



A heartbeat away

It's past midnight.

Linda Cantrell is alone in a trailer
that's miles from a hospital.

Then the pain hits.



Linda Cantrell needed Life Flight to get her to the hospital fast the night she suffered a heart attack. She was fortunate to live next to a private airstrip owned by Precision Aviation.

The ribbon of road leading to the Stone property in Yamhill County seems to go on for miles. Drive past the misty orchards, the patchwork quilt of farmland, and you eventually arrive at the family compound, a friendly collection of sheds, trailers, fruit trees and a small farmhouse.

This is where Linda Cantrell spends part of the year, in a tidy trailer with a welcome mat at the bottom of the steps. It's a few yards from the main house where her parents live and a few miles from her daughter's home in Newberg. The land is peaceful, bucolic and isolated – and is the last place you'd want to suffer a medical emergency.

Yet after midnight on May 22, 2008, one struck. >>>

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“I can’t have my mother think I’m dead.”

– Linda Cantrell

1:07 A.M. Cantrell, a vibrant 58-year-old who could pass for a younger Ann-Margret, is lying in bed listening to “Remember Me?” an audio novel about a woman who suffers a blow and reawakens with a new life.

Then comes the pain, a burning in the chest that feels like a flaring stomach ulcer, perhaps from the new medications she’s been taking. She gets up, takes some antacids and a prescription nitroglycerine tablet, just in case. Then she does something common, but unwise: She waits.

The discomfort travels to her throat, lodging there like a golf ball. Then it radiates to her jaw. Feeling dizzy and about to black out, she grabs her cell phone and crawls to unlock the front door. As she lies on the floor, she worries about her elderly parents. *They can’t lose another child*, she thinks. *I can’t die*. She dials 9-1-1. “Don’t bother my parents,” she gasps. “Just come and get me.” Then she can no longer speak.

The clock begins ticking with Cantrell’s first strange symptom. She is having a heart attack. Each passing minute means greater damage to the cardiac muscle and a higher risk that her heart’s electrical system will fall into a fatal irregular heartbeat.

She needs to get to Providence St. Vincent Medical Center, the nearest hospital with an interventional cath lab as fast as possible. There, a cardiologist can perform an emergency cardiac catheterization to unclog her artery, stopping or even reversing the damage. But it is the middle of the night, and she is 27 miles away from the medical center.

Cantrell doesn’t know it, but that 9-1-1 call from her remote trailer sets into motion a sophisticated emergency response involving dozens of people, from local paramedics to highly trained medical teams. They follow protocols that Providence Heart and Vascular Institute spent months designing, coordinating, measuring, critiquing and refining. They’ve made Providence a national leader in heart attack care, and they’re about to save Cantrell’s life.

As Newberg Fire Department paramedics race down Northeast Dopp Road, Cantrell’s 82-year-old mother, Edith Stone, is alerted by the 9-1-1 operator. Frail and using a walker, she moves as quickly as she can to the trailer in back. She opens the front door and calls out in a panic, “Linda!”

I can’t have my mother think I’m dead, Cantrell thinks. Using all her energy, she tries to respond with a faint “I’m OK.” But Stone doesn’t hear her. Her daughter looks unconscious . . . or worse.

Paramedics arrive within minutes and call Providence St. Vincent, triggering the hospital’s rapid heart-attack response. They also summon Life Flight, an air ambulance used for the most critically ill patients who need urgent care.

Minutes later, as she struggles to respond to paramedics’ questions, Cantrell can hear the thwacking rotors of the helicopter overhead.

2:25 A.M. It takes just 11 minutes for Life Flight to get to Providence St. Vincent, where Cantrell is whisked into the Emergency Department. There, the cath-lab team is waiting. Cardiologist Najji Hamdan, M.D., awakened by the emergency call a few minutes earlier, has arrived from his home nearby.

The goal is to clear her blocked artery fast. The team must work quickly, inflating a tiny balloon to restore blood flow in a procedure called angioplasty. The American Heart Association and the American College of Cardiology set this time threshold in 2004 after studies found that people have a better chance of surviving a heart attack if their blocked vessel can be opened within 90 minutes of arriving in the emergency department.

At the time, only about a third of patients nationally were treated within that window, commonly called the “door-to-balloon” time. More often, the process took two hours or longer.



Linda Cantrell, age 12, with her younger brother, David Stone, in 1962. His unexplained death at age 52 devastated the close-knit family, and made Cantrell’s cardiovascular disease all the more worrisome.



Cardiologist Naji Hamdan, M.D., performed the emergency procedure that opened Linda Cantrell's blocked artery. It took him just 17 minutes to restore blood flow to her heart, a speed that contributes to Providence's above-average record for rapid treatment.

"Back then the Emergency Department called the primary care doctor to see what they wanted to do," says Michael Wilson, M.D., medical director for Providence St. Vincent's cardiovascular laboratory. "Then they would call the cardiologist, then the cath lab would be mobilized – you can see how that slowed down the process."

2:55 A.M. Inside the cath lab, the team prepares for the procedure and gives Cantrell a mild sedative. This allows her to remain awake but relaxed and comfortable. She looks up at Dr. Hamdan. *He has nice eyes, she thinks. It will be her only memory of the procedure.*

After administering a local anesthetic, Dr. Hamdan makes a tiny incision into Cantrell's thigh and inserts a small plastic sheath that will allow a thin tube, or catheter, to travel painlessly up to the heart. Each catheter is shaped to fit easily into a specific coronary artery.

Dr. Hamdan injects a contrast dye into the vessel to highlight narrow spots and blockages on X-ray images. The clogs are caused by a blood clot that forms around plaque that breaks away from the artery wall. He finds the culprit. It wasn't the artery that

Cantrell has worried about – diagnosed years earlier as partially blocked – but a different one entirely.

Cantrell knows more about the health of her arteries than most women. She had a heart attack three years earlier, the day of her brother, David Stone's, memorial service. The cardiologist who performed that angioplasty in 2005 found a second vessel that was half blocked. It could be treated non-surgically, but the larger problem was evident: Cantrell had cardiovascular disease, which had begun years earlier.

Stone's unexpected death in his sleep at age 52 devastated Cantrell's family. And in one of life's ironies, that loss also contributes to her waiting to summon help this time. She didn't want to alarm her parents, to see the pain on their faces again, in case her symptoms turned out to be nothing.

The cause of her brother's death was undetermined, but Cantrell has her own theory: "I think his heart finally gave out."

Despite a family history peppered with heart disease, Cantrell had few risk factors – she didn't smoke, didn't have diabetes, was careful about her diet and exercised regularly. Even her jobs were a workout: sawmills and long-haul trucking. "I was throwing chains, throwing straps. I was getting a lot of exercise."

After marrying contractor John Cantrell, she traded trucking for recreational golf, getting a workout on the courses around their second home in Arizona.

"If I hadn't been in as good a shape," she says, "I might not have pulled through." > > >

3:12 A.M. Dr. Hamdan guides a wire with a balloon attached to the right spot and carefully inflates the balloon, “just like air in a tire,” he says. The vessel expands and the blood begins to flow into Cantrell’s heart. Then he inserts a stent – a stainless steel mesh tube – that will hold the vessel open after the balloon deflates.

With that, the critical part of the procedure is over. The hospital not only meets the 90-minute door-to-balloon deadline, it beats it by 43 minutes.

This is no accident. Over the past decade, Providence Heart and Vascular Institute experts and community colleagues have been refining their heart-emergency protocol with the single goal of saving lives such as Cantrell’s.

Now, paramedics perform EKG tests in the field, saving on average 20 minutes. A system-wide hotline for heart-attack patients means that a single phone call can gather the staff, trimming about 13 minutes. Activating the cath lab while the patient is en route can cut 15 minutes.

“It’s a mirror image of the trauma system,” says cardiologist Steven Reinhart, M.D., who oversees the door-to-balloon protocol at Providence Portland Medical Center. “That’s our model.”

DEC. 30, 2008 Cantrell is back in Yamhill County, visiting her family and occupying the little trailer from which she’d been carried out seven months earlier.

She has been given a new life, which she’s treating with care. She monitors her blood pressure and cholesterol. She goes to the gym three times a week and has dropped 20 pounds from her 5-foot-8 frame by eating a diet rich in lean meat, fruits, vegetables and “good fats.” Her one indulgence today is an eggnog frozen yogurt. “That’s my meal,” she says.

What may be more of a challenge, though, is reversing a life-long trait that she shares with millions of other women. That is, a habit of putting others’ concerns before her own welfare.

“She’s always been real nice,” says her mother, sitting at a small table in the farmhouse’s wood-paneled kitchen, “wanting to do things for other people.”

It’s an admirable quality, but one that can conflict with a disease that requires both urgency and assertiveness. After suffering two heart attacks, Cantrell knows now that she must sound an alarm when strange symptoms strike. Even if that means worrying her loved ones, or risking “crying wolf” if her chest pains turn out to be an ordinary bout of indigestion.

“I think women especially are afraid to upset somebody or cause a scene,” she says. “But if I start having pain again I would definitely go to the hospital.”

And to her parents, her family, and the people of Providence who designed the rapid response precisely for patients such as Cantrell that would be the most selfless gesture of all. ■



Linda Cantrell had two heart attacks in three years, each with different symptoms. Atypical symptoms are one reason that women delay calling for help.



Steven Reinhart, M.D., of Providence Portland Medical Center (left), and Michael Wilson, M.D., at Providence St. Vincent Medical Center, helped make Providence Heart and Vascular Institute's treatment for heart attack patients among the best in the country.

The quality gatekeepers

Since refining its emergency protocol, Providence Heart and Vascular Institute's median door-to-balloon time has dropped to 73 minutes, well below the established guidelines.

Good, but for Drs. Wilson and Reinhart, the numbers could be better – always better. So each does a post-analysis of every case at his respective hospital, sometimes within 24 hours of the event.

"If we find problems with the system, the teachable moment is as close to the time of the incident as possible," says Dr. Reinhart.

They scan each link in the time chain, looking for delays. Was the cardiologist called quickly enough? Why was

someone waiting for a lab test? Was the procedure more complicated than usual?

"We want to push that number as low as possible," says Dr. Wilson. "At the same time we can't rush the case and misdiagnose the patient or take a risk."

To show patterns, months of cases are charted on a graph. Each incident is presented as a vertical line with a bubble on top representing the moment the balloon is inflated. The cardiologists tend to fixate on the bubbles that rise above the 90-minute mark, but the slope of those lines tells the larger story. And it trends steadily downward. Dr. Wilson taps the chart with the tip

of his pen. Here, one case took 61 minutes; another, 57 minutes; then 54 minutes.

Such diligence has earned Providence high scores from The Joint Commission, a national organization that measures hospitals' quality and safety records. Both Providence St. Vincent and Providence Portland placed above the statewide and national averages for heart attack care.

"You plateau and you think, we have to get better at it," Dr. Wilson says. "So in addition to our monthly meetings we have these cross-river meetings with Dr. Reinhart's team. We compare each other's times and ask: What can we do to get better?" >>>

Heart disease: More a whisper than a scream

Women are just as likely as men to have a heart attack – and more likely to die from one. The reasons for this sobering statistic vary, but two loom largest: Women are largely unaware of the signs of cardiovascular disease until it's too late, and even in the throes of a heart attack, they often don't know they're having one.

"They die by not acting on their symptoms," says Suzanne Hall, M.D., medical director of Providence's Women and Heart Disease Program, which educates women on the risks of cardiovascular disease.



More women are recognizing the signs of heart disease, but half the female population is still unaware of the risks, says Suzanne Hall, M.D., medical director of Providence Women and Heart Disease Program.

Popular myth has it that heart disease is predominantly a man's illness. In fact, it's the No. 1 killer among women – taking more lives than all cancers combined.

Cardiovascular disease symptoms, which sometimes appear long before a life-threatening heart attack, are easily attributed to other conditions, such as menopause, stress, acid reflux or the flu. Disease symptoms may include shortness of breath; unusual fatigue; swelling in the ankles, legs or abdomen; pale skin; anxiety or back pain, in addition to the more obvious heart palpitations and chest pain.

Women often fail to tell their doctors about these symptoms, and until recently most doctors didn't ask.

"Physicians have typically negated the fact that women have heart disease," Dr. Hall says. "Studies show that women are not treated as aggressively even if they have the same symptoms as men."

In 2005, Linda Cantrell was unaware that she was even at risk. She and her doctors assumed her occasional burning chest pains were caused by acid reflux – which is statistically more common – and she was never screened for heart disease.

When her first heart attack struck at age 55, Cantrell had no idea what

was happening. The sensation was more of a chest discomfort than searing pain, with a curious lump in the throat. She took some antacids and sat upright all night hoping to relieve the burning.

When the symptoms persisted into the next morning, she drove herself to the hospital.

"I was arguing all the way into the cath lab that it was acid reflux," Cantrell says, "and the doctor is telling me that a heart attack was showing up in the tests."

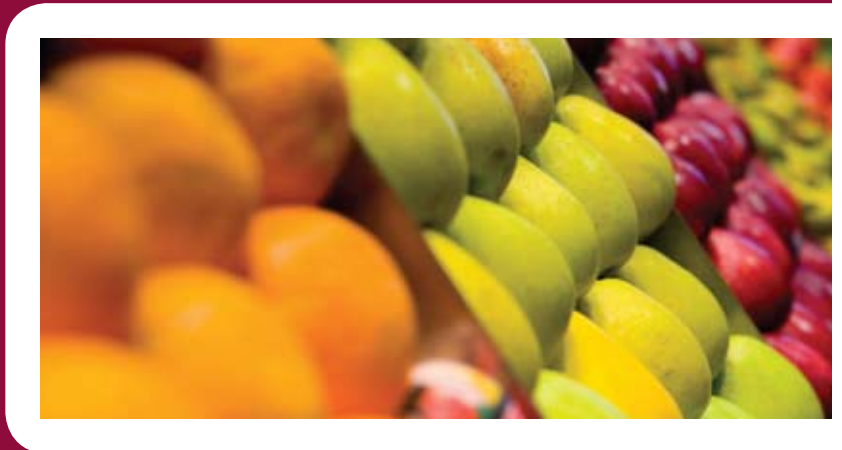
While many women do experience the classic signs of a heart attack – an intense gripping in the chest, radiating arm pain and shortness of breath – they're more likely than men to have atypical symptoms that they, their families and even their primary care doctors don't recognize, according to medical studies.

Because of this, women are less likely to seek emergency treatment. When Cantrell had her second heart attack, the early symptoms were so different from those of the first that again she was unaware what was happening until her condition worsened.

Likewise, when women do recognize the symptoms, they're also less likely than men to receive a lifesaving intervention, a gender gap that Dr. Hall and other women's health advocates are hoping to close through education and public awareness campaigns.

Today, with two artery stents and a lot more information about heart attacks, Cantrell considers what she could have done differently.

"I would have followed up more," she says, "and insisted that my doctors take me more seriously."



Know your risks

Cholesterol

Cholesterol totals that exceed 200 mg/dL put you at greater risk for vascular disease.

High blood pressure

Hypertension can lead to heart failure.

Diabetes

Two out of three people with diabetes die from heart disease and stroke.

Lack of exercise

Physical inactivity is as bad for your heart as smoking.

Family history

Your risks increase if an immediate relative suffered a heart attack before age 55.

Age

People over 50 are more likely to have heart disease.

Ethnicity

African Americans have higher rates of heart disease.

Preventing women's heart disease

Stop smoking

The risk of heart disease decreases by 47 percent within five years of quitting.

Exercise

Do at least 30 minutes a day of moderate-intensity activity, such as brisk walking. Women on a weight-loss regimen should be exercising 60 to 90 minutes a day.

Eat well

This means a diet rich in fruits, vegetables and whole-grain, high-fiber foods, and with servings of fish (especially oily fish) at least twice a week. Limit saturated fats, trans-fatty acids and sodium.

Maintain a healthy weight

Depending on height, optimum body-mass indexes are between 18.5 and 24.9, and waist circumference smaller than 35 inches.