

# The Beat



AUSTRALIAN  
HEART RESEARCH  
*beating heart disease*

Edition 2 2014



## Unexplained Heart Attacks – Unravelling a Mystery



**Earlier this year 46-year-old Cindy, a mother of two, was working her usual shift as a cleaner at a hospital in South Australia when she suddenly couldn't breathe and began gasping for air. A code blue was called (cardiac arrest) and Cindy was rushed to emergency – she was having a heart attack.**

In the majority of heart attacks a completely or severely blocked artery is the culprit, which can be diagnosed by a coronary angiogram procedure. However, it has been shown that about 10% of heart attacks have occurred even with fully open arteries or with minimal blockages. This condition is called MINOCA (Myocardial Infarction with Non Obstructive Coronary Arteries) and there is limited knowledge about the heart attack cause and how these people can be treated.

Cindy is one of a growing number of people who are MINOCA sufferers; an angiogram revealed that she had no blockages which could explain her heart attack.

Sivabaskari (Tharshy) Pasupathy (pictured above) from the Basil Hetzel Institute for Translational Health Research is undertaking her PhD aimed at identifying people through the Coronary Angiogram Database of South Australia (CADOSA) who have experienced MINOCA and how they can be treated.

Currently, people with MINOCA are receiving the same medications as other heart attack patients or no medication at all as the clinicians/cardiologists don't have clear management guidelines.

"For some people this means they are being sent home without any treatment at all, or the wrong medications," explained Tharshy.

"Their quality of life is being seriously affected – we have people still experiencing daily episodes of angina (chest pain) without any relief."

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### ♥ Allan's Story...

Allan Goode had spent a day on the golf course, when he suddenly felt unwell. He lay down, thinking it was just sunstroke or dehydration, as he hadn't been drinking very much.

His friend Graeme drove him home and got him settled. Although unsure it was a heart attack Graeme, who had suffered one himself thought it better to be safe than sorry so he contacted Allan's wife, Sally (pictured together below).

Allan, still convinced it was heat exhaustion, resisted attempts to seek professional help, until Sally, a former nurse, took him to the Medical Centre for tests.

"The next day my doctor called to say 'Why aren't you in hospital? You've had a heart attack'," said Allan.

"By that stage I was feeling much better, so much so that friends brought some red wine into my hospital room to keep me company. This didn't go down very well with the nurses."

"I'd been a smoker all of my life, and with no history of heart conditions in my family, my heart condition can be traced back to that."

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next page*



# Unexplained Heart Attacks - Unravelling a Mystery

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Doctors could not explain Cindy's heart attack and without specific treatment she continues to suffer chest pain episodes up to five times a week, and is continuously tired.

*"I am only young and I am an active person but I honestly feel like my body is 80-years-old"*

"I can't do the things I want to anymore, like going for a brisk walk with my husband or playing with my grandson on the playground," said Cindy.

Like many of the patients in Tharshy's study, Cindy doesn't have any other risk factors for heart disease; she doesn't smoke, doesn't drink, she eats well and is active.

Tharshy explains that this is the crux of her study; "MINOCA sufferers are otherwise healthy and we cannot explain why they are experiencing heart attacks."

"The aim of my research is to formalise a standardised and clear clinical management guideline for MINOCA patients so we can learn more about what might have caused their heart attack, and continual heart problems.

As part of her project, patients enrolled in her study who present

to hospital with a heart attack, but without typical symptoms of Coronary Artery Disease, will undergo cardiac MRI procedure and a blood test one month after the attack. Tharshy also monitors patients for a year to gain insight into their quality of life.

"We have found out so much more about our patients through doing these tests and the results have informed clinicians about potential treatment. But these tests are not mandatory for people who present with this condition, so opportunities to inform best treatment are being missed."

The benefits of Tharshy's project are both immediate and long-term.

"In the short term, if we discover something in a person's blood work or in a MRI, these patients will be immediately followed up by the cardiologist to either change or commence the right medical plan."

"In the long term our aim is to formalise this management practice for MINOCA patients so we can improve the lives of many more people through more accurate treatment," said Tharshy.

The next step will be to further investigate the causes of MINOCA and more specific treatment options.

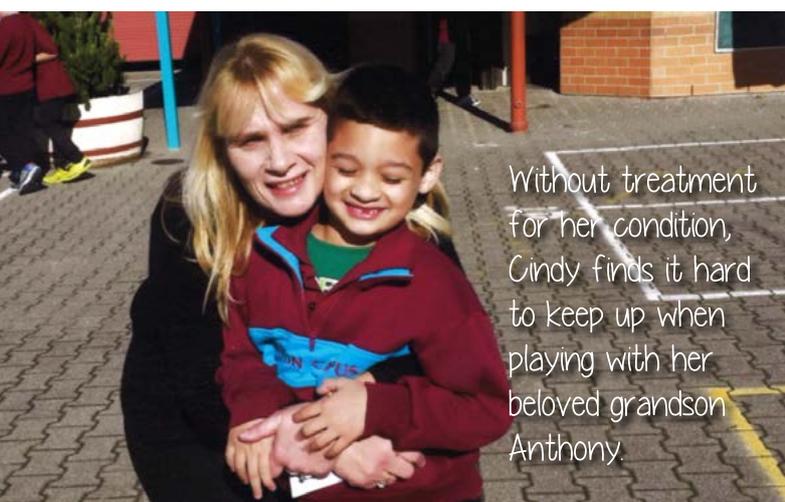
Cindy believes wholeheartedly in the importance of Tharshy's project.

"I am young, I have two children and a grandson that I can't keep up with because I'm so exhausted. I am active, healthy and I feel like I'm doing everything right."

*"I could potentially have to put up with this feeling for the rest of my life."*

"It makes me angry and sad. But it is heartening to know there is research going on in this area which may provide some help for me and others in the future." ♥

If you would like to support important heart disease research to help people like Cindy, please visit our website to find out how. [www.australianheartresearch.com.au](http://www.australianheartresearch.com.au)



## ♥ Allan's Story...

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"The ironic thing is that I'd actually given up smoking eight weeks before the heart attack."

The next step was was bypass surgery.

"The open heart surgery was terrible, I was sore for weeks after, and had lost my taste, particularly for red wine."

Allan eventually recovered, and continued life at his former pace. He had even returned to the golf course.

That was until the following year when he had a hernia operation.

"As I was coming out of the anaesthetic my blood pressure fell to my boots and I had another heart attack."

Luckily no other surgery was required at that time.

Despite regular check-ups, Allan's heart seemed to be working well, until more recently when he had a series of fainting spells.

"I was at a Rotary meeting when I fell flat on my face," he said.

"I had a few more fainting sessions until my surgeon decided to install a pacemaker."

Allan continues to struggle with his health; he has emphysema which is also slowing him down. He's always been interested in medical trials, travelling to Adelaide on several occasions to take part in preliminary trials.

He encourages everyone to either donate to medical research or be part of new studies so we can further educate our doctors and find better treatments for heart disease. Allan said he will continue to help and has even planned to donate his body to medical science as a final gesture. ♥

# Heart Disease – Sex Matters

## What do you picture when you imagine someone having a heart attack?

It's common for us to picture a man clutching his chest and wincing in pain because historically, heart disease has been classified as a 'man's disease'. But the fact of the matter is heart disease is the number one cause of death of Australian women, claiming the lives of four times as many women than breast cancer. Despite this, recent research from the National Heart Foundation has revealed that only 36% of Australian women are actually aware that heart disease is their number one killer.

We spoke to Cardiology researcher Dr Rachel Dreyer about the differences in heart attack symptoms for men and women, and what you should look out for.

"Men tend to experience more 'typical' heart attack symptoms compared with women, such as central chest pain often described as 'crushing', and/or discomfort that radiates to the jaw or down one arm," explained Dr Dreyer.

"Women frequently experience similar pain to men, but may also present with more 'atypical' and non-specific symptoms. Women often describe abnormal pain locations including pain in the arms, back, jaw or stomach. Compared to men, women may also report non-specific symptoms such as nausea, vomiting, fatigue and shortness of breath."

So why do the symptoms for a heart attack differ between men and women?

"What is becoming clear through research is that women often may experience a different type of heart disease compared to men," explained Dr Dreyer.

"This may be because women tend to have blockages not only in their main arteries but also in the smaller arteries that supply blood to the heart — a condition known as microvascular disease."

Microvascular disease is where the smaller microscopic coronary blood vessels constrict or dilate improperly, creating a lack of blood flow and oxygen to the heart muscle. Men on the other hand more often have macro-vascular disease involving the larger arteries.

There is a clear need to improve awareness among women and throughout the medical community about the difference in heart

attack symptoms for men and women, and what they are.

*"... it is known that women die of a heart attack more often than men."*

"The misconception in awareness is of concern since women are less likely to seek treatment immediately as their symptoms are less typical for a heart attack," said Dr Dreyer.

"Also, once arriving at the emergency department, physicians may be misdiagnosing women more often, again because their symptoms differ from those experienced by men. As a result, this may lead to a delay in diagnosis and treatment, thereby leading to worse outcomes in women such as death in-hospital."

In fact, it is known that women die of a heart attack more often than men.

"I am currently involved in research at the Yale University Center for Outcomes Research and Evaluation (CORE), where we are currently investigating why young women with heart disease have poorer outcomes than men. It will particularly focus on the VIRGO study, which endeavours to explain the three-fold higher mortality amongst young women who experience a heart attack.

"By learning the warning signs of a heart attack, and by educating women in recognising non-chest pain symptoms, we can encourage patients to present promptly to hospital, so treatments can be most effective." ♥

## Common heart attack symptoms – what to look for

- ♥ central 'crushing' chest pain
- ♥ pain in the arms, back, jaw or stomach
- ♥ nausea
- ♥ vomiting
- ♥ fatigue
- ♥ shortness of breath

It is important to note that each individual may present with a heart attack in different ways; you may experience one of these symptoms, a combination, or other less common symptoms. The one thing all heart attacks have in common is that the sooner you receive treatment, the less damage will be done, so if you are experiencing the warning signs of a heart attack for 10 minutes, if they are severe or get progressively worse, play it safe and dial '000'.

*This information is for educational purposes only. It is not a substitute for individual health advice provided by your doctor or cardiologist (heart specialist).*



# Investigating Heart Attack Medications

**Most heart attacks are caused by the narrowing of the arteries which supply blood to the heart.**

To stop a blockage a stent is often put in place to allow adequate blood flow. However, once the stent is inserted there is a risk of a blood clot.

To stop these blood clots from forming, patients are given medication to help thin the blood. But the medication doesn't work for everyone.

Cardiology researcher Vivek Nooney from the Basil Hetzel Institute for Translational Health Research wants to find out why.

"This medication is very important when stopping any clots from forming around the stent," said Mr Nooney.

"However, we have noticed that a small percentage of patients do not respond to this medication and therefore develop what we call stent-thrombosis."

This blockage could be fatal.

Mr Nooney's research, led by Professor John Horowitz and Dr Yuliy Chirkov, is focused on why this medication can fail in some people.



Vivek hopes his research will help the development of a treatment for people who can't use current heart disease medicines

"We discovered that one of the signals in the platelets contributes to the effectiveness of this medication."

They believe some of the signal is not being effectively delivered.

"As a result of our research, it will be possible to identify patients who are at high risk for clotting off their stents. The next step is to develop specific treatments for this group of patients," said Mr Nooney. ♥

## Healthy Heart Tip

✓ Eat a healthy diet

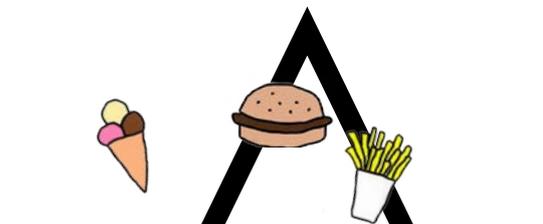
What does eating healthy mean?

Our body needs a variety of different vitamins and minerals, so the best way to get everything your body needs is to eat a variety of foods. No one type of food will contain a majority of the essential vitamins and minerals you require, which is why the traditional food pyramid is so important.

Some of the things that are often neglected in a standard diet are things like fish, whole grains, nuts and seeds. And of course the obvious: eat lots of fruits and vegetables and reduce your intake of sugary or fatty foods. But it's important not to cut these out of your diet completely; your body actually needs fats and sugars, but in moderation just like everything else.

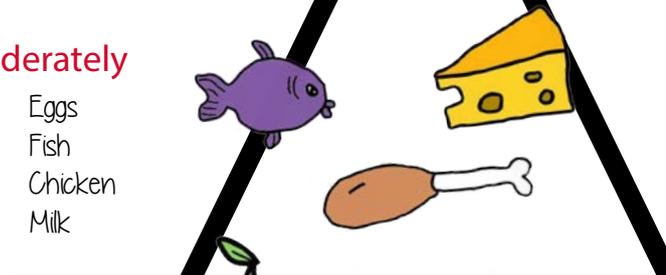
### Eat little

Oils  
Margarine  
Reduced-fat spreads  
Butter  
Sugar



### Eat moderately

Cheese  
Yogurt  
Lean meats  
Eggs  
Fish  
Chicken  
Milk



### Eat most

Vegetables  
Fruit  
Nuts  
Beans  
Dried peas  
Cereals

