

The Beat

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An Australian First for Coronary Heart Disease

An alarming statistic haunts the lives of too many members of our community – one Australian dies from heart disease every 12 minutes, making it the largest single cause of death in our country. But there is good news!

Clinical Data Manager and researcher at the Basil Hetzel Institute for Translational Health Research (BHI) Dr Rosanna Tavella has been passionately working on changing this statistic to improve health outcomes for you and your family. Thank you for making her work possible!

You may remember meeting Dr Tavella early in 2015. She has been working on the Coronary Angiogram Database of South Australia (CADOSA). Now two years since its launch CADOSA is already having a positive impact for everyday Australians who are suffering from heart disease.

Since the launch of the database which was adopted from the idea from America, CADOSA is having a positive impact for everyday Australians who have suffered heart disease.

“My current role is centred on trying to use clinical data more effectively, particularly using this data to monitor patient care and outcomes. This is so we can use the data we collect on a routine basis in a way that is useful for clinicians and researchers,” Dr Tavella explained.

“One key aspect of CADOSA I am very passionate about is our clinical outcome registry. This means that in addition to monitoring the clinical care that patients receive, we can also know what the mortality rate is and how often they come back to hospital, which is really important to help shape future research and patient care.

“What we are moving towards in healthcare globally is patient related outcomes, such as how heart attacks affect a patients’ quality of life and improving the aspects of care a patient feels are most important to them.”

With this in mind, Dr Tavella and her team are hoping to optimise what the data in CADOSA will be used for in the future. Already the team have made some life-changing discoveries, which have gone on to inform research and improve patient care for people living with heart disease worldwide.

“Using our international relationship with America we can look at their trends and see what we are doing differently, which is stimulating discussions on how we could then approach our work in a different way,” Dr Tavella said.

Using the CADOSA structure, Dr Tavella and her team have also improved what is known as a ‘door to balloon time’ in one hospital. Door-to-balloon is a time measurement in emergency cardiac care for patients with heart attacks. It reflects the amount of time between a heart attack, patient’s arrival in



Dr Tavella.

the emergency department and the time they receive angioplasty/stenting - a lifesaving treatment which restores blood supply to the heart.

The improvement was achieved

by introducing a new communications process for staff and then monitoring the performance between the emergency department staff and cardiology before the new process, during and also after it, which led to great improvements for patients.

“At the moment we are also starting a trial to look at different medical therapies for patients with residual angina (chest pain caused by insufficient blood flow and oxygen), and we are hoping to see benefits with the use of different treatments. We’re hoping to have early results of this in the next six months,” Dr Tavella said.

“There’s nothing else like CADOSA within Australia. I’ve been able to see changes and improvements in our healthcare system quite quickly, it’s very fulfilling. My supervisor Professor John Beltrame has been a great mentor to me and it is because of his leadership that we’ve been able to establish CADOSA, which is one of three international sites around the world that’s piloting the International Consortium for Health Outcome Measurement for coronary artery disease.”

You’ve made this a reality – thank you!



How Research You Support Gave Back a Young Dad's Life – Daniel's Story



Daniel has his life back, thanks to research you support!

“Being in the cardiac ward at 38-years-old and being the youngest person there by 40 odd years felt very strange....”

Father-of-one Daniel Balmforth never thought heart disease would affect him at such a young age, but when he collapsed at work one morning he knew something was wrong. Four years later Daniel was visiting the emergency department on a weekly basis.

“It came out of nowhere. I collapsed at work one day, and then it just kept happening, multiple times a week. I would collapse literally out of nowhere,” Daniel said.

“The attacks were excruciating. It felt like I was getting stabbed multiple times, and then my heart would begin to spasm, so it felt as if a knife is being twisted inside your body.

“It got to the point where I was in hospital five days out of seven each week. Sometimes I would be in the morning and then back in the afternoon.”

Baffling medical professionals, Daniel was suffering from refractory vasospastic angina, a form of angina which causes heart arteries to spasm. For many sufferers of vasospastic angina, it is only a major or minor heart vessel that spasms when an attack occurs, but in Daniel's case it was both.

“This is why it was such a mystery as the professionals hadn't seen it before and they didn't know how to treat it.”

Let go from his job and unable to even travel to the local supermarket without risk of a sudden attack, Daniel was becoming increasingly frustrated with his debilitating condition until he made contact with Professor John Beltrame, Head of the Discipline of Medicine and Cardiologist at The Queen Elizabeth Hospital (TQEH).

Fortunately having a well-established research interest in vasospastic angina, Prof Beltrame was confident he knew what Daniel was suffering from and organised a procedure to confirm his suspicions.

“We were about to induce a spasm when Daniel actually

experienced a spasm in the middle of the procedure and that's when we made the diagnosis,” Prof Beltrame said.

“After this we trialled many conventional and unconventional cardiac drugs to try and control Daniel's refractory vasospastic angina, which demonstrated the ongoing research needed to identify drugs for this condition.

“Through my research I was aware of an international study suggesting that a particular drug was effective in treating vasospastic angina. We then had to go through several regulatory processes to obtain this drug through TQEH's pharmacy.”

Daniel has now been taking this treatment for six months and it's already turned his life around. Not only has he avoided his weekly trips to the emergency department, but he is also only experiencing minor chest pain from his condition.

“This treatment is working really well. I do have pains every couple of days but my other treatments support that. Without it I would still be in the hospital on a fortnightly basis,” Daniel said.

“Now I can start looking forward. My daughter is only 10-years-old and she's seen things she should never have to see.”

“I've rarely been able to travel anywhere and if I have it's been dictated by what hospitals are close by. It was only four months ago that I took my first day trip in four years.”

Visiting Prof Beltrame every three months, Daniel is slowly returning to doing the things he loved before his condition took over his life. With his case highlighting how important ongoing research is in treating patients with rare conditions like his own, Daniel is confident Prof Beltrame will go on to answer more questions around the condition, improving outcomes for others diagnosed in the future.

“As much as this whole ordeal has been hard for me, in the grand scheme of things it's really good. Now the next person who presents to hospital with the same symptoms can be diagnosed straight away, and they'll be able to immediately start on this treatment.”

With your support Australian Heart Research along with partner The Hospital Research Foundation is proud to support Prof Beltrame's heart research. Thank you for making this possible! If you would like to support ongoing research into rare heart conditions like Daniel's, please fill in the enclosed coupon and



Prof Beltrame in the lab.

World First Finding – New Method to Predict Heart Failure Risk

You may recognise Dr Doan Ngo from a letter we sent to you last year! You are the reason Dr Ngo, her team and other heart researchers can go on to make life-changing research discoveries.. Thank you!

Receiving funding from Australian Heart Research (AHR) in partnership with The Hospital Research Foundation (THRF) was the start of an exciting adventure for Dr Ngo, who is now leading world-first research into a protein they have confirmed correlates with the natural process of the heart increasing in size as we age.

“As we age our heart gets bigger in size, it’s a natural physiological process. Unfortunately this increase in size affects your risk of developing not only heart failure but also atrial fibrillation, an unnatural heart rhythm,” Dr Ngo said.

“What we have discovered through our research is a protein that we’ve confirmed promotes the increase in size of a patient’s heart.

“So this protein is expressed in the heart meaning it increases in number as our heart thickens and it changes as the heart does.

“No one knew this until now so this is a very exciting new research area.”

A promising breakthrough in heart research, Dr Ngo and her team’s discovery could lead to a new method for testing a patient’s risk of heart failure.

“Since this protein changes so fast it can be used as a way of predicting any early changes in a patient’s heart – this can be done through a simple blood test,” she explained.

“The current way of measuring the size of a patient’s heart is through an ultrasound or MRI which are both notoriously expensive for patients.

“A blood test will tell us how present this protein is and in turn allow us to measure any increase in thickness of the heart. The protein will also change shape in patients who may be at risk of heart failure.”

Proving to be an all-important protein, Dr Ngo confirms this finding will help specialists determine the best course of treatment for patients suffering from a heart condition.

“Since we know that the amount of the protein increases in patients with conditions such as atrial fibrillation, this discovery will help doctors determine if a patient’s condition is new onset or if it’s a more persistent and permanent case.

“The other potential benefit of this research is helping doctors decide the best treatment for patients with acute heart failure.



Dr Ngo is passionate about beating heart disease.

“For patients who suffer from acute heart failure where medical therapy hasn’t helped, they are treated with a device. This device only has a 70 per cent response rate, and no one knows why this is the case. What we’ve discovered is if levels of this protein are high in the patient at the time of the device transplantation then their heart is less likely to respond to the device.

“This could revolutionise treatment and help guide the physician to know which people will have a higher or lower chance of responding to the device.”

Your support made it possible for Dr Ngo to kick-start this research project as she and her team eagerly prepare to translate this finding to patients as soon as possible.

“The funding from AHR and THRF has enabled us to establish this research and we are very excited by all these new things we have recently uncovered,” she said.

“It’s such a long and difficult process to obtain funding, and support from the community is absolutely crucial for the continuation of this type of research.”

With family members of her own affected by various medical conditions as so many families are, Dr Ngo is driven to make her mark in the world of research – eager to develop new and improved therapies for the conditions affecting so many.

“I’m very passionate about the cardiac and endocrine system. My overall career goal is to continue working towards finding different mechanisms and therapeutic targets to one day discover something that will change medical therapy as we know it.”

Your support plays a vital role in research discoveries like these! We look forward to keeping you updated as Dr Ngo’s research progresses.



Research to Fix a Broken Heart



Sven is hopeful his finding will help combat broken heart syndrome.

With your support, research at the Basil Hetzel Institute for Translational Health Research (BHI) is leading the way in understanding the heartbreaking condition of Takotsubo Cardiomyopathy (TTC), commonly known as 'broken heart syndrome' and 'Stress Cardiomyopathy'.

Discovered over 20 years ago in Japan and often misdiagnosed as a form of heart attack, TTC occurs when the heart's left ventricle, the main pumping chamber, is 'stunned' and does not work properly.

Thanks to your support, researchers at the BHI have come so far in their understanding of TTC leading to improving diagnosis of the condition.

Triggered when a person goes through severe emotional or physical stress, like the loss of a loved one, currently there is still no treatment available for the heartbreaking condition.

Fortunately PhD student Sven Surikow is determined to change this! He's been hard at work developing a potential therapy to speed up people's recovery from TTC, which if successful will be the first of its kind internationally.

"Up until five years ago the general consensus was that TTC resolved itself in about a week and was not that serious. We have learned it only appeared that way, the heart beat was going back to normal but the energetics within the heart could actually take from three months to a year or more to recover. This meant patients were still experiencing symptoms for up to a year," Sven explained.

"The aim of my research is to find a new therapeutic treatment that will accelerate this recovery without causing the patient any other side effects."

Have you been touched by heart disease?

We would love to share your story! Email us at contactus@ausheartresearch.com.au or call 08 8244 0591.

The need for new treatments for TTC could not be more crucial, with the condition not only becoming increasingly more common in Australia but also having a significantly high recurrence and mortality rate.

In order to develop these potential therapies, Sven first had to understand what is happening to the heart when a person undergoes an emotional or physical stress and is diagnosed with TTC.

"Based on past research we know when people experience physical or emotional stress they release huge amounts of adrenaline-like chemicals called catecholamines into the heart, which in turns stuns the heart's muscles and causes TTC," Sven said.

"Through our research we've discovered the release of these adrenaline-like chemicals results in inflammation of the heart.

"What we don't know is what is causing this inflammation and how we can reduce it to not only help patients heal faster but also reduce the number of deaths as a result of TTC."

Over the past two years Sven along with his supervisors at the BHI has been testing two therapies in which he's had varied results, but is set to investigate a third this year he is hopeful will have the right result for TTC patients.

"With the results we've received from testing those therapies we can now suggest this new therapy may improve both heart function and inflammation.

"If this proves correct and this therapy is successful, we're hoping it will go on to reduce morbidity and mortality of patients who are living with TTC."

Looking to launch this phase of his PhD early this year, we look forward to keeping you updated on the progress of Sven's research!

"It's so important that we figure out a treatment that actually works for patients with TTC. I think the condition will only continue to become more prevalent as people start to understand it better."

Thanks to you support, research like Sven's into the heartbreaking condition of TTC will only continue to grow and ultimately improve the quality of life of people living with the disease.

Did you know?

90 per cent of broken heart syndrome patients are women over the age of 50-years-old.

