

► **Contractility Therapy: Helping the Heart to Regain Strength**

Can we teach the failing human heart to pump with greater strength? The answer appears to be yes, and a novel device now in use at Virtua Health is conditioning heart muscle to contract more robustly in patients who face the challenge of congestive heart failure (CHF).

Not all patients suffering from CHF have complete improvement from guideline-directed drug therapy. For such patients with moderate-to-severe heart failure, a new device, the Optimizer Smart System®, from Impulse Dynamics, uses cardiac contractility modulation (CCM) therapy to stimulate and recondition the myocardium.

“This is a completely new approach,” said Virtua cardiac electrophysiologist Heath Saltzman, MD, FACC, FHRS, FACP. “Its success in reducing symptoms and improving patient activity levels has been remarkable.”

Current Stimulates Myocardial Cells

The Virtua electrophysiology team implants two standard pacemaker leads in the right ventricular septum and connects them to the pulse generator that is placed in the pectoral region. The programmed device provides precisely timed non-excitatory electrical pulses to heart cells during the heart’s absolute refractory period (the instant immediately after it contracts). It delivers this CCM therapy to the heart ventricles in one-hour sessions prescheduled periodically throughout the day. The device does not interfere with the function of implantable cardiac defibrillators.

The current affects the myocardial cells, causing them to experience rapid changes in their biochemical activity, specifically in phosphorylation of key proteins and improved calcium cycling. This eventually leads to greater contractile force with no increase in myocardial oxygen consumption. The heart muscle cells gradually reverse from heart failure phenotype to normal phenotype, and local effects start to improve contraction at a global cardiac level.

Heart Failure Scores Markedly Improve

Most patients return home the day of implantation and resume normal activities. **After several months, beneficial effects include improvement in:**

- Minnesota Living with Heart Failure scores
- New York Heart Association heart failure class (by greater than or equal to one class on average)
- Peak VO₂ and six-minute walk test.

The device also has been shown to reduce heart failure readmissions by about 75%. Patients have improvement in left ventricular ejection fraction and reduction in left ventricular end-diastolic volume. The FDA gave the device breakthrough designation and, soon thereafter (March 2019), cleared it for clinical use. **Criteria to qualify for this CCM therapy include:**

- Left ventricular ejection fraction of 25 to 45%
- NYHA Class III heart failure symptoms

Patients charge the device for one hour per week using an external charger placed against the chest.

“This is a breakthrough, first-of-its kind system for improving quality of life for a vast population of heart failure patients,” said Dr. Saltzman, “and it has already done so for thousands of patients struggling with the symptoms of CHF.”

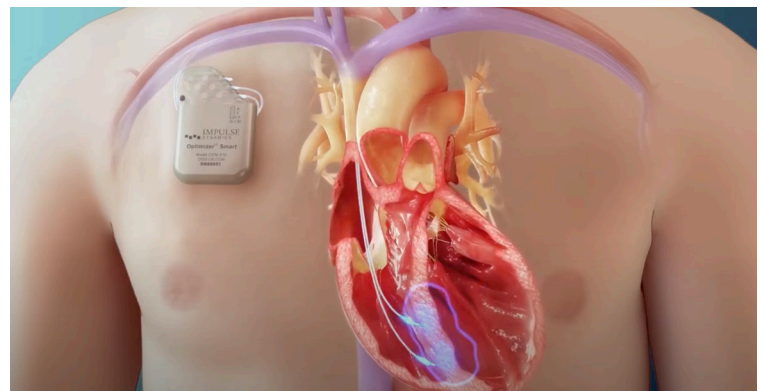


image courtesy Impulse Dynamics

CCM therapy improves the heart’s contractility by modifying the function and expression of proteins in heart muscle through a reverse-remodeling effect, thus enhancing the overall function of the heart.

To contact cardiac electrophysiology services at Virtua, call **856-424-3600**.

Virtua Our Lady of Lourdes is First EP Lab in NJ and Phila. to Achieve ACC Accreditation

The Electrophysiology Laboratory at Virtua Our Lady of Lourdes Hospital recently became the first EP service in New Jersey and Philadelphia to receive accreditation from the American College of Cardiology. ACC Accreditation Services help hospitals implement evidence-based guidelines, quality initiatives, and best practices to improve cardiovascular outcomes and reduce variations in care. In pursuit of this new distinction, which requires labs to meet or exceed certain stringent criteria, the EP service at Virtua underwent rigorous onsite review of the staff's ability to evaluate, diagnose, and treat patients. A successful team effort resulted in this validation and recognition by the ACC of the achievements and capabilities of the Virtua heart rhythm program, putting a stamp of quality on their delivery — including interventions such as implantable heart monitors, pacemakers, and cardioverter defibrillators.

“Virtua Our Lady of Lourdes has demonstrated its commitment to providing South Jersey with excellent heart care,” said Phillip D. Levy, MD, FACC, chair of the ACC Accreditation Management Board. “ACC Accreditation Services is proud to award Virtua with Electrophysiology Accreditation.”

The process of evaluating EP services at Virtua included completing a gap analysis, examining variances of care, streamlining processes, implementing guidelines and standards, adopting best practices in specific treatment steps, and monitoring for sustained success. The program helped the EP and administrative staff to further emphasize patient education and to focus on more effective and efficient disease control. The ACC program seeks to optimize patient outcomes and improve hospital financial performance.

“Our electrophysiologists are among leaders in the field, adopting the most advanced devices and procedures to improve the lives of our patients, including hybrid ablation for persistent atrial fibrillation, the Watchman device for stroke prevention without the need for blood thinners, the Micra leadless pacing system, and the newest generation of pacemakers, defibrillators, and monitors,” said Darius Sholevar, MD, FACC, FHRS, Chief of Electrophysiology at Virtua Our Lady of Lourdes Hospital.

The staff has also been involved in leading the way in the region in use of prehospital ECG telemetry; emergency department cardioversion; and nonsurgical, catheter-based heart ablation.

Aatish Garg, MD, an electrophysiologist who recently joined Virtua's heart rhythm team said, “The electrophysiology labs here have long been a source of pride for this cardiac program, which is recognized nationally for excellence in care.”

