

» LIFE-SAVING ADVICE

Be alert, time is muscle during a heart attack

BY GINA KOLATA

MR KEITH Orr thought he would surprise his doctor when he went for a checkup.

His doctor had told him to have a weight-loss operation to reduce the amount of food his stomach could hold, worried because Mr Orr, at 1.8m, weighed 125kg. He also had a blood-sugar level so high he was on the verge of diabetes and a strong family history of early death from heart attacks. And Mr Orr, who is 44, had already had a heart attack in 1998 when he was 35.

But Mr Orr had a secret plan. He had been quietly dieting and exercising for four months and lost 20kg. He saw himself proudly telling his doctor what he had done, sure his tests would show a huge drop in his blood sugar and cholesterol levels. He planned to confess that he had also stopped taking all of his prescription drugs for heart disease.

After all, he reasoned, with his improved diet and exercise, he no longer needed the drugs. And, anyway, he had never taken his medications regularly, so stopping altogether would not make much difference, he decided.

But the surprise was not what Mr Orr had anticipated. On Feb 6, one week before seeing his doctor, Mr Orr was working out at a gym near his home in Boston when he felt a tightness in his chest. It was the start of a massive heart attack, with the sort of blockage in an artery that doctors call the widow-maker.

He survived, miraculously, with little or no damage to his heart. But his story illustrates the reasons that heart disease still kills more Americans than any other disease, as it has for nearly 2 century.

Research reveals enough about the causes and prevention of heart attacks that they could be nearly eliminated. Yet nearly 16 million Americans are living with coronary heart disease, and nearly half a million die from it each year.

It is not that prevention does not work, or that once someone has a heart attack there is little to be done. In fact, said Dr Elizabeth Nabel, director of the National Heart, Lung and Blood Institute at the National Institutes of Health, age-adjusted death rates for heart disease have dropped precipitously in the past few decades, and prevention and better treatment are major reasons why.

But the concern, Dr Nabel and others say, is that much more could be done.

In many ways, scientists' hard work and increasingly detailed understanding of what causes heart disease and what to do for it often goes unknown or ignored.

Studies show, for example, that people have only about an hour to get their arteries open during a heart attack if they are to avoid permanent brain damage. Yet, recent surveys find, less than 10 per cent get to a hospital that fast, sometimes because they are reluctant to acknowledge what is happening. And most who reach the hospital quickly do not get the optimal treatment — many US hospitals are not fully equipped to provide it but are reluctant to give up heart patients because they are so profitable.

New studies reveal that even though drugs can protect people who have already had a heart attack from having another, many patients get the wrong doses and miss step taking the drugs in a matter of months. They should take the drugs for the rest of their lives.

"We've done pretty well," Dr Nabel said. "But we could be doing much better. I've heard some people refer to it as the rule of halves. Half the people who need to be treated are treated and half who are treated are adequately treated."

The result, heart researchers say, is a huge disconnect between what is possible and what is actually happening. Mr Orr's story has themes that resonate with every cardiologist. He did many things right, but also made some crucial miscalculations that were so common that nearly every patient makes them, cardiologists say. But not every-one comes out as well.

Mr Orr anticipated a pleasant day on Feb 6, starting with a workout at his gym, then lunch with a friend before he went to work at Smith & Wollensky, a steakhouse where he is a manager.

He arrived at the gym around noon and lifted weights, concentrating on the pectoral muscles of his chest. Then he moved on to an elliptical cross-trainer for cardiovascular exercise.

After half an hour on the elliptical, Mr Orr felt a tightness in his chest. "I attributed it to the weight training," he said, but stopped exercising, showered, dressed and walked to his car.

"I felt really bad, out of sorts," he said. The pressure in his chest would ease off and then intensify, and now he was sweating profusely and was nauseous. When he arrived at the restaurant, he told his friend Dorin Friedman that he would have to beg off from lunch. "I feel like hell," he told Mr Friedman.

He went home and lay on his bed. "I knew at that point that it was not a pulled muscle," Mr Orr said. "It's a completely different feeling of pressure and discomfort. You feel as though something is genuinely wrong."

It was 3:15pm. And the pain was no longer intermittent. It was constant.

Mr Orr called Mr Friedman and asked him to drive him to an emergency room. A few minutes later, the two set off for Brigham and Women's Hospital, about a 10-minute drive.

Keith was hunched over and he didn't put his seat belt on," Mr Friedman said. "I kept asking him: 'Is it getting better or getting worse or staying the same?' For the first 10 minutes he said: 'It's about the same.' Then, when we were a block away, he said: 'I'm not doing well. I think it's getting worse.'"

When they got to the hospital's emergency department, Mr Friedman explained that his friend was having chest pains. Immediately, Mr Orr was wheeled off for an electrocardiogram, showing his heart's electrical signals. It was ominous, including one pattern called the T-wave because patients who had it died in the days before there were aggressive treatments to open arteries.

Mr Orr was rushed to the cardiac catheterisation laboratory for a procedure to open his artery.

He recalled: "They said: 'We're going now. We're going now.' That really scared me. Someone kept yelling: 'Do you have his name?' Do you have his name? Someone else said: 'We'll transfer him later.'"

The electrocardiogram was done at 3:45pm, roughly 30 minutes after his symptoms changed from intermittent to

BREATHLESS? ANXIOUS? EXHAUSTED? THEY'RE ALL SYMPTOMS

Many heart attack victims have nausea or shortness of breath. Or they break out in a cold sweat, or have a feeling of anxiety or impending doom, or have blue lips or hands or feet, or feel a sudden exhaustion.

But symptoms often are less distinctive in elderly patients, especially women. Their only sign may be a sudden feeling of exhaustion just walking across a room. Some say they broke out in a sweat.

constant and five minutes after he got to the hospital.

At 3:52pm, Dr Ashwin Pandey, a cardiology fellow, was called to the catheterisation lab.

"Big M.I. coming in," a nurse told him, using the abbreviation for myocardial infarction, or heart attack. Mr Orr was wheeled in. It was 3:56pm.

Within minutes, Dr James Kienbaum, director of acute interventional cardiology, assisted by Dr Pandey, threaded a thin tube, like a long and narrow straw, from an artery in Mr Orr's groin to his heart. They injected a dye to make the arteries visible to an X-ray and they saw the problem — a huge clot in his heart's left anterior descending artery, blocking blood flow to most of his heart.

The quickest option was to open that artery with a balloon and keep it open with a stent, a tiny mesh cage, if possible. It worked — the balloon shattered the clot and pushed the debris against

the artery wall and the stent held the artery open. Then a different problem arose. When the clot was pushed aside, the debris was shoved against the opening of a small artery that branched off the larger one, much as a snowplough clearing a street can block a driveway.

"We made a calculated decision that it would be worth sacrificing the branch to secure the main vessel," Dr Pandey said. Fortunately, they were able to insert another balloon through the stent and into the small artery, opening it too.

At 4:43pm, the procedure was over and Mr Orr was wheeled to the intensive care unit. He had been awake but sedated and experienced what he said was the amazing feeling of having his artery opened. "As soon as the balloon goes in,

all the pain disappears," he said. "You know immediately."

The cardiologists who saved his life were exhilarated. "This adrenaline rush is why people like me go into cardiology," Dr Pandey said.

Mr Orr was incredibly lucky, said Dr Elliott Antman, director of the coronary care unit at Brigham and Women's Hospital. He ended up with little or no damage to his heart, even though he teetered between life-saving decisions and critical miscalculations in his moments of crisis.

The first life-saving decision was to go to a hospital soon after his chest pain began. But the miscalculation was to call his friend for a ride. He should have called an ambulance.

Had his friend gotten caught in traffic, Mr Orr might have been dead or sustained serious injury to his heart.

What few patients realise, Dr Antman said, is that a serious heart attack is as much of an emergency as being shot.

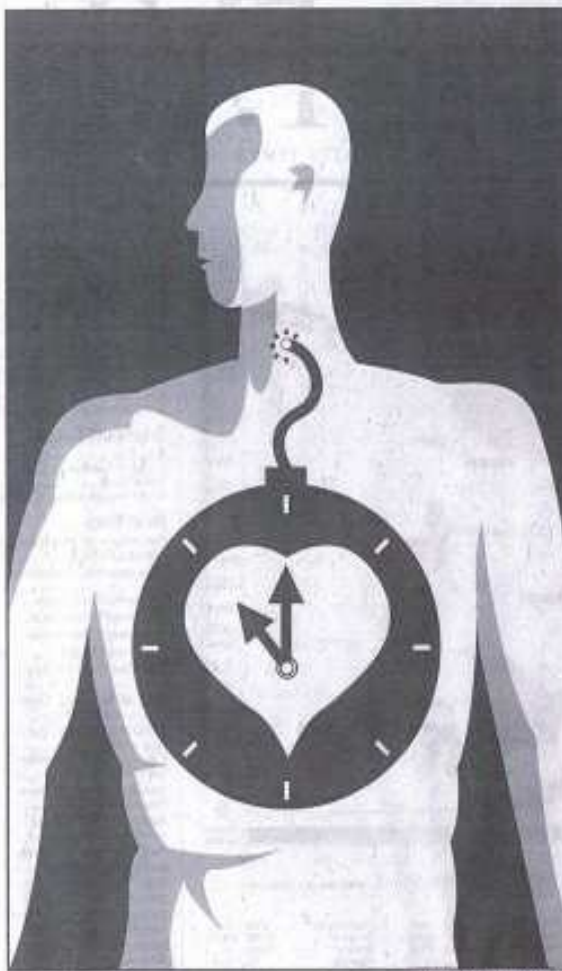


ILLUSTRATION: GEORGE FOU

"We deal with it as if it is a gunshot wound to the heart," he said.

Cardiologists call it the golden hour, that window of time when they have a chance to save most of the heart muscle when an artery is blocked.

But that urgency has been one of the most difficult messages to get across, in part because people often deny or fail to appreciate the symptoms of a heart attack. The popular image of a heart attack is all wrong.

Most patients describe something like discomfort in the chest that may, or may not, radiate into the arms or neck, the back, the jaw or the stomach. Many also have nausea or shortness of breath. Or they break out in a cold sweat, or have a feeling of anxiety or impending doom, or have blue lips or hands or feet, or feel a sudden exhaustion.

But symptoms often are less distinctive in elderly patients, especially women. Their only sign may be a sudden feeling of exhaustion just walking across a room. Some say they broke out in a sweat. Later, they may recall a feeling of pressure in their chest or pain radiating from their chest but, at the time, they paid little attention.

Patients with diabetes might have no obvious symptoms at all other than sudden, extreme fatigue. It is not clear why diabetics often have these so-called silent heart attacks — one hypothesis attributes it to damage diabetes can cause to nerves that carry pain signals.

"Tell patients to be alert in the possibility that they may be short of breath," Dr Antman said. "Every day you walk down your driveway to go to your mailbox. If you discover one day that you can only walk halfway there, you are so fatigued that you can't walk another foot, I want to hear about that. You might be having a heart attack."

Other times, said Dr George Sopko, a cardiologist at the National Heart, Lung and Blood Institute, symptoms like pressure in the chest come and go.

That is because a blood-clot blocking an artery is breaking up a bit, reforming, breaking and reforming. "It's a pro-heart attack," he said. A blood vessel is on its way to being completely blocked.

But most people — often hoping it is not a heart attack, wondering if their symptoms will fade, not wanting to be alarmed — hesitate far too long before calling for help.

"The single biggest delay is from the onset of symptoms and calling 911," said Dr Bernard Geraci, a cardiologist at the

Mayo Clinic. "The average time is 111 minutes, and it hasn't changed in 10 years."

At least half of all patients never call an ambulance. Instead, in the throes of a heart attack, they drive themselves to the emergency room or are driven there by a friend or family member. Or they take a taxi. Or they walk.

Patients often say they were embarrassed by the thought of an ambulance arriving at their door.

"If you come to the hospital unannounced or if you drive yourself there, you're burning time," Dr Antman said. "And time is muscle," he added, meaning that heart muscle is dying as the minutes tick away.

There is also the question of how, or even whether, the patient gets either of two types of treatment to open the blocked arteries, known as reperfusion therapy.

One is to open arteries with a clot-dissolving drug like TPA, or tissue plasminogen activator.

"These have been breakthrough therapies," said Dr Joseph Ornato, a cardiologist and emergency medicine specialist who is medical director for the City of Richmond, Virginia. "But the problem is that even the best of the clot-buster drugs typically only open up 60 to 70 per cent of blocked arteries — nowhere close to 100 per cent."

The drugs also make patients vulnerable to bleeding. Dr Ornato said.

One in 200 patients bleeds into the brain, suffering a stroke from the treatment meant to save the heart.

The other way is with angioplasty, the procedure Mr Orr received. Cardiologists say it is the preferred method under ideal circumstances.

Nurses have recently been questioned for those who are just having symptoms like shortness of breath. In those cases, drugs often work as well as stents. But during a heart attack, or in the early hours afterward, stents are the best way to open arteries and prevent damage. That, though, requires a cardiac catheterisation laboratory, practised doctors and staff on call 24 hours a day. The result is that few get this treatment.

"We now are seeing really phenomenal results in experienced hands," Dr Ornato said. "We can open 95 to 96 per cent of arteries, and bleeding in the brain is virtually unheard of. It's a safer route if it is done by very experienced people and if it is done promptly. Those are big ifs."

The "ifs" were not a problem for Mr Orr. His decision to go to Brigham and Women's Hospital proved exactly right.

Having a heart attack, even if it turns out well, as his did, is a life-altering experience, Mr Orr said.

His first heart attack "came out of the blue." When he was discharged from the hospital, he was terrified that it would happen again when he was alone and unable to call for help. "I had a really hard time with it," he said. "I only stayed in my own house for one night and then I moved to a friend's house for two weeks."

Now Mr Orr plans to be serious about taking his medication and getting back to his diet and exercise programme. He will call an ambulance if he ever has symptoms again. Still, he hates to think of himself as a patient. "I'm a little freaked out that I will have to take medication for the foreseeable eternity," he said.

But the day after he got home from the hospital, he thought about what had happened.

"The gravity of the situation just sort of clicked," Mr Orr said. "I started to cry."

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