

## HEALTH &amp; WELL-BEING

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**Dr. Richard Zelman sits next to imaging equipment that focuses in on arteries in the heart of a Cath Lab patient at Cape Cod Hospital, Hyannis. "The main thing that would help patients and that would help us," Zelman insists, is for "patients to recognize their symptoms, to admit to themselves that they're having a heart attack, and to call and get help quickly, to not drive themselves into the hospital."**



# IN THE CATH LAB

with Dr. Richard Zelman

BY BARBARA RAVAGE

Standing in the corridor between the four spanking-new cardiac catheterization suites at Cape Cod Hospital, Dr. Richard Zelman launches into a mini-course on how to halt a heart attack before it begins. In front of him is a glass wall looking into one of the cath suites. Three people in blue scrubs gather around a gurney fitted out as an operating table. The man lying on it is conscious, but calmed by a sedative. A large video monitor hangs at eye level, displaying the black-and-white moving image of a heart in distress. Zelman clicks on a smaller monitor showing the identical image.

In his precise, soft-spoken manner, he explains every step of the procedure taking place on the other side of the glass wall.

As Director of Interventional Cardiology at Cape Cod Healthcare, Zelman is justifiably proud of the state-of-the-art "cath lab." It is here that the consequences of coronary artery disease – from unstable angina to heart attacks – are diagnosed and treated.

Earlier that day, the patient had gone to Falmouth Hospital complaining of sudden and severe chest pains. When a blocked coronary artery was identified as the cause, he was trans-

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#### About the author

Barbara Ravage moved to Cape Cod from her native New York City in 2000, after the youngest of her children went off to college. She considers heavy doses of ocean air and Cape light the best cure for empty nest syndrome. A graduate of Barnard College, she is the author of nine books, including a biography of Rachel Carson for middle-school students and "Burn Unit: Saving Lives After the Flames," which explores the history and science of burn treatment. She balances her writing life with yoga, karate, and pottery. After years of making do with two summer weeks on the Cape, her favorite part about living here is that she's already home.

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ferred by ambulance to Cape Cod Hospital. The cath lab can be up and running at any hour of the day or night, alerted in advance that a patient is coming in by ambulance. It's a direct route from ambulance to cath lab, with no detour through the ER. "We have extremely good door-to-open-artery times," Zelman says, referring to the vital importance of clearing a blocked artery quickly, before the damage to heart tissue results in disability or, all too often, death.

The heart pumps blood throughout the body via a vast network of blood vessels. Like all other living tissue, the heart needs a blood supply itself. That comes through the coronary arteries, which lie on the outside surface of the heart. When those arteries are narrowed by fatty deposits in one or more places, the result is coronary artery disease (CAD). Zelman explains that CAD develops over many years and affects all the blood vessels in the body. Among other things, it can cause stroke, heart attack, and cardiac arrest. Angina, or chest pain, is a symptom of CAD. It occurs when heart tissue doesn't get enough blood. So-called

stable angina comes and goes according to a predictable pattern, usually during exercise or other exertion that increases the need for oxygenated blood. It is typically treated with medication. In contrast, unstable angina comes on suddenly, without exercise or other obvious cause. It is a sign that a coronary artery is blocked and a heart attack is imminent. That's what brought this patient to the cath lab.

On the video screen, the heart can be seen moving rhythmically the cardiologist threads a wire guiding the catheter, an ultrathin, flexible tube, through one of the main coronary arteries. Zelman explains that this particular artery carries about one third of the heart's blood supply. The problem is clearly visible. Blood, which is dyed to show up as a black line on the screen, is flowing through the main artery and the smaller vessels branching off it. Then it comes to a roadblock, beyond which the artery and its branches are barely visible, a ghostly white area starved of blood.

The image on the screen magnifies a technique measured in millimeters. The catheter pushes into the blocked

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## Cath lab

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area. Then a tiny balloon is inflated to press against the narrowed artery walls. Next, a very small perforated metal cylinder called a stent is slid into place, and finally, the catheter is withdrawn. The ghostly pale area comes to life as the black line shoots along the once empty length of artery. The patient's heart muscle is once again receiving all the blood it needs.

This is the life-saving technique known as balloon angioplasty, using a drug-coated stent to keep the artery open. The procedure took an hour and 15 minutes. The patient will go home tomorrow, Zelman says, and can be back at work a couple of days later. "Ten years ago, we couldn't do this at all," Zelman says.

What a difference a decade makes. Until the late 1990s, Cape Cod Hospital did not have the facilities, the trained personnel, or the authorization to take care of patients on the verge or in the midst of a heart attack. "In those days, there were a huge number of patients, many of them unstable, who were transferred to Boston." In the intervening years, Zelman was instrumental in bringing top-notch cardiac care to Cape Cod and putting an end to what he estimates were 700 to 800 transfers each year. "Now there are none. I can't remember the last time we sent a cardiac patient to Boston."

The 50-year-old native of New York City is a graduate of Duke University and the University of Texas Medical School. He did his post-graduate training in cardiology at Harvard, serving his residency at Brigham and Women's Hospital. In 1994, he returned to Brigham and Women's on a one-year fellowship in interventional cardiology.

A sense of mission brought Zelman to the Cape in 1990. "When I was practicing at academic medical centers in Boston I had the feeling that I was kind of expendable, that I could leave and somebody would take my place the next day and nobody would know I'd been there. I hoped to be somewhere where I could make a little more of a difference, where I could actually improve the way medicine was practiced, and bring innovative types of care and therapies. This turned out to be a perfect place to do that."

Zelman and his family live in

Barnstable. He has two daughters and a son, all in their teens. His wife, Joan, has impressive credentials of her own. She began her career as a nurse, then went on to earn a law degree, a master's in public health, and an additional degree in bioethics. She currently works in clinical research at the Cape Cod Research Institute, which her husband helped found and serves as medical director.

Zelman says the Cape is "a great place to live and raise a family. It's a nice community. You see people you know all over the place. I run into patients who recognize me and I recognize them." A great place to live, a great place to vacation, but Cape Cod used to be a terrible place to have a heart attack. Thanks to the efforts of Zelman and his colleagues, that is no longer the case. In 2007, Cape Cod Hospital was recognized by the U.S. Department of Health and Human Services as the highest rated hospital in Massachusetts in terms of an important benchmark of cardiac care – the likelihood of surviving at least 30 days after a heart attack. Of 4,500 hospitals studied nationwide, it was one of only 17 with survival rates better than the national average.

Richard Zelman came to Cape Cod hoping to make a difference, and he has.

"Our outcomes have been extraordinary," he says. "In the last year, of all the procedures we have done – from the younger, healthier patients to the 100-year-old patients having heart attacks – only .3 percent have died, that's 3 out of 1000. That includes every patient that has come to the lab having an heart attack."

Zelman is quick to credit his team and colleagues. The efforts of "a ton of people" are behind the excellence of cardiac care at Cape Cod Hospital. It begins with hospital-trained paramedics in the field, and continues through the cardiac catheterization and surgical units, the recovery and step-down facilities staffed by highly experienced nurses, all the way through to rehabilitation and long-term risk reduction programs targeting smoking, high blood pressure, and high cholesterol. The only weak link, Zelman says, is at the beginning of the chain: the patients themselves.

"We've tried to teach patients to come in earlier, but that hasn't worked very well," he concedes. "Patients like to deny that they're having heart attacks and often don't come in for many, many hours beyond when they should."

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