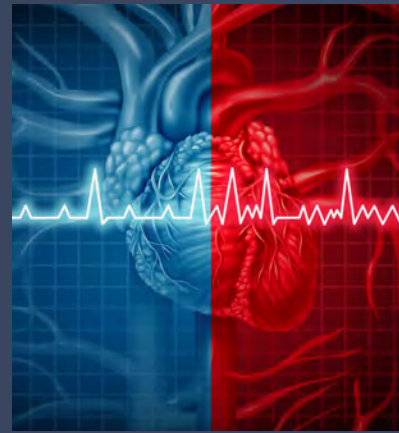


# EECP NOW

Issue #1 | April 2021



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In memory of  
**Dr. Rohit Arora**—dear friend,  
colleague, and EECP pioneer.

# Welcome

Welcome to EECP NOW, a triannual publication dedicated to the ever-evolving world of Enhanced External Counterpulsation (EECP). In this inaugural edition, we take a look at the history of EECP, tracing its conception in the early 1950s to the modern day, where refinements in technology and a growing awareness of the efficacy of the treatment have given rise to a boom in EECP's popularity as a safe and noninvasive solution for many refractory angina patients. We also examine current EECP-related literature, and explore the impact the treatment is having around the world. Finally, we speak to a leader in the field of EECP therapy, and learn of his vision for the future of the treatment.

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# 1 Enhanced External Counterpulsation (EECP): A Brief History

To trace the origins of EECP, we must travel back to 1950s New York, where brothers Arthur and Adrian Kantrowitz were hard at work on a study titled “Experimental augmentation of coronary flow by retardation of the arterial pressure pulse.” Adrian, a physician who would later go on to perform the first heart transplant in the United States, was among a handful of researchers exploring the possibility of developing mechanical devices to support failing hearts. The Kantrowitz brothers’ study suggested that coronary blood flow could be improved by diastolic augmentation, and demonstrated a score of benefits, including increases in aortic diastolic pressure, diastolic pressure-time index, cardiac output, ejection fraction, and myocardial oxygen supply, while providing decreases in peak systolic aortic pressure, left ventricular end-diastolic pressure, and myocardial oxygen consumption. This research would lead to the development of the intra-aortic balloon pump (IABP), an internal counterpulsation device that inflates a balloon to augment diastolic pressure and deflates it to reduce left ventricular afterload, leading to a reduction

in myocardial work. Since its inception in 1967, the IABP has been used worldwide to treat cardiogenic shock in over three million people, including Arthur Kantrowitz himself.

The path from the Kantrowitz brothers’ groundbreaking research into counterpulsation to what is today known as EECP can be broken into four principal stages of development. The first of these began in 1953 with Dr. John Gibbon, inventor of the heart-lung machine. This device, also known as a cardiopulmonary bypass machine, is so-named because it controls the pumping and oxygenation of blood by bypassing heart and lungs, thus keeping patients alive while surgeons operate on their hearts. Five years later, in 1958, the first coronary angiography was performed, allowing physicians to identify blockages in coronary arteries. During this

procedure, also called a cardiac catheterization, a catheter is inserted into an artery and fed up to the heart, where a contrast dye is deployed and images of the coronary arteries are captured to identify the presence of blockages.

As this breakthrough was taking place and the first coronary artery bypass (CABG) surgeries were being performed in the 1960s, William C. Birtwell experimented with inserting catheters into the femoral arteries of animals, withdrawing blood during systole and reinjecting it during diastole. The aim of Dr. Birtwell’s research was to demonstrate a reduction of arterial wall stress and improvement in diastolic coronary flow. The study proved highly successful in this regard, but could not be applied practically from a clinical standpoint, on account of the



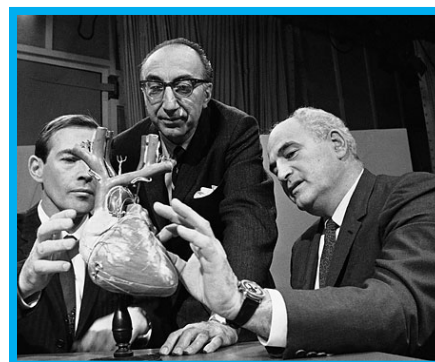


tremendous hemolysis incurred, as well as other problems. Researchers began to turn their attention to developing a less invasive means of achieving counterpulsation. They theorized that by exerting pressure on the legs and buttocks during diastole, then releasing this pressure during systole, the same physical effects might be achievable. By 1968, a hydraulic pressure apparatus was developed, using water to provide leg compression. Unfortunately, the devices were quite unwieldy and not terribly effective, and thus did not gain much traction.

The second stage in the evolution of EECP came in the 1970s. During this time, the focus of the cardiovascular research conducted in the United States was aimed at refining the highly successful CABG and angioplasty procedures that had recently come into practice. Little to no attention was paid to noninvasive solutions, like counterpulsation. Thankfully, this was not the case in all parts of the globe. Chinese physicians, intrigued by the cost-effective and noninvasive nature of EECP, sought to refine the procedure.

To this end, Dr. Zeng-Sheng Zheng (often dubbed “The Father of EECP”) of Sun Yat-sen University of Medical Sciences led a team of researchers to develop a system that would reproduce the effects of the hydraulic counterpulsation machines with air, via pneumatic cuffs. The cuffs were designed to inflate from the legs to the buttocks, pushing blood flow back to the heart. A short time later, the same research team would add arm cuffs to the treatment, designating the procedure “sequential ECP,” or SECP. Dr. Zheng’s earliest experiments with his newly-minted system were conducted on pigs, and demonstrated that the treatment could develop new arteries in the heart, an effect known as angiogenesis. Subsequent human experiments in patients with angina pectoris and acute myocardial infarction revealed that the treatment provided long-term relief from angina symptoms in more than 90% of participants, with minimal relapse.

Dr. Zheng’s research attracted the attention of an American company called Vasomedical in 1982, and thus began a collaboration that would



give rise to the third major phase in the advancement of what would now be termed “EECP,” or enhanced external counterpulsation. Nearly 90% of the EECP research conducted in the following two decades can be attributed to Vasomedical, and the depth and quality of this research would later prove invaluable to the growth and widespread acceptance of the treatment.

The path to such acceptance was not an easy one, though. In spite of a number of both domestic and foreign studies that supported the use of EECP as an effective treatment modality for angina, the United States Health Care Financing Administration (HFCA) denied approval for the treatment, citing the need for a double-blind study with published research. This prompted the 1997 Multicenter Study of EECP (MUST EECP Trial), which monitored 139 patients at seven medical centers in a double-blind study. Then came the establishment of the 1998 International EECP Patient Registry (IEPR), in which many of the same pioneering physicians, including Rohit Arora, John Hui, and William Lawson, worked together to compile data detailing the safety and efficacy of EECP. In the following year, the results of these efforts were published in the peer-reviewed Journal of American College of Cardiology’s June 1999 issue.

In spite of Vasomedical having satisfied the HFCA’s conditions



with an abundance of supporting evidence, coverage for EECP was again denied.

Finally, in 1999, Vasomedical enlisted the help of Senator Edward Kennedy, and together they petitioned the Senate Finance Committee, ultimately resulting in Centers for Medicare and Medicaid Services (CMS) coverage for EECP in the year 2000, some five years after FDA approval, but under very strict conditions. **(See Figure 1)**

## CMS Indications for EECP Treatment:

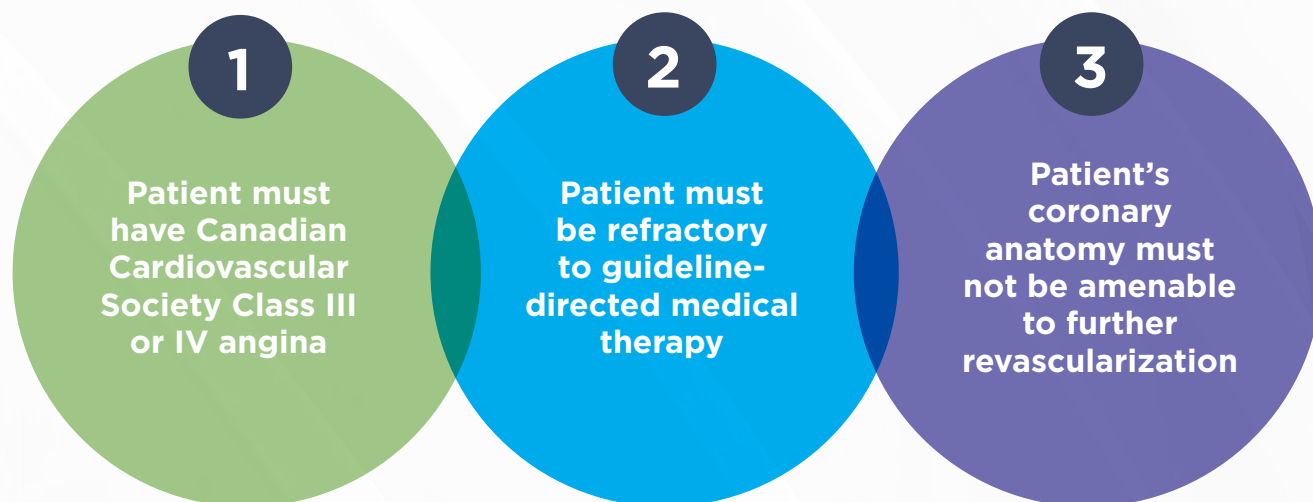


Figure 1

The Food and Drug Administration (FDA) approved EECP as a treatment for congestive heart failure in 2002, and in 2005, Vasomedical published the results of its Prospective Evaluation of Enhanced External Counterpulsation in Congestive Heart Failure (PEECH) study. This study found marked improvements in congestive heart failure patients' New York Heart Association (NYHA) class after one series of EECP.

That brings us to the present day, the fourth and ongoing phase in the evolution of EECP, in which technological refinements continue to be made, and a number of enterprising physicians around the globe persist in their efforts to raise awareness for this truly life-changing treatment. When one weighs the relative infancy of EECP against the countless patients who have benefitted from it worldwide, it would seem that the sky is indeed the limit for this still-too-little-known therapy.



## 2 TIMELINE

### **EARLY 1950s**

The first counterpulsation techniques are invented at Harvard University.

### **1953**

The Kantrowitz brothers (Adrian and Arthur) conceive of Diastolic Augmentation (increasing pressure to the coronary arteries during the diastolic phase of the heart), leading to the theory that blood flow could be improved to the ischemic myocardium through increased coronary perfusion.

### **Late 1950s**

Harken Associates and Birtwell, Sarnoff develop counterpulsation techniques at Harvard University.

### **Early 1960s**

Lab studies on animals show potential efficacy of counterpulsation as a treatment following coronary occlusion, suggesting a possible clinical application for patients with coronary insufficiency and angina.

### **1963**

Jacoby et al gauged the effect of counterpulsation on the development of collaterals in the hearts of dogs. Angiograms before and after demonstrated marked development of such collaterals.

### **Mid 1960s**

Scientists experiment with creating crude external hydraulic devices that apply pressure for counterpulsation. These machines were shown to improve outcomes in patients with cardiogenic shock and myocardial infarction.

### **Late 1960s**

NIH researchers discover enhanced results from sequential rather than non-sequenced pulsation.

### **Early 1970s**

FDA grants approval for EECP as a treatment for cardiogenic shock and myocardial infarction.

### **Mid 1970s**

Zheng-Shen Zhen and associates develop a new form of ECP machine, relying on air, rather than water to apply pressure to extremities, thus doing away with awkward and unwieldy hydraulic machines and providing an easy method of delivering the treatment.



## 1982

Dr. Zheng comes into contact with Vasomedical. Sequential external counterpulsation (SECP) is renamed EECP, enhanced external counterpulsation. Zheng relocates to the United States.

## Mid 1980s

Researchers in the United States and China continue to carry out EECP research with favorable results. Results confirm that sequential systems raise diastolic pressure much more effectively than their non-sequential counterparts.

## 1989

Researchers from the State University of New York at Stony Brook demonstrate that EECP has long-term benefits for angina pectoris patients, sometimes up to three years after treatment.

## 1995

EECP receives FDA approval as a treatment for angina pectoris.

## 1997

The Multicenter Study of EECP (MUST EECP Trial) is conducted with the cooperation of seven medical centers and 139 patients, further demonstrating the safety and efficacy of the treatment.

## 1999

The results of the MUST EECP Trial are published in the Journal of American College of Cardiology in June.

## 2000

Grant Bagley, MD, director of HCFA Coverage and Analysis, approves EECP for reimbursement.

## 2002

The American Heart Association and the American College of Cardiology issue guidelines on the treatment of angina, mentioning EECP. The FDA approves EECP for treatment of congestive heart failure.

## 2004

Further studies suggest that EECP confers benefits on patients with stabilized heart failure.

## 2007

The EECP program at Buena Park Heart Center is launched

# 3 EECP Around the World

Like many of the technologies we enjoy today, enhanced external counterpulsation (EECP) may rightly be deemed an international invention. First conceived in a Harvard University laboratory, the treatment would undergo a series of refinements both in the United States and abroad, before materializing in the form we know and appreciate today. In this article, we will explore the impact of the international community on the development of EECP, examine some of the present-day efforts being made to refine and further promulgate the therapy, and seek to answer why, despite widespread acceptance abroad, the treatment remains underutilized in the West.

To properly assess the influence of the international community on the evolution of EECP, one must look to 1970s China. Here, as we discussed previously in *Enhanced External Counterpulsation (EECP): A Brief History* (page X), Dr. Zeng-Sheng Zheng and his associates at Sun Yat-sen University of Medical Sciences experimented with various methods that would reproduce the effects of bulky and difficult-to-operate hydraulic counterpulsation machines with more convenient and user-friendly mechanisms. Eventually, the team settled on

pneumatic cuffs that used air, rather than water, to generate pressure. At a time when the West had turned its focus almost entirely to high-tech invasive surgical procedures to treat heart disease, Dr. Zheng and his team worked tirelessly to improve upon a treatment modality that had been all but abandoned by physicians in its country of origin. Why, given the smashing success of coronary artery bypass surgery (CABG) and angioplasty in North America, did Zheng—and indeed the Chinese government—devote such time and resources to a comparatively cumbersome and outdated piece of machinery?

The answer to this question is in fact ancient in origin. It stems from an Eastern medical ethos distinct for its focus on promoting self-healing. In this philosophy practiced widely throughout Asia, the purpose of medical intervention is to help a patient's body heal itself—to assist the body's innate ability to self-repair, and avoid any external influences that would impede such processes. As such, invasive procedures are considered a last resort, and generally discouraged. This was particularly true when Dr. Zheng was performing his experiments in the 1970s, as China had not yet

begun to adopt many of the Western methodologies it practices today. Mastering counterpulsation, then, represented offering to Chinese patients a safe and noninvasive approach to the treatment of heart disease that was consistent with their philosophical beliefs.

For economic reasons, too, the Chinese were strongly incentivized to pursue counterpulsation—a factor again traceable to long-held medical traditions. The foundation of Traditional Chinese Medicine (TCM), which has been practiced for centuries, is one of disease prevention. Under this system, patients in good health make regular visits (and payments) to their doctors for acupuncture, herbs, teas, and general lifestyle advice aimed at maintaining their wellbeing. In the event that a patient should fall ill, the doctor is presumed to have failed at his/her job, and payment for medical services are suspended until the patient is rehabilitated. This, of course, works opposite to the Western model, in which one seeks out a doctor when unwell, and pays for services rendered in the interest of restoring one's health. Fascinatingly, even as China began to invent and adopt more modern treatment methods in the



1900s, the attitude toward payment for medical services remained largely unchanged until quite recently. Doctors in 1970s China were paid higher for keeping patients out of hospitals, thus motivating them to avoid unnecessary tests and procedures and seek out safe and convenient ways to maintain health. Counterpulsation represented an ideal method for treating heart disease and avoiding unfavorable—and costly—outcomes for patients. The treatment remains tremendously popular today for a wide variety of conditions, including Parkinson's disease, strokes, and visual impairments. To date, over two million patients have now received the EECP in the country.

India represents another global hotspot for EECP, thanks to

the exhaustive efforts of a number of physicians with a true passion for the treatment. At the forefront of the EECP movement in this region is Dr. Subramanian Ramasamy, President of the International Cardiology EECP/ECP Society (ICES), an organization whose goals are focused on advancing EECP through research, training, and a variety of other means. The steadfast commitment of Dr. Ramasamy and others like him have helped to establish EECP as a well-known and popular treatment for cardiac patients in India.

With EECP-enabled medical centers having now been established around Europe, the Middle East, Africa, and Oceania, the therapy has indeed reached global status.

Ironically, it was perhaps

on account of the great success of roughly concurrent breakthrough surgical techniques that counterpulsation therapy failed to gain greater traction in the 1970s, and has, despite numerous refinements since, still failed to achieve mainstream status. Because EECP is not part of the standard medical school curriculum, many North American cardiologists have only a passing knowledge of the treatment. To some, it is nothing more than fringe science. Nonetheless, the intense enthusiasm for EECP among its providers in the region gives hope that the safe, cost-effective, and noninvasive treatment will one day become a household name.



# EECP

Buena Park Heart Center (BPHC) is proud to announce the publication of our latest medical review article, titled Enhanced external counterpulsation: A unique treatment for the “No Option” refractory angina patient in The Journal of Clinical Pharmacy and Therapeutics (JCPT).

In this open-access article, which can be read and printed free-of-charge at <https://doi.org/10.1111/jcpt.13330>, BPHC Medical Director Dr. Jose Caceres and colleagues draw upon a wealth of peer-reviewed data to explore the numerous benefits EECP therapy may offer to refractory angina patients once believed to have no further avenues for relief.

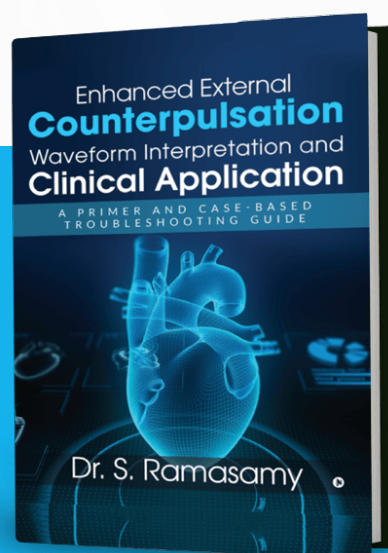
On the adjacent page, you will find a snippet from the article whose collaborating authors include the late Dr. Rohit Arora, a pioneer and invaluable figure in the field of EECP research.



Buena Park Heart Center recently had the good fortune of obtaining this, the first EECP clinical training textbook to enter print. Within the pages of this comprehensive text, the eminent Dr. S. Ramasamy provides readers with an A-Z breakdown of EECP, beginning with a description of the cardiovascular system and continuing through both basic and advanced mechanisms of EECP. Dr. Ramasamy's commitment to educating EECP practitioners on the techniques necessary to achieve the greatest outcomes for patients is evident in his concise writing and use of abundant visual aids throughout the text. He includes a troubleshooting section, too, to address any difficulties EECP technicians may encounter.

This one-of-a-kind book is a must-read for EECP practitioners, cardiologists looking to familiarize themselves with the treatment, and even EECP patients interested in better understanding the precise mechanisms through which they are benefitting from the therapy. It is written in a friendly but highly informative style agreeable to readers of all types.

For more information, please visit: <https://www.healurheart.com/book/>



5

# EECP Newsletter

## Interview



**Q.** Good afternoon, doctor Caceres. Thank you for taking the time to talk to me today.

**A.** It's my pleasure. Thank you for the opportunity.

**Q.** We're here today to discuss a medical treatment that many people may not be familiar with. For the benefit of those who have never heard of EECP, could you give us a brief summary of what it is and how it works?

**A.** I'd be glad to. Enhanced External Counterpulsation is a noninvasive, safe, and cost effective treatment for patients with symptomatic coronary artery disease. It is an outpatient therapy consisting of three sets of pneumatic cuffs that are wrapped around the calves, thighs, and buttocks of the patient. Inflation and deflation of the cuffs is timed to the patient's EKG while the arterial pressure waveform is monitored in one of the fingers. The cuffs are sequentially inflated, starting from the calves, to the thighs to the buttocks, at the onset of diastole, when the heart relaxes. This creates a strong retrograde counterpulse in the arterial system, forcing oxygenated blood toward the heart and coronary arteries, while concurrently increasing the venous blood return to the heart under increased pressure. This is followed by simultaneous deflation of the cuffs before the onset of systole, when the heart contracts. The end result of this sequential inflation and deflation of the cuffs in the lower extremities is an increase in the blood flow and perfusion pressure of the coronary arteries.

**Q.** I can tell from the passion with which you speak about it that this is something you really believe in.

**A:** My belief in EECP is based on the hemodynamic effects and clinical benefits of multiple studies since the first randomized, blinded, controlled trial was conducted in seven university hospitals in our country and published in 1999 by Rohit Arora and associates.

As a cardiologist, it was problematic to me that I had patients who had residual angina pectoris, despite conventional optimal medical therapy and revascularization, including percutaneous coronary intervention and/or coronary artery bypass grafting surgery. I began to research whether there was indeed no option for these so-called "no-option" patients. I discovered EECP and was highly encouraged by the results.

So, in 2007, we began EECP in our office for patients with medically refractory angina pectoris and Canadian Cardiovascular Society (CCS) classification class III -IV, with wonderful results.

It was then and remains to this day very rewarding to see the way in which EECP markedly alleviates angina pectoris (from CCSC III to I) and improves the quality of life in the vast majority of my patients. In fact, we have seen about an 85% success rate in our more than 13 years of experience with EECP.

For example, we recently had a 78 year-old-patient with angina pectoris—CCS III—despite GDMT, CABG X 4, and PCIs, with a total perfusion defect (TPD) reversible of 32% by PET scan before EECP. After 35 sessions

of EECP, his symptoms improved to angina CCS I, and a few months later, a repeat PET scan revealed a reversible TPD of only 5%.

**Q.** Yet there really aren't many places offering this treatment, are there?

**A.** Years ago, it was not unusual for some of my colleagues to have an EECP bed in their offices.

The current CMS guidelines for EECP therapy mandate that candidates for the treatment must have documented CAD, and should have disabling angina despite optimal tolerable medical therapy, with CAD no longer amenable to further revascularization with PCI and/or CABG surgery. In other words, CMS will only reimburse for EECP therapy as a last resort for patients with refractory angina and no further options. What's more, although EECP has been demonstrated to be useful for other cardiac and non-cardiac conditions, such as restless legs syndrome and various noncardiac conditions, at present the therapy is covered by Medicare for patients with refractory angina only.

I'm sorry to say there have been several EECP facilities that have not adhered to these strict CMS EECP guidelines, abused the system, or even committed fraud, resulting in their closure.

On the other hand, I'm very happy to say that we at Buena Park Heart Center, having now operated for more than 13 years, have become the largest and best equipped center in Southern California, with a solid reputation to deliver EECP in a state-of-art facility.

**Q.** I read your most recent review article on EECP, and in it you referred to the treatment as "underutilized." Why do you suppose that is?

**A.** There are several reasons. First, most practicing cardiologists today don't have hands-on experience with EECP. Many of the university medical centers that train

cardiology fellows do not have an EECP therapy program. This lack of exposure to EECP and the interrupted follow-up of patients with refractory angina pectoris (RAP) makes for missed opportunities to witness how much of a difference EECP can make in decreasing symptoms and improving the quality of life of these patients.

Also, it is easier to perform a percutaneous coronary intervention of a single significant coronary stenosis in a matter of minutes than to treat all coronary lesions to improve coronary blood flow in 35 sessions of one hour each.

**Q.** Then would you say it is a mission of yours to raise public awareness of EECP?

**A.** Absolutely, yes.

When we launched our EECP program in 2007, it was obvious that most cardiologists in the community were not familiar with this alternative to treat patients with RAP.

This motivated us to publish in 2008 the clinical results of EECP in 26 consecutive patients treated over a period of 9 months. Then, in 2012, we distributed a 16-page publication regarding the "Role of EECP in Stable Ischemic Heart Disease." Our first EECP symposium on RAP was done a couple of years later on October 29, 2014, with Dr. Rohit Arora as the main speaker. We then hosted a second symposium in 2015, featuring national experts in RAP and EECP, which was well-attended. Since then, we have developed conferences and newsletters for patients, primary care providers, and cardiologists, in the interest of making the treatment better known.

More recently, we published a peer-reviewed article of EECP as a unique treatment for the "no-option" patient with refractory angina in the Journal of Clinical Pharmacy and Therapeutics (JCPT), which is open access and can be read and printed freely.



In spite of all these efforts, however, EECP is still not a mainstream treatment for symptomatic refractory CAD in the USA, as it is in other countries, and it remains a Class IIb recommendation for patients with revascularization and residual myocardial ischemia.

In these difficult times, we remain committed to providing EECP therapy with the highest standard of medical care in a safe, comfortable, and spacious environment where social distancing measures can be and indeed are observed at all times.

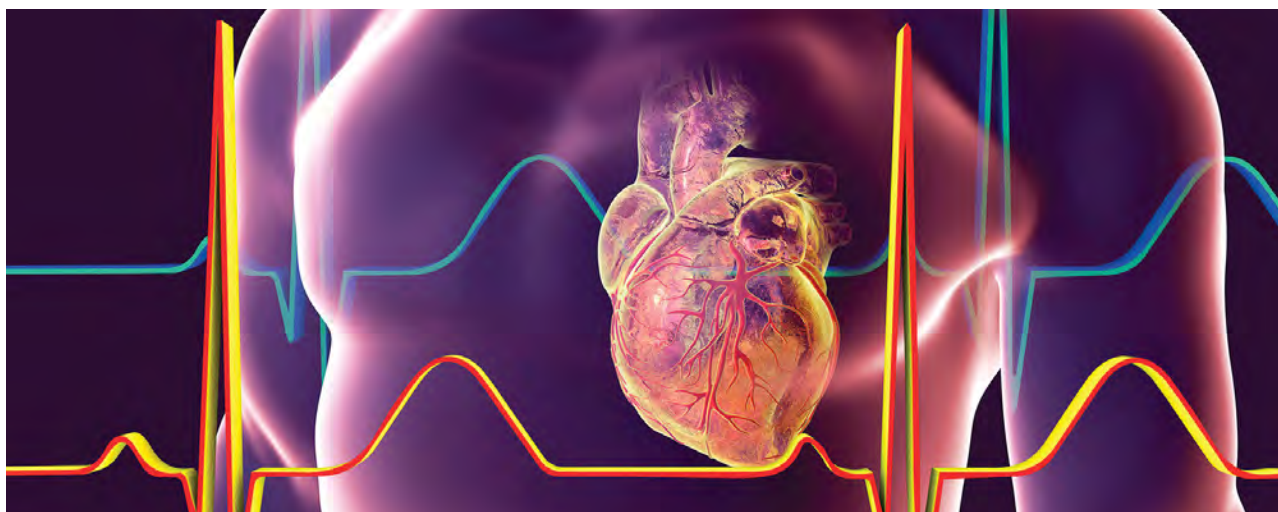
**Q.** And finally, because we are in the midst of a pandemic, I have to ask you about safety. Many of the patients who could benefit from EECP are also in the “high risk” category for COVID-19. Is it safe for them to come for the treatment at a time like this?

**A.** Since April of 2020, we have very strictly adhered to the CDC safety measures regarding prevention of COVID-19 infection in our facility. The health and safety of our patients is of the utmost importance to us, so we are taking every possible precaution to ensure that our facility is a safe and stress-free environment for all patients.

All EECP patients are screened for symptoms or signs of COVID-19 infection before they receive EECP therapy. This is followed by conducting temperature checks, requiring masks, providing hand sanitizer, and routinely disinfecting all EECP beds and shared spaces between patients and/or EECP staff.

**Q.** Well, doctor Caceres, thank you very much for your time, and good luck on your quest to raise awareness of this life-changing treatment.

**A.** Thank you!



## 6

# EECP Testimonials



“

Dr. Caceres is outstanding, and I thank him for giving me my life back! Since undergoing EECP therapy, I now feel very energetic, can walk better, and am in complete control of my life and work. In addition to the therapy, I was given top-notch advice for lifestyle adjustments that have really made a difference. I wholeheartedly recommend EECP therapy to all heart patients.

- Vaughan Herrick



“

I was diagnosed with heart blockages in 2008, and had angioplasty. Now, with EECP therapy, I have more energy and I'm able to climb stairs easier. I was also able to return to playing golf and riding my bicycle. Thanks to the excellent medical care at the center I am enjoying a good quality of life.

Dr. Caceres is a great cardiologist and very well-mannered. He works in the best interest of the patient.

Buena park Heart Center's EECP therapists are helpful, friendly, and professional. I wholeheartedly recommend EECP therapy at Buena Park Heart Center to anyone in need of cardiac care.

- Larry Ledvina



“

My name is Steve Ezell. I had angina pectoris on minimal exertion in 2008. My coronary angiogram revealed severe coronary artery disease, so I underwent coronary artery bypass grafting surgery. In 2012, I was feeling more fatigue than usual and more shortness of breath while performing everyday activities. I had angina pectoris on exertion and equivalent angina. A PET scan showed reversible perfusion defect in the inferior and septal walls.

I didn't want to have another coronary angiogram, or angioplasty, or another heart surgery, so I decided to try EECP therapy.

Before EECP, I felt tired to the point where I could hardly finish my work. I would take breaks while making the 15 step walk up to my door, because of angina. I was unable to walk ½ mile a day or ride my bike without becoming out of breath and/or having angina. I had very little energy and felt tired most of the time.

Since having EECP, I'm able to work 8 hours a day without feeling tired. I walk up the 15 steps to my front door without any trouble. I'm also able to walk 2-3 miles per day and ride my bike for 5-6 miles every day without angina. I have more energy and feel so much better. On weekends, I ride my bike up and down the hills near my home for up to 15 miles without feeling tired or becoming out of breath.

Last year, I witnessed the birth of my first grandchild, and just last month we got our first ever annual pass to Disneyland. We go there on average three times a week, and walk several miles over the course of many hours with my granddaughter. I attribute my ability to do this to the EECP therapy. Without a doubt, EECP therapy has improved my heart condition, endurance, and physical capacity. I have not taken nitroglycerin in over 2 years.

**- Steve Ezell**



**“Patients and health professionals working together to maintain a vigorously pumping heart.”**



**EECP Therapy** at Buena Park Heart Center provides excellence in cardiovascular care with an attitude of compassion for each patient. Our mission is to alleviate angina pectoris and improve the quality of life of patients with heart disease.

We have 20 EECP beds and dressing rooms with HD televisions and headphones, six certified EECP therapists, and three patient care providers.

**Indications for EECP (CMS Guidelines):** Patients with angina pectoris responding inadequately to anti-ischemic agents and coronary revascularization, who are inoperable or at high risk for operative complications or postoperative failure, who are poor candidates for PCI or CABG, or continue to have disabling angina despite revascularization.

**Referral Process:** A prescription for EECP. No further heart studies are conducted. We will write a letter of medical necessity for EECP. Upon completion of EECP therapy, a report is sent to the patient's cardiologist.



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