiving optimal pharmacological therapy

CRT-D may be considered for people who fulfill the criteria for implantation of a CRT-pacing (P) device and who also separately fulfill the criteria for the use of an ICD device.

The Agency for HealthCare Research and Quality (AHRQ) published a technology assessment in 2004 to examine the success rate and safety of biventricular pacemaker implantation and the efficacy of CRT in patients with heart failure. Nine trials were reviewed with a total of 3216 patients randomized to receive CRT. The mean

age was 64; 74% were male; 75% had NYHA Class III symptoms; and 10% had NYHA Class IV symptoms. The QRS duration ranged from ≥ 120 ms to > 200 ms. All of the trials restricted enrollment to patients with reduced EFs ranging from ≤ 35% to ≤ 40%. The authors reported that CRT improves functional and hemodynamic markers and reduces all-cause mortality by 25% and heart failure hospitalizations by 32% in patients with NYHA Class III or IV CHF, despite optimal medical management, reduced EFs, and prolonged QRS duration (McAlister, et al., 2004).

Literature Review CRT in Other Categories of Patients

Class I-II Heart Failure: Ongoing studies are evaluating the hypothesis that early use of CRT before the development of Class III symptoms may prevent or reverse remodeling, caused by prolonged ventricular conduction, thus preventing the progression of heart failure. Results of published trials are insufficient at this time to demonstrate that the use of CRT in Class I-II heart failure patients benefits patient outcomes.

In a multicenter, randomized controlled trial, Linde et al. (2008) studied whether CRT improves ventricular structure and function in patients with asymptomatic and mildly symptomatic heart failure. A total of 610 patients with NYHA functional class I or II heart failure with a QRS ≥ 120 ms and a LVEF ≤ 40% received a CRT device (±defibrillator) and were randomly assigned to active CRT (CRT-ON;n= 419) or control (CRT-OFF; n=191) for 12 months. The primary end point was the heart failure clinical composite response, which scores patients as improved, unchanged, or worsened. The prospectively powered secondary end point was LV end-systolic volume index. Hospitalization for worsening HF was evaluated in a prospective secondary analysis of health care use. Of the 419 patients assigned to the CRT-on group, 16% worsened compared to 21% of the 191 patients assigned to the CRT-off group, a difference that was not statistically significant (p=0.10). Therefore, the trial results did not meet the primary outcome. There was no significant difference in the number of hospitalizations between the two groups, but the time to first hospitalization was significantly delayed in the CRT-on group (hazard ratio 0.47, p=0.03). Left ventricular end-systolic volume index was evaluated as a measure of left ventricular remodeling. Patients assigned to the CRT-on group experienced a greater improvement in this outcome. These results suggest that while CRT can improve left ventricular remodeling, this improvement did not result in a significant improvement in clinical symptoms at one year.

In an observational study, Landolina et al. (2007) evaluated data from the InSync ICD Italian Registry to examine the effects of CRT in patients with NYHA Class II compared with effects in patients with NYHA Class IV heart failure. Nine hundred fifty-two patients (188 in NYHA Class II) were included in the study. At a median follow-up of 16 months, there were significantly fewer major cardiovascular events in NYHA Class II patients compared with NYHA Class III or IV patients. The percentage of patients who improved in NYHA class status was lower for Class II patients compared with patients who had more severe heart failure symptoms, although the absolute increase in ejection fraction (EF) was similar, as were the reductions in end-diastolic and end-systolic diameter. The study limitations include potential bias in patient selection and the lack of a control group. The pharmacologic therapy at enrollment was not optimal.

Narrow QRS Interval: Some patients with narrow QRS complexes have echocardiographic evidence of left ventricular mechanical dyssynchrony and may also benefit from CRT. Results of published trials are insufficient at this time to demonstrate that use of CRT in heart failure patients with a narrow QRS complex benefits patient outcomes.

In a prospective randomized clinical trial, Beshai et al. (2007) enrolled 172 patients who had a standard indication for an ICD. Patients received the CRT device and were randomly assigned to the CRT group or to a control group (no CRT) for six months. The primary end point was the proportion of patients with an increase in peak oxygen consumption of at least 1.0 ml per kilogram of body weight per minute during cardiopulmonary exercise testing at six months. At six months, the CRT group and the control group did not differ significantly in the proportion of patients with the primary end point (46% and 41%, respectively). In a prespecified subgroup with a QRS interval of ≥ 120 ms, the peak oxygen consumption increased in the CRT group (p=0.02), but it was unchanged in a subgroup with a QRS interval of ≤ 120 ms (p=0.45). There were 24 heart failure events requiring intravenous therapy in 14 patients in the CRT group (16.1%) and 41 events in 19 patients in the control group (22.3%), but the difference was not significant. The authors reported that CRT did not improve peak oxygen consumption in patients with moderate-to-severe heart failure, providing evidence that patients with heart failure and narrow QRS intervals may not benefit from CRT.

Patients with narrow QRS complex are currently not eligible for CRT, and the potential effects of CRT are not well-studied. In a prospective pilot study, Bleeker et al. (2006) studied the effects of CRT in heart failure patients with narrow QRS complex (<120 ms) and evidence of LV dyssynchrony on tissue Doppler imaging (TDI). The study participants included a total of 33 consecutive patients with narrow QRS complex and 33 consecutive patients with wide QRS complex (control group). Patient inclusion criteria included: LV dyssynchrony ≥ 65 ms on TDI, NYHA functional Class III/IV heart failure, and LVEF ≤ 35%. Baseline characteristics, particularly LV dyssynchrony, were comparable between patients with narrow and wide QRS complex (p=NS). No significant relationship was observed between baseline QRS duration and LV dyssynchrony (p=NS). The improvement in clinical symptoms and LV reverse remodeling was comparable between patients with narrow and wide QRS complex (mean NYHA functional class reduction 0.9 versus 1.1 (p=NS) and mean LV end-systolic volume reduction 39 versus 44 ml (p=NS). The authors reported that, "CRT appears to be beneficial in patients with narrow QRS complex and severe LV dyssynchrony on TDI, with similar improvement in symptoms and comparable LV reverse remodeling. These effects need confirmation in studies with larger populations." The authors noted that color-coded TDI measures the velocity of the myocardium, which may not always equal active myocardial contraction. Large, comparative studies are needed to define which technique is most accurate in the assessment of LV dyssynchrony.

Professional Societies/Organizations
The American College of Cardiology (ACC)/American Heart Association (AHA) and North American Society for Pacing (NASPE) guideline for device-based therapy for cardiac rhythm abnormalities (Epstein, et al., 2008) addresses recommendations for CRT in patients with severe systolic heart failure. This guideline is an update to the 2002 guideline. The committee reviewed and ranked evidence supporting current recommendations, with the weight of evidence ranked as Level A if the data were derived from multiple randomized clinical trials that involved a large number of individuals, Level B when data were derived either from a limited number of trials that involved a comparatively small number of patients or from well-designed data analyses of nonrandomized studies or observational data registries. Evidence was ranked as Level C when the consensus of experts was the primary source of the recommendation. Recommendations are classified as Class I, Class IIa, Class IIb, and Class III. Class I is defined as conditions for which there is evidence and/or general agreement that a given procedure or treatment is beneficial, useful and effective; Class II is defined as conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment. Class II recommendations are further defined as IIa, for which the weight of evidence/opinion is in favor of usefulness/efficacy, and Class IIb, for which the usefulness/efficacy is less well-established by evidence/opinion. Class III is defined as conditions for which there is evidence and/or general agreement that a procedure/treatment is not useful/effective and in some cases may be harmful.

Class I

- For patients who have LVEF ≤ 35%, a QRS duration ≥ 0.12 seconds, and sinus rhythm, CRT with or without an ICD is indicated for the treatment of NYHA functional Class III or ambulatory Class IV heart failure symptoms with optimal recommended medical therapy (Level of evidence A).

Class IIa

- For patients who have LVEF ≤ 35%, a QRS duration ≥ 0.12 seconds, and AF, CRT with or without an ICD is reasonable for the treatment of NYHA functional Class III or ambulatory Class IV heart failure symptoms on optimal recommended medical therapy (Level of Evidence B).
- For patients with LVEF ≤ 35% with NYHA functional Class III or ambulatory Class IV symptoms who are receiving optimal recommended medical therapy and who have frequent dependence on ventricular pacing, CRT is reasonable (Level of evidence C).

Class IIb

- For patients with LVEF ≤ 35% with NYHA functional Class I or II symptoms who are receiving optimal recommended medical therapy and who are undergoing implantation of a permanent pacemaker and/or ICD with anticipated frequent ventricular pacing, CRT may be considered (Level of evidence C).

Class III

- CRT is not indicated for asymptomatic patients with reduced LVEF in the absence of other indications for pacing (Level of evidence B).
- CRT is not indicated for patients whose functional status and life expectancy are limited predominantly by chronic noncardiac conditions (Level of evidence C).

The ACC/AHA Task Force on Practice Guidelines and the European Society of Cardiology (ESC) Committee for Practice Guidelines, developed in collaboration with the European Heart Rhythm Association and the Heart Rhythm Society, updated the practice guideline for the management of patients with AF. In general, the guideline states, "For those with impaired LV function not due to tachycardia, a biventricular pacemaker with or without defibrillator capability should be considered. Upgrading to a biventricular device should be considered for patients with heart failure and an right ventricle (RV) pacing system who have undergone atrioventricular node ablation" (Fuster, et al., 2006).

The ACC/AHA/ESC 2006 guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death addresses ventricular arrhythmias associated with cardiomyopathies. Class IIa recommendations with a level of evidence B are given for heart failure. The authors recommend, "ICD therapy combined with biventricular pacing can be effective for primary prevention to reduce total mortality by a reduction in sudden cardiac death (SCD) in patients with NYHA functional Class III or IV, are receiving optimal medical therapy, in sinus rhythm with a QRS complex of at least 120 ms, and who have reasonable expectation of survival with a good functional status for more than one year." Additionally, the authors recommend, "Biventricular pacing in the absence of ICD therapy is reasonable for the prevention of SCD in patients with NYHA functional Class III or IV heart failure, a LVEF $\leq$ 35%, and a QRS complex equal to or wider than 160 ms (or at least 120 ms in the presence of other evidence of ventricular dyssynchrony) who are receiving chronic optimal medical therapy and who have reasonable expectation of survival with a good functional status for more than one year."

In August 2005, the ACC/AHA Task Force on Practice Guidelines, in collaboration with the American College of Chest Physicians and International Society for Heart and Lung Transplantation, issued a guideline update for the diagnosis and management of chronic heart failure in adults (Hunt, et al., 2005). The guideline addresses CRT and CRT/ICD therapy for the treatment of heart failure. The authors recommend that there is strong evidence that CRT should be used for patients with LVEF $\leq$ 35%, sinus rhythm, and NYHA functional Class III or ambulatory Class IV symptoms despite recommended, optimal medical therapy, and who have cardiac dyssynchrony defined as QRS duration > 120 ms. The authors recommend that results from ongoing or future clinical trials are needed before recommending CRT for patients with right bundle-branch block, minor conduction abnormality, AF, and pacemaker dependence, as well as inadequate medical therapy.

Patient selection criteria for CRT were reported in an AHA Science Advisory by Strickberger et al. (2005). The inclusion criteria for the published trials that have randomized patients to CRT included patients with sinus rhythm, a QRS complex duration > 120–130 ms, heart failure resulting from systolic dysfunction with NYHA Class III or IV symptoms, and optimal medical treatment for heart failure, including beta-blockers, angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers, and diuretics. Based on the results of the studies and the inclusion criteria, the evidence supports CRT in patients with systolic dysfunction and heart failure resulting from either ischemic or nonischemic cardiomyopathy who have an LVEF $\leq$ 35%; are in NYHA Class III or IV; are on maximal medical therapy; have a QRS complex duration > 120 ms; and are in sinus rhythm. The authors reported a variety of unresolved issues, including the role of CRT for patients with NYHA Class II symptoms or with AF, identification of responders to CRT, and the role of CRT in other categories of patients.

Summary
The evidence in the peer-reviewed published literature supports the use of cardiac resynchronization therapy (CRT) or biventricular pacing to alleviate some of the symptoms of severe heart failure in patients who have evidence of ventricular asynchrony, poor cardiac function and failed optimal drug therapy. The clinical studies report improved cardiac function, exercise tolerance, and quality of life in patients with severe heart failure. These studies report a decrease in heart failure-related hospitalizations and a decrease in mortality. Similar findings are reported in clinical studies of CRT plus ICD system (CRT-D) therapy in patients with severe heart failure, ventricular asynchrony, and risk of life-threatening ventricular arrhythmias. Numerous randomized clinical trials provide data to identify appropriate patients for CRT or CRT-D therapy. Optimal candidates for

CRT or CRT-D therapy have heart failure with LVEF ≤ 35%, a QRS complex ≥ 120 ms, sinus rhythm or chronic atrial fibrillation (AF) and NYHA functional Class III or IV despite maximal medical therapy for heart failure.

There is insufficient evidence in the published, peer-reviewed, scientific literature demonstrating the safety and efficacy of CRT therapy in other categories of patients. Further randomized controlled studies with larger sample sizes are required in order to validate CRT therapy in other categories of patients.

Appendix A

The New York Heart Association (NYHA) classification of heart failure is a 4-tier system that categorizes patients based on subjective impression of the degree of functional compromise. The chart below defines the four NYHA functional classes. Advanced heart failure is categorized as NYHA Class III and Class IV.

Class I:	patients with cardiac disease but without resulting limitation of physical activity; ordinary physical activity does not cause undue fatigue, palpitation, dyspnea or anginal pain; symptoms only occur on severe exertion
Class II:	patients with cardiac disease resulting in slight limitation of physical activity; they are comfortable at rest; ordinary physical activity results in fatigue, palpitation, dyspnea or anginal pain
Class III:	patients with cardiac disease resulting in marked limitation of physical activity; they are comfortable at rest; less than ordinary activity (e.g., mild exertion) causes fatigue, palpitation, dyspnea or anginal pain
Class IV:	patients with cardiac disease resulting in inability to carry on any physical activity without discomfort; symptoms of cardiac insufficiency or anginal syndrome is present at rest; if any physical activity is undertaken, discomfort is increased

Coding/Billing Information

Note: This list of codes may not be all-inclusive.

Covered when medically necessary:

CPT®* Codes	**Description**
33202	Insertion of epicardial electrode(s); open incision (eg, thoracotomy, median sternotomy, subxiphoid approach)
33203	Insertion of epicardial electrode(s); endoscopic approach (eg, thoracoscopy, pericardioscopy)
33207	Insertion or replacement of permanent pacemaker with transvenous electrode(s); ventricular
33208	Insertion or replacement of permanent pacemaker with transvenous electrode(s); atrial and ventricular
33211	Insertion or replacement of temporary transvenous dual chamber pacing electrodes
33213	Insertion or replacement of pacemaker pulse generator; dual chamber
33214	Upgrade of implanted pacemaker system, conversion of single chamber to dual chamber system (includes removal of previously placed generator, testing of existing lead, insertion of new lead, insertion of new pulse generator)
33217	Insertion of transvenous electrode; dual chamber (two electrodes) permanent pacemaker or dual chamber pacing cardioverter-defibrillator
33224	Insertion of pacing electrode, cardiac venous system, for left ventricular pacing, with attachment to previously placed pacemaker or pacing cardioverter-

	defibrillator pulse generator (including revision of a pocket, removal, insertion and /or replacement of a generator
33225	Insertion of pacing electrode, cardiac venous system, for left ventricular pacing, at time of insertion of pacing cardioverter-defibrillator or pacemaker pulse generator (including upgrade to dual chamber system)
33226	Repositioning of previously implanted cardiac venous system (left ventricular) electrode (including removal, insertion and/or replacement of a generator)

HCPCS Codes	**Description**
C1882	Cardioverter-defibrillator, other than single or dual chamber (implantable)
C2621	Pacemaker, other than single or dual chamber (implantable)

ICD-9-CM Diagnosis Codes	**Description**
398.91	Rheumatic heart failure (congestive)
402.01	Hypertensive heart disease, malignant, with heart failure
402.11	Hypertensive heart disease, benign, with heart failure
402.91	Hypertensive heart disease, unspecified, with heart failure
404.01	Hypertensive heart and renal disease, malignant, with heart failure
404.03	Hypertensive heart and renal disease, malignant, with heart failure and renal failure
404.11	Hypertensive heart and renal disease, benign, with heart failure
404.13	Hypertensive heart and renal disease, benign, with heart failure and renal failure
404.91	Hypertensive heart and renal disease, unspecified, with heart failure
404.93	Hypertensive heart and renal disease, unspecified, with heart failure and renal failure
410.00-410.92	Acute myocardial infarction
412	Old myocardial infarction
425.1	Hypertrophic obstructive cardiomyopathy
427.1	Paroxysmal ventricular tachycardia
427.31	Atrial fibrillation
427.41	Ventricular fibrillation
427.5	Cardiac arrest
428.0-428.9	Heart failure

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Policy History

Pre-Merger Organizations	Last Review Date	Policy Number	Title
CIGNA HealthCare	8/15/2008	0174	Biventricular Pacing/Cardiac Resynchronization Therapy (CRT)