The cardiovascular clinical stream

Welcome to the first publication dedicated to the Sydney Local Health District cardiovascular clinical stream. Within these pages are just some of the incredible stories of patients who have benefitted from the innovative care and research delivered by our extraordinary staff. All departments within the clinical stream, cardiology, cardiothoracic surgery, vascular surgery and renal medicine, are distinguished by a culture of research and scholarly enquiry, which enhances all aspects of clinical care. The stream boasts a remarkable proportion of specialist clinicians with higher research degrees, and many of its clinical leaders are also leaders of major national scientific and clinical bodies.

Our major research partners include the Heart Research Institute, the Centenary Institute of Cancer and Cell Biology, the George Institute for Global Health, the National Health and Medical Research Clinical Trials Centre, the Baird Institute, and the ANZAC Research Institute. Our research is supported by category 1 funding from bodies such as the NHMRC, the Australian Research Council, and the National Heart Foundation, as well as by funds from philanthropic donors and departmental contributions.

Delivery of clinical services to patients with cardiovascular disease is changing dramatically. Models of care today are different from five years ago. They are likely to be profoundly different in another five years. The drivers of change are the changing epidemiology of the diseases we deal with and relentless progress of biomedical innovation, which yields new technologies to tackle old problems.

- **Cardiology** is made up of several services including inpatient and outpatient care through specialised clinics, ambulatory care, invasive and non-invasive cardiology, and electrophysiology.

- **Cardiothoracic Surgery** is performed predominantly at Royal Prince Alfred Hospital and covers valve surgery, device implantation, surgery of the aorta, coronary artery surgery, left ventricular remodelling surgery, thrombo-embolectomy, ECMO retrieval service and participation with cardiologists in interventional structural heart disease program.

- **Vascular Surgery** includes major operative and endoluminal procedures in theatres. Endoluminal procedures are performed on out-patients in the cardiac catheterisation labs at Royal Prince Alfred and in operating theatres only at Concord.

- **Renal Medicine** incorporates inpatient care, outpatient care, in-centre dialysis, satellite dialysis, home dialysis, renal transplantation and specialist clinics.

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Professor Phillip Harris
- Clinical Director, Cardiovascular Services

Professor Len Kritihadis, Head of Cardiology, Deputy Clinical Director, Cardiovascular Clinical Stream, Concord Repatriation General Hospital
Trends in illness and treatment

Diseases of the heart, blood vessels and kidneys are among the most prevalent in the western world and the most common reason for hospital admission, contributing significantly to both emergency and planned admissions. Ageing of the population and the epidemics of obesity and diabetes are also increasing the prevalence of cardiovascular disease and patient presentations.

We are also seeing many patients, who would have died in the past without recent breakthroughs in treatment, now surviving longer and requiring ongoing, intensive care. Some new interventions, such as the Transcatheter Aortic Valve Implantation, allow us to help patients who could not be treated previously, driving up demand.

While coronary disease continues to be a major problem, there is a growing burden of structural heart disease and arrhythmias and this is matched by a growing capacity to treat these problems.

Our knowledge of cardiac arrhythmias, for instance, and our ability to diagnose them through ECG and panel genetic sequencing has increased rapidly in the past decade. These people now live longer, with many requiring implantable devices and lifelong complex medical care.

In renal medicine, the number of patients requiring dialysis increases by about six per cent each year, driving greater demand for ultrasound and x-ray images, and shifting focus towards preventing patients from requiring dialysis.

In cardiology, the demand for echocardiography continues to grow and cardiac magnetic resonance imaging has become the standard of care for a growing number of structural heart problems.

The rapid advances in endoluminal technologies in vascular surgery are increasing demand for sophisticated theatre facilities and vascular ultrasound.

Our local community

By 2021, the Sydney Local Health District population is expected to reach 642,000. Five years after that, we expect to hit almost 670,000. The growing elderly population is critically important for healthcare planning and delivery over the coming decade, with a predicted increase of 29.2 per cent in the 70 to 80 age group and 28 per cent in the over 85 age group. This population growth and ageing is placing significant pressure on cardiovascular services across Sydney Local Health District.

At the last census, Sydney Local Health District was home to 4,875 people identifying as Aboriginal and Torres Strait Islander, a community which has known high rates of cardiovascular risk and disease.

Almost half of the people in our catchment area report speaking a language other than English at home, and seven per cent are unable to speak English well. We are committed to ensuring that our non-English speaking communities feel welcome and comfortable navigating our health district and have the same access to high quality health service as everyone else.
What we do

Last year we performed:

- 3,217 diagnostic catheterisations
- 1,541 percutaneous coronary interventions
- 313 electrophysiology studies
- 430 permanent pacemaker implantations
- 226 defibrillator implantations
- 247 cardiothoracic surgeries
- 333 coronary artery bypass operations
- 30 Transcatheter aortic valve implantation (TAVI) procedures

34,934 haemodialysis admissions
81 kidney transplant operations
35,245 acute renal admitted episodes

200 research papers were published
31 million dollars were generated in grant funding
46 currently ongoing clinical trials

81.8 million dollars spent delivering treatment and care to our patients
If Victoria Forsdick had been born 20 years earlier, she would not have survived.

Now a junior doctor at Royal Prince Alfred Hospital, she arrived into the world with blue lips, one ventricle and required immediate surgery.

“Some people with the same condition have required transplants, so I’ve been very lucky as I haven’t had any major complications in the 24 years since the operation,” Dr Forsdick says.

Surgeons performed the Fontan procedure, where blood vessels from the body are connected to blood vessels going to the lungs, without a pump between them.

“When I was born and had the operation very little was known about my heart condition and a lot of doctors thought I would have a poor quality of life, but that hasn’t been the case.”

She hasn’t allowed her condition to impede her ambitions, playing tennis at a national level and sitting on the Fontan Registry Steering Committee with RPA’s Director of Adult Congenital Heart Services, Professor David Celermajer, where she helps prioritise research and treatments for her condition.

“Until the mid-1970s, these poor kids were not surviving but with the advent of much better surgery in childhood and better care, the number and complexity of adults with congenital heart disease is increasing rapidly,” Professor Celermajer says.

“At first, only patients with simple conditions survived, but now the more complex patients are surviving and as we are observing them longer in their lives, they develop many more problems that we weren’t expecting.”

RPA’s multidisciplinary clinic is one of the largest in Australia and specialises in the most difficult and complex conditions.

“As we’ve been running for more than 20 years now, we can research even the very rare conditions, understand the outlook, the complications, and devise the best management strategies to help these patients, like Victoria, live long healthy lives,” Professor Celermajer says.

**Common congenital heart conditions**

- **Ventricular septal defect** – sometimes called a hole in the heart, this occurs when the septum separating the right and left ventricles doesn’t fully form. The hole allows oxygen-rich blood to leak from the left ventricle into the right ventricle, instead of moving into the aorta and on to the body.

- **Pulmonary valve stenosis** – blood flow from the right ventricle to the pulmonary artery is slowed by narrowing at the pulmonary valve, forcing the right ventricle to pump harder to get blood to the lungs.

- **Coarctation of the aorta** - The aorta is too narrow, forcing the heart to pump harder to get blood through the aorta and into the rest of the body. This can cause several life-threatening complications, including severe high blood pressure, aortic aneurysm, infection of the heart, brain hemorrhage, stroke and heart failure.

- **Transposed aorta and pulmonary artery** – the positions of the aorta and the pulmonary artery are reversed, with the aorta connecting to the right ventricle instead of the left ventricle and the pulmonary artery connected to the left ventricle instead of the right. This prevents oxygenated blood from reaching the body.
In 1955, Dr Richmond Jeremy told Agnes Pounder he couldn’t repair her dissected aorta to save her life, but that one day medical technology would make it possible.

Now, 60 years later, Dr Jeremy’s grandson and Royal Prince Alfred cardiologist, also named Richmond Jeremy, has not only helped save Agnes’ grandson, Justin, from the same condition, but ensured it would not be passed on to future generations.

The condition, Loeys-Dietz syndrome, is a genetic connective tissue disorder similar to Marfan syndrome, which causes aneurysms and sudden dissection in the aorta wall.

Justin now knows the syndrome is “rife” throughout his family but his first episode, which he described as “like a zipper tearing open down my spine”, occurred three years before it was first described in medical literature.

He required many surgeries over several years to gradually stent and replace sections of the aorta as tears and aneurysms continued, and eventually his entire aorta was replaced.

Aortic disease has been a field of rapid change and development over the past 10 years and RPA has played a major role in driving progress.

“Our surgeons are incredibly committed to innovation so you couldn’t do a lot of these things in many other places,” Professor Jeremy says.

“Our thoracic surgeons have developed new techniques, our vascular surgeons have improved stenting, and our cardiologists have enhanced our understanding of genetics and developed new interventions and new risk stratifications.”

The head of cardiothoracic surgery at RPA, Professor Paul Bannon, says RPA is one of only three units in the world developing early endovascular stenting.

“RPA was one of the best units in the world to manage Justin’s multiple stents and complex arrangements of stents,” he says. “It’s now world-wide, but we helped put endovascular stenting on the world map.”

For Justin, Raffi Qasabian, the late Geoff White, Paul Bannon and Michael Wilson spent countless hours keeping him alive.

“Everyone at RPA has been fantastic, from the surgeons to the nursing staff, and Professor Jeremy has become like a friend of the family,” Justin says.

For Professor Jeremy, it has been incredibly satisfying and rewarding to see Justin leading a normal life, and to know that genetic screening has ensured his sons Toby, 2, and Jeremy, 5, will never face the battles waged by their father and great grandmother.

Loeys-Dietz syndrome

The four main characteristics (not all are observed in all patients)

- Arterial tortuosity (twisting or spiralled arteries), most often occurring in the vessels of the neck and observed on imaging techniques.
- Hypertelorism (widely spaced eyes).
- Bifid (split) or broad uvula (the little piece of flesh that hangs down in the back of the mouth).
- Aneurysms (widening or dilation of arteries), which can be observed by imaging techniques. These are most often observed in the aortic root (base of the artery leading from the heart) but can be seen in other arteries throughout the body.

A killer tamed at last

Justin Pounder and his family

Andy Yong and Len Kritharides are leading a study focusing on the clinical application of computational fluid dynamics analysis examine coronary blood flow; the pathophysiological consequence of myocardial bridging in coronary arteries; improved understanding into the cardio-protective mechanism of remote ischaemic conditioning; and the clinical application of the Syntax Score. And collaboration is the key with the team working with researchers from Stanford University Medical Centre in the United States, the Alfred Hospital in Melbourne, Liverpool, Royal North Shore and Westmead hospitals.

Patients with hiatus hernia often have dyspnoea related to lung compression and other factors. In a project, led by John Yiannikas, a series of studies using differing imaging modalities, has shown a substantive compression of the left atrium with evidence of altered cardiac filling in many of these patients. This is worsened by exercise, feeding and the Valsalva manoeuvre. The work to date represents the world’s largest series of patients documenting the cardiac effects of hiatus hernia.

Len Kritharides and Wendy Jessup are looking at the regulation of cholesterol metabolism and efflux from macrophages in the presence of HDL (good cholesterol), the biochemistry, glycosylation and secretion of apolipoprotein E (a molecule important in coronary disease and Alzheimer’s disease), and novel responses of macrophages to cholesterol. Both staff were awarded Distinguished Researcher and Scientist awards by the Australian Vascular Biology Society of Australia.

This is an environment and culture that supports important medical research and uses that knowledge to improve our care and directly benefit our patients.

Professor
Tony Keech
RPA
The clip that gave a family back their mother

Concord Hospital’s Dr Thomas Yeoh treated Jamila Dable’s numerous heart complications for more than five years, but time was running out.

“Mrs Dable had received a triple bypass operation several years ago, but her leaking mitral valve was quickly becoming much worse and open heart surgery was far too risky,” Dr Yeoh said.

The 83-year-old was experiencing pain in her arms and legs and could barely walk without becoming exhausted.

Royal Prince Alfred cardiothoracic surgeon Professor Michael Vallely said Mrs Dable was lucky the District had invested in a new technology, the Mitraclip, which could be deployed via a catheter through the vein in the groin, pinning the leaking mitral valve leaflets together and reducing the volume of blood flowing back into the heart.

“We were able to position a clip exactly where the leak was occurring and where the leaflets were not meeting, and clip the leaflets together so that we could stop the leak,” Professor Vallely said.

“On the first night after the procedure, she reported that she was able to sleep through the night without shortness of breath for the first time.

Interventional cardiologist Professor Martin Ng said RPA was fortunate “to have a unique interdisciplinary structural heart team, with collaboration between cardiology, cardiothoracic surgery, geriatric, radiology and cardiac anaesthetics”.

For Mrs Dable, this meant she could fulfil her dream to attend her granddaughter’s wedding – and was even able to have a dance.

“We couldn’t believe how quickly she improved, not over a number of weeks but overnight,” her son, George, said.

“Five years earlier we thought we were going to lose her, so she and the whole family are incredibly grateful.”

For Professor Ng, the case highlights the transformation underway in cardiovascular medicine, which is leading to such sophisticated less invasive procedures becoming routine for low risk younger people.

“Imagine if a 50-year-old, in his prime working life, could be treated with something like this and go home the next day, as opposed to staying in ICU for a week, moving to a ward, and then going to rehab,” Professor Ng says.

District champions the Mitraclip

From November 2013, Sydney Local Health District has made a significant investment in Mitraclip technology, as the device is not funded through usual channels. The device has been used successfully in 12 patients and all have done well. “We are running this program with a desire to treat people with no other options and be at the vanguard of medicine, and RPA has consistently been forward looking in that regard,” Professor Ng says.
In 2005, Edward Hastings died suddenly while playing rugby at the age of 17. The cause of his death remained a mystery for the next four years until his sister, Lucy, then 24, experienced ventricular tachycardia while playing netball in Dubbo.

“It was a terrifying time because, clearly it was a potentially lethal condition, and I was not just concerned for me, but for my two older brothers as well,” she says.

After reviewing her family history, Royal Prince Alfred Hospital cardiologist Professor Chris Semsarian initiated genetic testing and quickly discovered the gene fault responsible for arrhythmogenic right ventricular cardiomyopathy. The lifelong, potentially progressive condition is marked by hypokinetic areas involving the free wall of the right ventricle.

Now a paediatric registrar at Sydney Children’s Hospital, Dr Hastings received an implantable cardioverter-defibrillator and her family was screened for the gene fault. “Lucy’s case is a perfect example of how much we have improved in diagnosis, understanding of these diseases, clinical evaluation and genetic analysis over the past 10 years, and RPA has really led that field,” Professor Semsarian says.

“If Lucy’s brother had died today, we would have immediately activated screening of her family and implanted devices or initiated medical therapy to prevent sudden death.”

In 2003, Professor Semsarian and Dr Jodie Ingles established Australia’s first genetic heart disease registry and clinic, which has led to national initiatives regarding sudden death and genetic investigation of young people.

Today, the registry has more than 1200 families with genetic heart disease benefitting from care and preventative intervention. RPA has also been at the forefront of genetic sequencing and interpreting in Australia. “Five years ago, we could analyse one gene a year and we can now look at 22,000 in six weeks,” Professor Semsarian says.

Dr Hastings now helps Professor Semsarian screen children in rural Cambodia for rheumatic heart disease through the 500 Hearts charity.

Our philosophy of care is to empower patients to be as independent as possible by embracing the principles of self-care.

Jane Zeng, Nurse Unit Manager, Satellite Dialysis, Concord Hospital
We’re involved in a study to identify patients admitted to hospitals in NSW with a diagnosis of venous thromboembolism since 2000, and explore their health for a decade. Led by Austin Chin Chwan Ng and Len Krihtarides, we’ve found that patients with pulmonary embolism have reduced long term survival; those who do survive have functional impairment and show evidence of abnormal global coagulation; patients who present with pulmonary embolism while on warfarin have a very risk of recurrent pulmonary embolus; and that acute values of serum sodium, troponin T and comorbidity all independently predict long term outcome.

At Concord Hospital, we have the largest database in Australia assessing the long-term outcome of patients admitted since 2000 with confirmed pulmonary embolism. Through the database, we’re aiming to continue to provide contemporary outcome insights and establish preventative strategies.

We’ve been looking at novel aspects of platelet activation and coagulation in clinical contexts. Findings include specific shear-related platelet activation in human coronaries, evidence of activation of the CD147 pathway in circulating platelets in patients with coronary disease and evidence of abnormal global coagulation in patients with schizophrenia and long term survivors of pulmonary embolism.

I’m so grateful to work in a place that provides such excellent care for patients and to be surrounded by health professionals and researchers at the top of their fields.

Dr Rachael Cordina, RPA

Royal Prince Alfred Hospital’s state-of-the-art hybrid theatre has made complex high risk procedures safer and more precise than ever since it opened in 2013. Now Concord Hospital is set to establish its own $4.5 million hybrid theatre, combining the latest imaging technology within an operating theatre.

One of the theatre’s first patients would not be alive today without the accuracy and flexibility the theatre provides.

“I don’t believe in miracles and things like that, but this was just like a miracle,” the patient says.

In 2013, he arrived at RPA with a ruptured thoracic aneurysm and was treated with a stent graft. Despite significant complications, he survived and went on to have a complex endovascular repair of an abdominal aortic aneurysm.

Royal Prince Alfred Hospital’s Dr David Robinson led the surgical team and says the case perfectly illustrates the value of the hybrid theatre.

“It allowed us to do both procedures in the one setting and meant that we had real time imaging while we were performing the procedure,” he says.

“The first operation would have been a lot more difficult and the second probably would have been impossible without the hybrid technology.”

Teamwork plays a key role, with vascular surgeons, anaesthetists and radiographers working together while cardiothoracic surgeons observe in case needed to assist with stent grafts.

The patient’s wife prays for Dr Robinson and his team often and wishes them a lifetime of happiness.

“I am so grateful that he is alive and that I still have him with me,” she says. “They are all great surgeons.”

For Dr Robinson, challenging cases are the most rewarding as they require all his skills and deliver patients “from death’s door back to their families”.

RPA’s hybrid theatre was named for the late former head of vascular surgery, Professor Geoff White, honouring his pioneering contribution to vascular surgery and the improvement of patient outcomes.
The phone call that changed a life

At midnight on January 8 this year, 70-year-old Maaen Abdullahat received the call he had scarcely dared to hope for during his six year battle with chronic kidney disease.

“They said ‘are you ready for your kidney transplant’ and I said ‘yes I am’,” Maaen recalls. “I was so happy and so excited.”

After more than 4,000 hours of dialysis over four years, he had begun to wonder if his age would exclude him from the waiting list, but Concord Hospital’s staff specialist Dr Mona Razavian, says Maaen was “a perfect patient”.

“He was medically fit, psychologically fit and he complied with all his treatment and medication,” she says. “Unfortunately, he had a family history of renal disease so there were no medically-fit live donors in his family.”

Royal Prince Alfred’s Professor of Kidney Transplantation, Steve Chadban, says transplant suitability guidelines requires an 80 per cent probability that patient will still be alive five years after the operation.

“Maaen now has a good quality of life to look forward to, rather than being stuck to a machine, and importantly, transplantation is much cheaper than dialysis to the taxpayer and to RPA,” Professor Chadban says.

“Keeping a patient on dialysis costs $70,000 to $100,000 each year, while transplantation costs about that in the first year, then $15,000 in the second year, and every year after that you save more money.”

Dr Razavian says Maaen is a remarkable patient for his age, as he quickly learned to operate the home dialysis machine, only requiring occasional assistance from Concord Hospital’s home dialysis nurses.

“Not everyone can operate the machine themselves, but home dialysis is more convenient and comfortable, it can run longer for better outcomes, and it allows the patient to take ownership of their disease,” she says.

“He visited to thank me 10 days after the transplant and it is wonderful that he has this freedom and extra time to spend with his big loving family.”

Maaen would like to thank “all of the very good doctors at Concord Hospital and RPA” for his “new life”.

Professor Steve Chadban

Concord Renal Unit is participating in a trial investigating phosphate reduction though Lanthanum use, and its effect on arterial compliance, left ventricular mass and vascular calcification in chronic kidney disease patients. Registered Nurse and Project Manager of the study, Samantha Hand, said the study would determine whether early attention to blood levels of phosphate in people with chronic kidney disease will reduce the risk and burden of cardiovascular disease.”

We have seen huge improvements in heart failure outcomes with our multi-disciplinary approach and heart failure specialist nurses supporting patients in the community.

Dr Michele McGrady, RPA
The first time Lotfi Tawadros first saw Concord Hospital cardiologist Professor Andrew Sindone, he was so weak he could barely walk.

Beginning with bypass surgery in 1997, Mr Tawadros, 86, has endured a long list of chronic conditions, including abdominal bleeding and heart failure. Last year, he began receiving visits from Sydney Local Health District’s Cardiac Chronic Care nurses.

“We give the patients information about how to manage the disease themselves, teach them which symptoms to watch out for and provide an action plan in case they start getting worse,” says clinical nurse consultant Virginia Booth.

“Basically, we do everything we can to keep them healthy and out of hospital.”

For Mr Tawadros, that included convincing him to attend chronic disease rehabilitation at Royal Prince Alfred Hospital, a commendable feat, according to his wife, Laurice.

“It was hard because he doesn’t listen much and likes to do what he wants to do, but they were very good at encouraging him,” she says.

“Now, he is very happy to go because he is feeling so much better and that has encouraged him to go outside and do things.”

Chronic disease rehabilitation senior physiotherapist Lissa Spencer says exercise is the key to reverse what she calls the “disability spiral”.

“When they’re told that they have a heart condition, they are frightened, their families want to wrap them in bubble wrap and they do less physical activity, which increases their chances of rehospitalisation,” Ms Spencer says.

“Exercise is the best thing they can do for themselves, but often they need the supervision to gain the understanding and confidence to do it alone at home.”

Mr Tawadros is becoming faster, stronger and more confident, and is committed to improving with the help of his nurses and physiotherapists.

Fighting fit after rehab

When Lissa Spencer’s clients finish their rehabilitation sessions, she encourages them to continue exercise programs at home or at their gym, local pool, or through walking groups.

“Our rehabilitation aims to provide patients with an effective transition from the hospital to the community,” Ms Spencer said. “Many of her patients attend personal trainer John ‘Sparrow’ Dowse’s senior fitness exercise classes at the University of Sydney Sports and Aquatic Centre.

“Put them through a full range of exercises that targets all muscle groups in my circuit training class,” Sparrow says.

“We make sure that when they get back on their feet, they stay there.”

Sparrow, previously a Wallaby fly-half, has been an instructor of safe, fun and effective circuit classes for over 55 year olds for the past nine years.
Uniting two passions: a lifelong mission

Royal Prince Alfred Hospital’s head of cardiothoracic research, Professor Paul Bannon, has myriad research initiatives that are close to his heart, but an underlying drive has long been improving the connection between surgery and research.

“At a national level, the public expects every surgeon to be academic so the concept of a separation between the two needs to go,” Professor Bannon says.

“Not every surgeon needs to be a scientist, but they must at least be abreast of the latest literature and practice evidence-based medicine. The better scenario would be for every surgeon to contribute to the knowledge required to be innovative.”

To affect this change, Professor Bannon, who is also the President of the Australian and New Zealand Society of Cardiac and Thoracic Surgeons, disseminates clinical practice guidelines and measures how widely they are received and adopted.

“We are also trying to stop this idea that clinical trials are experimenting on patients,” he says.

“There is clear evidence that patients in clinical trials get better care, so surgeons need to be aware of the trials, submit patients appropriately and push knowledge that way.”

One of the ways Professor Bannon pushes knowledge is to collate cardiothoracic surgical data from RPA and compare it to the Australian national database. RPA’s database for aorta replacement amounts to 25 per cent of all data held nationally.

The results for transcatheter aortic valve implantation (TAVI), which Professor Bannon established in conjunction with cardiology, are also being examined.

“We need to know how best to use resources, to do the surgery the best you can, select the patients the best you can and to do that you’ve got to measure everything and be prepared to change.”

Synthetic blood vessels

Professor Bannon is also heavily involved with the Baird Institute’s Biomaterials Research Team, which is close to producing the “gold standard” of synthetic blood vessels.

“Lots of groups have been trying to do this for years but we are one of the closest to achieving it at the moment,” he says.

“We’ve actually reconstructed the mammary artery and showed that it’s strong enough to sew with, that it stays open for at least six weeks and that it inhibits cellular ingrowth. So we’ve had some promising signs but we need to sustain them.”

The biocompatibility knowledge generated by this project can be transferred to significantly improve the performance of coronary stents and heart valve replacements.

Despite advances in bypass surgery and lower limb stenting, a significant portion of patients develop ulcers and gangrene, requiring amputation. For these patients the use of bone marrow stem cells has shown promise as a potential therapy. Our pilot study, to develop a feasible methodology to collect and safely administer a patient’s own bone marrow stem cells to treat ulcers and gangrene, showed they can be delivered safely to avoid amputation, improve ulcer healing and reduce pain.

Dr Sanjay Patel is part of a group studying novel stem cells for cardiovascular regeneration. The group has a particular interest in induced pluripotent stem cells (iPSCs), which are generated via reprogramming of mature skin cells. This groundbreaking work represents an exciting development in regenerative medicine, as these cells not only overcome the ethical concerns related to the use of human eggs or earlier embryos for deriving stem cells, but also have the potential to produce patient-specific stem cells.

Professor David Brieger is leading the Australian Grace Risk Score Implementation Study (AGRIS) is a randomised trial examining the impact of routine implementation of an objective risk stratification tool, The GRACE risk score, for patients presenting with an acute coronary syndrome on the provision of evidence based care. Thirty hospitals will participate in this study which is being coordinated from the Cardiology Department at Concord Hospital.

“"It is a privilege to work in an environment where you have opportunities to actively improve the delivery of cardiovascular care.”

Professor David Brieger, Concord Hospital
RPA’s Raj Puranik and his team recently developed a method in which patients can exercise within the MRI scanner and have real-time physiology calculated to understand changes in cardiac function. Exercise MRI, allows better diagnosis of disease states which only manifest during cardiac stress. We have been applying this technology to those born with congenital heart disease up till now in particular Tetralogy of Fallot, aortic disease and in the future we will apply this technique to respiratory disease as well.

Our focus here is to look at novel aspects of platelet activation and coagulation in clinical contexts. Findings include specific shear-related platelet activation in human coronaries, evidence of activation of the CD147 pathway in circulating platelets in patients with coronary disease and evidence of abnormal global coagulation in patients with schizophrenia and long term survivors of pulmonary embolism (the coagulation projects in collaboration with Dr Jenny Curnow). Current projects include delineating changes to platelet function during reperfusion, exploring the role of platelet microparticles in regulating global coagulation, and pathways involved in shear-related platelet activation.

"RPA has a long history of managing the coordinated care of complex health problems for patients from all walks of life combined with a passion for medical research and training the health professionals of the future.

Dr Ian Wilcox"

Generosity saves lives

When Yvonne Johnstone’s son, Robbie, died suddenly almost four years ago, she chose to honour his life by helping save others.

Having worked as a cardiology department secretary at Royal Prince Alfred Hospital for more than 25 years, Ms Johnstone donated $15,000 from Robbie’s superannuation fund to help purchase an ultrasound machine for her former workplace.

“I was always very impressed with what they do and how dedicated they are, and I wanted something useful to come from Robbie’s passing,” she said.

“It was his money so really he made the contribution that could help save lives. He’d like that.”

Sydney Local Health District’s Clinical Director of Cardiovascular Services, Professor Phil Harris, has praised Ms Johnstone for her generosity.

“It’s simply amazing that, in her time of personal loss and tragedy, she thought of making a gift to the hospital and the department,” he says. “We thank her and we honour Robbie’s memory as she has done with this gift.”

How to donate

Every year, the cardiovascular clinical stream receives a great deal of support from generous individuals and organisations donating money to help fund vital research and clinical care. Much of the research supported by these donations is working towards breakthroughs in the treatment of some of the most lethal diseases and illnesses and could save or change countless lives over generations. We are incredibly grateful to all our donors and their generosity makes an enormous difference to everything we do. Donations can now be made easier than ever by using our convenient online donation page at [www.slhd.nsw.gov.au/supportUs.html](http://www.slhd.nsw.gov.au/supportUs.html)
Our Research Partners
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