San Doctor

Neuro Edition 2026

Adventist HealthCare

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Message from Brett Goods, Chief Executive Officer

It has been a significant period of growth and innovation for San Neuro, and I'm pleased to share this dedicated edition of San Doctor with you.

This edition comes on the back of several major milestones, including the opening of our new hybrid biplane theatre – the most advanced of its kind in the country. This capability is further strengthened by the introduction of cutting-edge imaging technology, including the G-Arm, and the expansion of our robotic platform with the cranial arm extension of the Globus system.

Together, these advancements are enhancing precision, supporting minimally invasive approaches and enabling our clinicians to deliver increasingly complex care with improved outcomes for patients.

We are also proud to spotlight our comprehensive Parkinson's service in recognition of Parkinson's Awareness Month, highlighting the multidisciplinary care available to support patients across their treatment journey.

As always, our focus remains on working in partnership with you to provide timely access to specialist care and the best possible outcomes for your patients.

Thank you for your ongoing support.

Brett Goods, CEO

Chief Executive Officer
Adventist HealthCare Limited

References for articles are available on request.

Intraoperative CT scans with the Globus Excelsius3D – the 'G-arm'

An article by Clinical Professor Brian Owler

For the Sydney Adventist Hospital (the San), continued innovation through the adoption of technology that makes surgery safer and less invasive for patients is at the core of what we offer our patients and the community. After 20 years of practice as a consultant neurosurgeon, I've been privileged to see how technology has revolutionised surgery. Intraoperative imaging and navigation have been a key driver of this innovation.

Intraoperative navigation, whether it be for cranial or spinal surgery, is now an essential tool for neurosurgeons. Essentially, it means a surgeon can place an instrument anywhere on the brain or spine and see on a screen exactly where they are. It's like a GPS for the brain or spine. In fact, the instrument can be placed on the skin of the scalp or back and the scans will show where in the brain or spine the instrument is pointing to.

To use intraoperative navigation, some form of anatomical imaging needs to be acquired during or prior to the surgery. The surgeon then 'registers' anatomical landmarks on the patient and matches them to the scan. In spine surgery, and in some cranial surgeries like Deep Brain Stimulation (DBS), an intraoperative 'on table' scan is needed during the surgery.

The Globus Excelsius3D (G-arm) scanner is the latest technology that can perform both x-rays and CT scans in the operating theatre. It can be driven into the operating theatre with a joystick and carefully manoeuvred over the patient. The scans can then be obtained within a few minutes.

The San is the first hospital in New South Wales to obtain the G-arm, and the second in the country. We are indeed very fortunate to have this technology.

The successful implementation of a robotic surgery program at the San, including for neurosurgery with the Globus ExcelsiusGPS robot, continues to provide more options for our surgeons and patients. However, the use of the robot relies on images for planning by the surgeon to instruct the robot as to how it should position itself to guide the surgeon to the correct site. This may be to accurately place pedicle screws into the spine or place an electrode into the brain for DBS surgery. The accuracy needed in some of these procedures is submillimeter, without ever seeing the target directly.

Together, the Globus robot and G-arm form an ecosystem in the operating room that allows efficient and safe acquisition of images that are directly sent to the robot. The surgeon can then plan the surgery on the robot and use it to achieve the accuracy needed to target the structure in the brain or spine of interest.

There are other advantages too. The G-arm has a wide field of view. Other technology might require multiple scans particularly when performing surgery on long areas of the spine. Now that area can be imaged in one scan, requiring less radiation for the patient. The images are also very clear.

At the end of the surgery, the Excelsius3D can be brought back into the area to repeat the scan and make sure that the surgeon's plan has been achieved to the highest accuracy.

This new equipment is part of the San's deliberate strategy to drive innovation and clinical excellence. As a neurosurgeon, and head of the San's neurosurgery department, my colleagues and I are very pleased to be able to offer the latest technology for our patients.

ClinProf Brian Owler

MBBS, BSc(Med)Hons), PhD, FRACS

ClinProf Brian K Owler AM is an adult and paediatric neurosurgeon and Head of the Department of Neurosurgery at the San. He is experienced in the management of brain and spine tumours, hydrocephalus, complex spinal conditions, and functional neurosurgery.

ClinProf Owler is a Clinical Professor of Neurosurgery at the Australian National University. He currently serves on the Board of the Royal Australian College of Surgeons as well as Adventist HealthCare Limited. He is a Fellow of the Royal Australasian College of Surgeons, a former president of the Australian Medical Association and was made a Member of the Order of Australia in 2018 for significant service to medicine and medical education.

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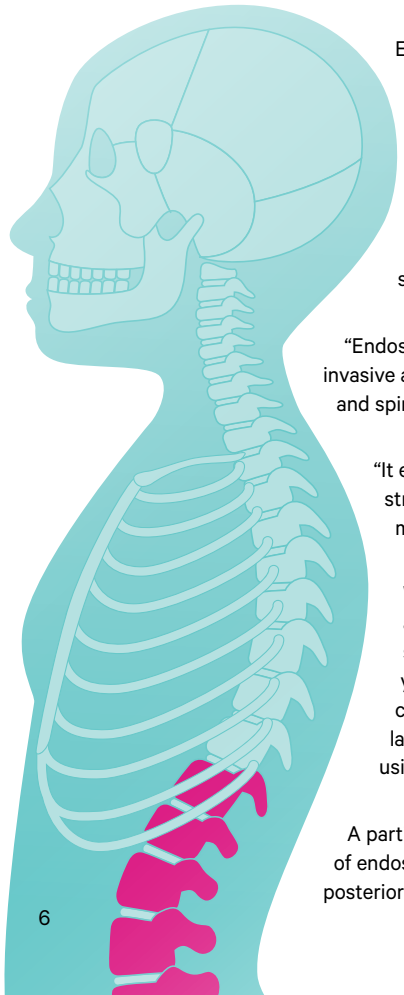
Endoscopic Spine Surgery at the San

An article by Dr Shanu Gambhir



Endoscopic spine surgery is an evolving minimally invasive technique that utilises a small working channel and high-definition camera to treat a broad range of spinal pathologies. Procedures are typically performed through a 7–9 mm incision, compared with 2–4 cm in traditional open approaches, allowing targeted neural decompression with minimal disruption to surrounding soft tissues.

"Endoscopic spine surgery represents an ultra-minimally invasive approach," says Dr Shanu Gambhir, neurosurgeon and spine surgeon at the San.

"It enables us to precisely decompress neural structures while preserving normal anatomy and minimising collateral tissue damage."

While initially adopted for lumbar disc herniations and sciatica, the indications for endoscopic spine surgery have expanded significantly over recent years. It is now possible to treat more complex conditions, including severe central canal stenosis, lateral recess stenosis, and recurrent pathology, using endoscopic techniques.

A particularly important development is the application of endoscopic techniques in the cervical spine, especially posterior cervical foraminotomy for cervical radiculopathy.

This approach allows direct decompression of the affected nerve root via a small posterior incision, avoiding the need for fusion in appropriately selected patients. By preserving segmental motion and minimising disruption to paraspinal musculature and stabilising structures, this technique offers a motion-preserving alternative to traditional anterior cervical discectomy and fusion (ACDF). Patients may benefit from reduced postoperative pain, earlier mobilisation, and faster return to normal activities.

Over the past five years, Dr Gambhir has increasingly incorporated endoscopic techniques into his practice, with approximately 80% of spinal procedures now performed endoscopically. This includes not only lumbar decompression for disc herniations and stenosis, but also cervical endoscopic foraminotomy and selected thoracic discectomy.

"With growing experience and advances in instrumentation, we are now able to treat a broader spectrum of spinal pathology endoscopically, including more complex cases," he says.

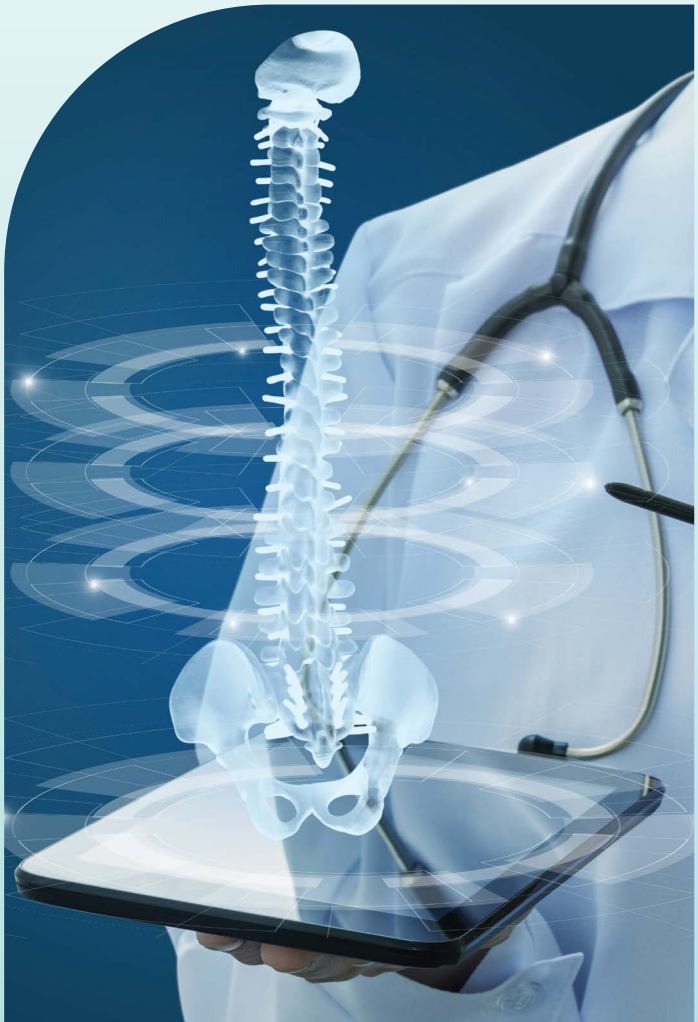
Benefits of endoscopic spine surgery

- Smaller incisions
- Reduced tissue disruption and muscle injury
- Less blood loss
- Shorter hospital stays
- Faster recovery and return to function

The use of continuous irrigation enhances visualisation of neural structures, while high-definition magnification provides excellent anatomical detail, allowing precise and controlled decompression.

Emerging evidence suggests that, in appropriately selected patients, endoscopic spine surgery achieves clinical outcomes comparable to conventional open or microscopic techniques, with potential advantages in recovery time and perioperative morbidity. Early data from local case series has also demonstrated low infection rates and a complication profile similar to traditional approaches.

Endoscopic spine surgery continues to evolve rapidly and is becoming an integral component of modern spinal surgical practice, offering selected patients a less invasive yet effective alternative across both lumbar and cervical pathologies.



Dr Shanu Gambhir

MBChB, MS, FRACS (Neurosurgery - Brain and spine)

Dr Shanu Gambhir is an Australian trained Neurosurgeon and Spine surgeon. He specialises in minimally invasive spine surgery, endoscopic surgery, complex spinal and cranial surgery. He practices a minimalistic approach to ensure the best patient outcomes.

Dr Gambhir completed his advanced training in Neurosurgery through the Royal Australasian College of Surgeon (RACS) at major tertiary hospitals in Australia and New Zealand. He is a Fellow of the Royal Australasian College of Surgeons (RACS), member of the Neurosurgical Society of Australasia (NSA) and Australian Medical Association (AMA).

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Management Strategies in Incidental Aneurysms

An article by Dr Jun Kim

With the increasing use of advanced imaging, incidental intracranial aneurysms are being identified more frequently in general practice. It is estimated that 2–5% of the population harbour an unruptured aneurysm, the vast majority of which will never cause harm.

However, the diagnosis can generate significant anxiety for patients, and determining which aneurysms require intervention remains a nuanced clinical challenge.

The most critical role for GPs is recognising the features of a ruptured aneurysm, which constitutes a neurosurgical emergency. Patients typically present with a sudden, severe headache, often described as the "worst headache of my life", frequently accompanied by nausea, vomiting or other neurological symptoms. Immediate referral to hospital is essential, even if initial imaging is inconclusive.

In contrast, most aneurysms encountered in general practice are incidental findings on imaging performed for unrelated symptoms such as headache or dizziness. In these cases, the priority is to exclude red flags and arrange appropriate specialist assessment.

Management decisions are guided by a combination of patient factors (age, comorbidities, family history, smoking status) and aneurysm characteristics (size, location, morphology and number). The key clinical question is a balance between:

- The lifetime risk of rupture, and
- The upfront risk of intervention

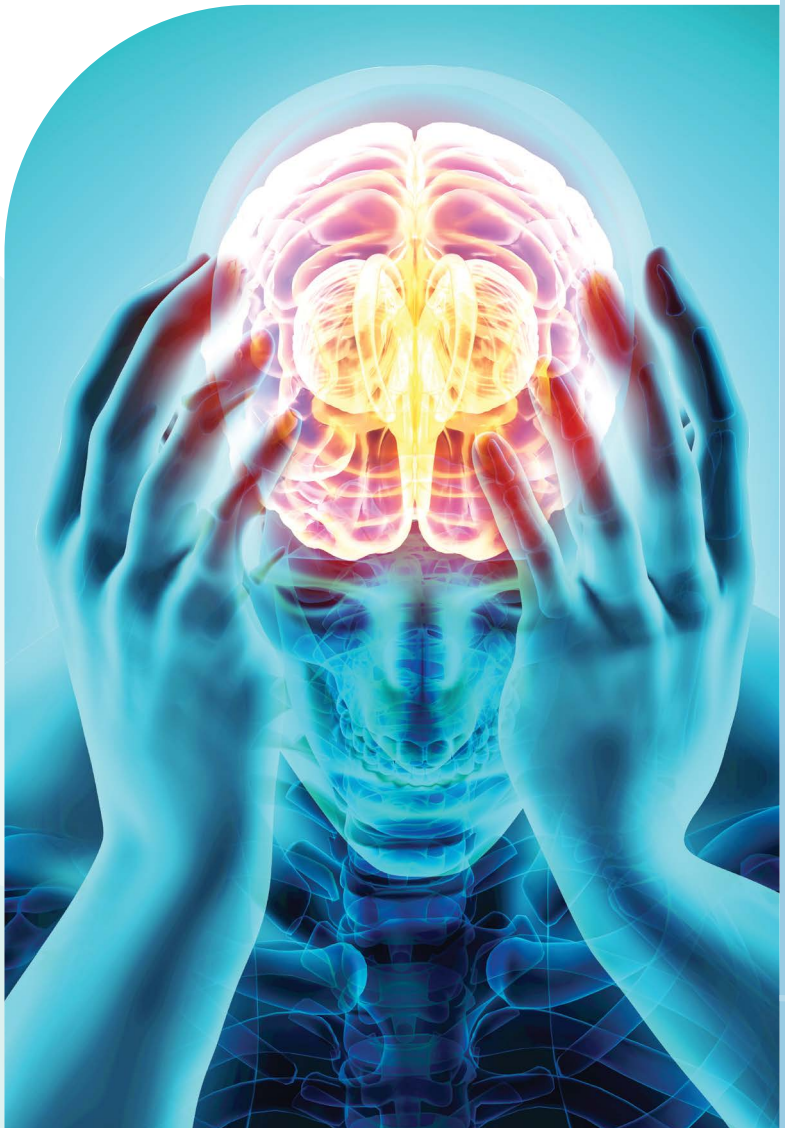
For most patients, the appropriate strategy is conservative management with surveillance. Reassurance, supported by structured follow-up imaging, is often the most important aspect of care.

For higher-risk aneurysms, treatment options include both microsurgical clipping and endovascular approaches, such as coiling or flow diversion. Advances in both techniques have significantly improved safety and efficacy, allowing for tailored, patient-specific treatment.

In complex cases, a multimodal approach may be required, combining endovascular and surgical techniques to achieve optimal outcomes. These type of cases can now be done in the same theatre at the same time at the San in the new hybrid biplane theatre.

At the San, aneurysm care is delivered through a highly integrated neurovascular service, where neurosurgeons and interventional neuroradiologists assess patients together. This collaborative model ensures that patients receive balanced advice and access to the full spectrum of treatment options.

The key takeaway is that while incidental aneurysms are common, most do not require intervention. Early referral for specialist assessment can help guide management, alleviate patient anxiety and ensure appropriate follow-up.



Dr Jun Kim

B.Sc(Med), MBBS, FRACS (Neurosurgery)

Dr Jun Kim is an Australasian trained Neurosurgeon. After completing his internship and residency, he undertook advanced neurosurgical training at multiple units around Australia and New Zealand. He received the fellowship of the Royal Australasian College of Surgeons in 2019. He also undertook advanced clinical fellowships in cerebrovascular and skull base surgery and paediatric neurosurgery in Dallas, Texas, where he was mentored by world leaders in cerebrovascular surgery.

Dr Kim has specific interest in cerebrovascular disorders including arteriovenous malformation (AVM), aneurysms and moyamoya disease; tumors including vestibular schwannoma, meningioma, glioma, pituitary tumours; endoscopic skull base surgery; and trigeminal neuralgia.

Dr Kim is active in research and teaching and has published in the areas of head injury, neuro-oncology, epilepsy and cerebrovascular disorders. He serves as a reviewer for prestigious journals such as Neurosurgery and Operative Neurosurgery and is involved in the teaching of medical students and trainees. He is a member of the Australian Medical Association (AMA), Neurosurgical Society of Australasia (NSA), American Association of Neurological Surgeons (AANS) and the North American Skull Base Society (NASB).

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Managing Cerebrovascular Disease: the Short History of Neurointervention

An article by Dr Kenneth Faulder

Neurointervention has undergone a remarkable transformation over the past three decades, evolving from a niche, last-resort technique into a cornerstone of modern cerebrovascular care.

In the early 1990s, the introduction of platinum coil embolisation marked the beginning of endovascular treatment for cerebral aneurysms. Initially reserved for cases unsuitable for surgery, coiling has since become a first-line treatment for many aneurysms following landmark clinical trials demonstrating improved outcomes compared to open surgery.

Since then, the field has expanded rapidly. Advances in imaging, device technology and operator experience have enabled the treatment of increasingly complex vascular conditions with minimally invasive techniques.

One of the most significant developments has been the rise of mechanical thrombectomy for acute ischaemic stroke. Landmark trials in 2015 demonstrated that endovascular clot retrieval dramatically improves functional outcomes, with a number needed to treat of approximately 2–3 to achieve independent recovery. This represents one of the most effective interventions in modern medicine.

Today, neurointerventionalists manage a wide spectrum of conditions, including:

- Acute stroke
- Intracranial aneurysms
- Arteriovenous malformations and fistulae
- Carotid artery disease
- Chronic subdural haematoma (via middle meningeal artery embolisation)

Importantly, the specialty has also shifted toward comprehensive patient care, rather than purely procedural intervention. Neurointerventionalists now play an active role in assessment, decision-making, inpatient management and long-term follow-up.

Collaboration is central to this model. Optimal outcomes are achieved through close partnership between interventional neuroradiology, neurosurgery and neurology, ensuring that each patient receives the most appropriate treatment based on their individual condition.

At the San, the development of a dedicated neurointerventional service, supported by advanced imaging and biplane technology, enables the delivery of state-of-the-art, minimally invasive care. This includes both elective and emergency treatment pathways, supported by an integrated multidisciplinary team.

This evolution means that many cerebrovascular conditions that previously required open surgery, or had limited treatment options, can now be managed with less invasive, highly effective techniques, often with faster recovery and improved outcomes.

Dr Kenneth Faulder

MBBS, FRANZCR

Dr Kenneth Faulder is a specialist trained Interventional Neuroradiologist (INR), completing his fellowships at Royal North Shore Hospital and Mount Sinai Hospital, New York. He has extensive experience and works full time managing patients with neurovascular diseases, with specialist interest in cerebral aneurysms, arteriovenous malformations, dural fistulas and acute stroke.

Dr Faulder's role in patient management includes pre-procedural consultations, in-hospital clinical care before and after procedures, and long term clinical follow up. He works in close collaboration with clinical colleagues, especially neurosurgeons and neurologists, to provide individualised and optimal clinical care.

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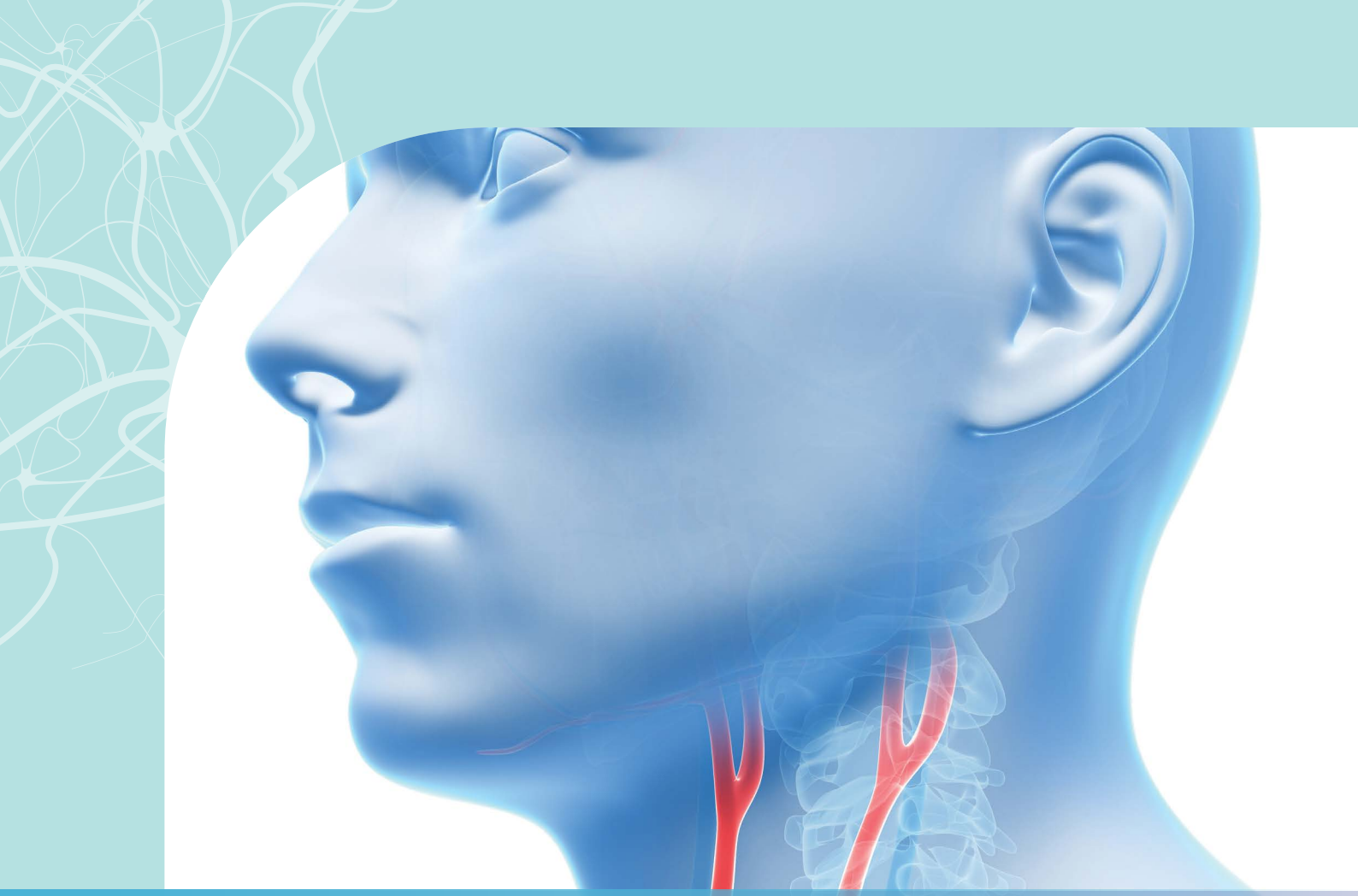


Modern, Evidence-based Management of Carotid Disease

An article by Dr Brendan Steinfort

Carotid artery disease remains a significant contributor to stroke burden in Australia, accounting for approximately 20% of the 55,000 strokes occurring each year.

While the fundamentals of diagnosis are well understood, the management of asymptomatic carotid stenosis continues to evolve, driven by advances in both medical therapy and procedural techniques.

Historically, carotid endarterectomy demonstrated superiority over medical therapy in selected patients. However, contemporary practice must now be considered in the context of improved pharmacological management and rapidly advancing endovascular options.

The recently published CREST-2 trial provides important contemporary data in this space. This large, rigorously conducted study compared intensive medical therapy alone with medical therapy plus either carotid stenting or endarterectomy in patients with high-grade asymptomatic stenosis. Notably, the trial demonstrated a significant reduction in stroke and death with stenting plus medical therapy compared to medical therapy alone, while endarterectomy did not demonstrate a statistically significant benefit in this study.

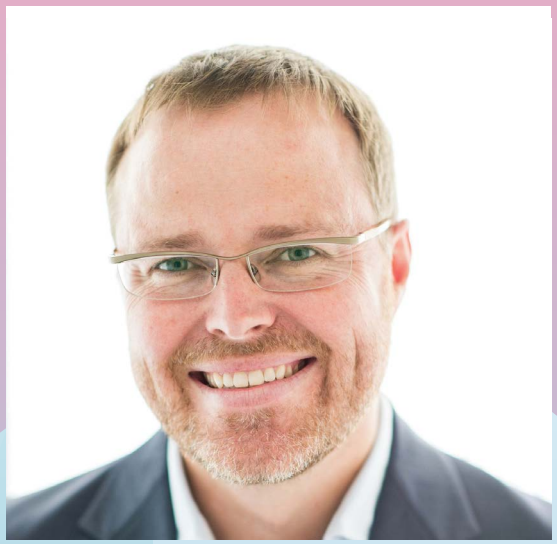
It is important to interpret these findings in context. Outcomes in CREST-2 reflect highly selected patients treated by experienced operators in specialised centres. Periprocedural complication rates were exceptionally low, around 1.3%, highlighting the importance of expertise and case selection.

The key message is that management of asymptomatic carotid stenosis is no longer one-size-fits-all. While many patients will continue with optimal medical therapy alone, there is an increasing role for carefully selected intervention, particularly with modern stenting techniques.

Equally important is recognising that carotid-related strokes are not always "minor." In contemporary stroke practice, large vessel occlusions secondary to carotid disease can result in devastating neurological injury, reinforcing the importance of early identification and appropriate referral.

Technological advancements are also reshaping outcomes. Contemporary stents, embolic protection devices and flow control systems have significantly reduced procedural risk. These innovations, combined with operator experience, are contributing to steadily declining complication rates over time.

Ultimately, decision-making should be individualised and multidisciplinary. At the San, patients are assessed within a collaborative neurovascular framework, ensuring that medical, endovascular and surgical options are all considered in a balanced, patient-centred discussion.



Dr Brendan Steinfort

MBBS, FRANZCR

Dr Brendan Steinfort is a specialist trained Interventional Neuroradiologist (INR). His fellowships were completed at Royal North Shore Hospital and The National Hospital of Neurology & Neurosurgery, Queens Square London.

Dr Steinfort has extensive experience with neurovascular disease with special interest in cerebral aneurysms, AVM and dural AV fistulas embolisation, intracranial stenting and internal carotid artery stenting. He works full time managing patients from consultations to procedures to follow up.

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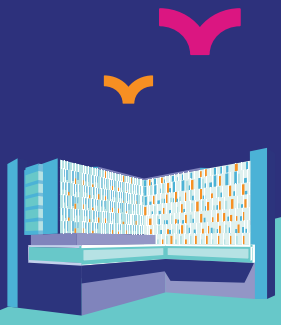
San Foundation

raising funds for Sydney Adventist Hospital

We work alongside the San to raise funds for research, technology, education, and facilities so our hospital can continue to be a world class leader at the forefront of private hospital care.



San Foundation is your way to support our hospital and the future health and wellbeing of our community.

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Nurse Spotlight

LEFT
Lovely Espero (Nursing Unit Manager)

RIGHT
Krista Dormitorio (Stroke Clinical Nurse Consultant)

Behind our exceptional neurosurgeons and neurologists are a team of highly skilled nurses providing expert care, coordination and support at every stage of the patient journey.

In this edition, we're shining a light on the dedicated nursing professionals within the San's Neuro Ward, whose clinical expertise and patient-centred approach play a vital role in achieving the best possible outcomes for patients and clinicians.

We spoke with Nursing Unit Manager Lovely Espero and Stroke Clinical Nurse Consultant Krista Dormitorio about their roles and how their team works alongside our specialists to deliver seamless, high-quality care.

Can you briefly describe your role and what a typical day looks like?

Kristia: I work as a Stroke Clinical Nurse Consultant at the San. A typical day might involve responding to stroke calls in emergency care or on the wards, helping to coordinate care with the multidisciplinary team, and spending time with patients and their families to explain what's happening and what to expect next. I also work closely with nursing teams, providing education to ensure we're delivering the best possible, evidence-based stroke care across the hospital.

Lovely: I am new to the role of Nursing Unit Manager on Radley Ward. My role involves overseeing the day-to-day operations of the ward to ensure safe and effective patient care. A typical day includes checking staffing, the surgical list, and managing incoming admissions and discharges. I also check on patients regularly and address any issues, such as concerns or complaints, as they arise. A key part of my role is ensuring the ward is appropriately staffed and supported to meet patient needs. Some days involve meetings, while others are more focused on ward-based activities.

How long have you been working in neurosurgery/ the Neuro Ward at the San?

Krista: I've been part of the Neuroscience Ward at the San for 11 years now. My journey began at the bedside, where I built strong assessment skills and quickly found myself drawn to caring for patients with stroke. Working closely with them really shaped my practice and helped me see where processes could work better. That experience ultimately led me into my current role as a Stroke Clinical Nurse Consultant, where I get to use my clinical background to improve workflows, support the team, and help drive quality initiatives that make a real difference to patient care.

Lovely: I have been with the San for 13 years. In June 2013, I started working as an AIN at Dalcross Hospital which was owned by the San, and we moved to the San in 2015.

What drew you to this area of nursing?

Krista: I moved to Sydney from the Philippines and started working in a neurosurgical ward as soon as the opportunity arose. Over time, the ward evolved to include neurology cases. Eleven years later, I'm still proud to be working in the same ward and specialty. I loved the complexity of this area of nursing. No two patients are ever the same and I was really drawn to that challenge. In this field, you're constantly learning, adapting, and supporting patients through life changing moments.

Lovely: We once cared for a patient who had been unable to walk for several years due to a spinal cord injury. After undergoing back surgery and being discharged to rehab, she returned to the ward about a year later, this time walking with her four-wheeled walker, and personally thanked the team for their efforts. That moment was incredibly powerful. It wasn't just the skill of the Neurosurgeons that stood out, but the way the entire team worked together toward a shared goal to improve her quality of life. Since then, I've been inspired by the impact of collaborative care. As the ward evolved into a Neuroscience ward, we began caring for Neurology patients and stroke patients. Seeing their recovery journey, often from severe

impairment to regaining their independence is deeply rewarding. Being part of that process, even in a small way, is what continues to motivate me in this field.

What makes the Neuro team at the San unique?

Krista: What really stands out to me is how genuinely collaborative and patient-focused the neuroscience team is. There's a shared commitment to delivering quality, holistic care beyond the acute phase.

Lovely: What distinguishes the neuroscience team at the San is the strong unity across its entire multidisciplinary team. It's not just the expertise of highly skilled and very supportive Neurosurgeons, Neurologists and Neuro Interventionists, but the way they collaborate seamlessly with dedicated registrars, interns, other specialists, CNCs and nursing staff across all departments. This collective depth of knowledge ensures that every patient benefits from well-rounded, carefully considered care. Together, this combination of clinical excellence, strong support, teamwork, and genuine patient-centred care is what sets the Neuro team at the San apart.

How do you support patients through complex neurosurgical journeys?

Krista: A big part of my role is helping patients understand what's happening and what to expect next. I support patients and families by providing education, coordinating care, and acting as a point of contact throughout their hospital journey.

Lovely: By identifying their individual concerns and ensuring care is tailored to their needs. This involves working closely with the entire disciplinary team, from doctors and nursing staff to allied health and hospitality. Also, the importance of involving family members in the care process and ensuring they feel supported.

What do you find most rewarding about your role?

Krista: The most rewarding part is seeing patients progress whether that's regaining independence, feeling more confident about their condition, or simply knowing that they feel supported and cared for. Being able to contribute to improvements in stroke care alongside a dedicated team is incredibly rewarding.

Lovely: Seeing patients recover and feel genuinely happy with the care they receive and knowing that our team has made a meaningful difference in someone's life is incredibly fulfilling. I really value being part of such a very supportive and incredible team.

Stroke Service

San recognised for gold standard stroke care

Earlier this year, Sydney Adventist Hospital became the first private hospital in Australia to receive an Angels Award from the World Stroke Organisation, achieving gold status for stroke care.

The award recognises hospitals that consistently deliver high-quality stroke care, from rapid diagnosis through to timely treatment.

The recognition builds on the San's strong foundations in stroke services. The San is one of 40 hospitals in NSW participating in the RISE - Realising Improvement in Stroke – program, focused on improving patient outcomes and setting global benchmarks. We are also accredited as a Primary Stroke Centre by the Australian Stroke Coalition, with certification valid through to 2028.

Navigating Advanced Parkinson's Disease: Modern Therapies to Manage Motor Fluctuations

An article by Dr Peter Puhl

Parkinson's disease (PD) is one of the most common neurological conditions, affecting approximately 150,000 Australians. It is more common in males than females, and while it is more common in the older population, it has a considerable impact on younger Australians due to its effect on maintaining employment and personal relationships.

PD is a progressive neurodegenerative condition and managing its many symptoms becomes increasingly difficult over time. While oral dopaminergic therapy has been the cornerstone of treatment since the 1960s, its effectiveness can wane in the advanced stages of the disease, leading to significant challenges for patients and their carers.

The upper north shore of Sydney, where the Sydney Adventist Hospital is located, has a very high prevalence of Parkinson's disease with the incidence of the condition rising annually by about four per-cent nationally, making accessible, advanced local services crucial.

The Challenge of Worsening Motor Control

Advanced PD patients often experience debilitating motor fluctuations, with unpredictable shifts between "on" periods of good symptom control and "off" periods where motor symptoms return. These challenges are driven by a convergence of physiological and pharmacokinetic factors.

Biological Progression: The ongoing loss of dopamine-producing neurons diminishes the brain's capacity to store and buffer dopamine. As a result, the motor response becomes directly tied to the short half-life of oral levodopa. This creates a "pulsatile," non-physiological stimulation of dopamine receptors, in contrast to the constant, tonic stimulation found in a healthy brain. Over time, this leads to cellular adaptations that sensitise the motor system, increasing the risk of both motor fluctuations and dyskinesia. Furthermore, as PD advances, it damages non-dopaminergic pathways, contributing to symptoms like postural instability and freezing of gait that are less responsive to levodopa.

Pharmacokinetic Issues: Autonomic dysfunction, a common feature of PD, frequently causes delayed gastric emptying (gastroparesis). This slows the transit of medication from the stomach, leading to unreliable absorption and "delayed on" or "no-on" responses where a dose fails to take effect. Medication efficacy is further complicated by dietary protein, as levodopa competes with amino acids for the same

transporters in the gut and across the blood-brain barrier. Factors such as higher levodopa dosages and younger age at onset also increase the risk of developing these complications.

These issues compound over time, often resulting in worsening disability and a gradual decline in quality of life. For these patients, transitioning from standard oral therapy to advanced, device-aided therapies can be transformative.

Advanced Therapeutic Options at the San

The Parkinson's disease service at the San is dedicated to offering a comprehensive suite of device-assisted therapies designed to provide more continuous and reliable symptom control.

Our program is designed to be easily accessible, caring, highly efficient, and cost-effective. Patients can be referred by their GP to one of our neurologists for assessment. Suitable candidates are then often reviewed by our specialist Parkinson's Disease nurse, Suliana, who provides education and support on the practicalities of initiating these treatments.

Our therapies include:

Subcutaneous Apomorphine: A potent dopamine agonist delivered via intermittent injections (pen) or a continuous subcutaneous infusion pump. This therapy bypasses the gut and can be initiated and adjusted in an outpatient setting.

Duodopa®: This therapy delivers a continuous infusion of levodopa-carbidopa intestinal gel directly into the small intestine via a percutaneous endoscopic jejunostomy (PEJ) tube, ensuring consistent absorption. It is initiated during a brief hospital admission following a successful trial with a temporary nasoduodenal tube.

Vyalev®: The newest therapy available, Vyalev provides a continuous subcutaneous infusion of a levodopa-carbidopa solution. It is well-tolerated, highly effective, and offers a less invasive pump-based alternative that can be managed in the outpatient clinic. It may require a brief hospital admission for the initial set up and adjustment.

Deep Brain Stimulation (DBS): A well-established neurosurgical treatment, available for over 30 years. It involves the implantation of electrodes into specific brain regions to modulate abnormal nerve signals. This is managed by our highly skilled and experienced team of neurologists and neurosurgeons, who have performed hundreds of these procedures.

These advanced treatments are considered for patients with progressive issues with symptom control, including worsening gait, freezing, increased falls, or difficult-to-manage motor fluctuations and dyskinesia. By offering these modern therapeutic options, we aim to improve symptom stability, enhance quality of life, and provide renewed hope for patients and families living with advanced Parkinson's disease.

Dr Peter Puhl

MBBS, FRACP

Dr Puhl is a general neurologist with subspecialty interests in clinical neurophysiology, stroke and movement disorders including Parkinson's disease, in addition to the use of botulinum toxin in a variety of neurological disorders. He is currently the Head of the Neurology Department at the Sydney Adventist Hospital.

Dr Puhl graduated from medicine at University Kiel, Germany. He has had extensive training in neurology in Australia and Germany and completed a neuromuscular fellowship at the Concord General Repatriation Hospital in Sydney.

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Deep Brain Simulation for Parkinson's Disease

An article by Dr Jacqueline McMaster

Chronic stimulation of the brain was first used in the 1960's for management of pain, however it soon became apparent that stimulation of the subthalamic nucleus could affect the symptoms of Parkinson's disease (PD).

Initially this information was used to direct lesioning however in the early 1970's neurostimulators were developed to be implanted into the brain for long term stimulation and symptom modification.

Deep brain stimulation (DBS) is a surgical procedure which can be used to treat the debilitating symptoms of Parkinson's disease. These symptoms include tremor, rigidity, stiffness and slowed movements. The procedure can also be used to treat other tremor conditions and movement disorders, for example, dystonia. Patients are usually referred for consideration of DBS when their symptoms can no longer be adequately managed with medications without considerable side-effects.
The goals of DBS are to improve quality of life, decrease burden of illness on both patients and their families and to reduce medication related side effects such as dyskinesias. It also helps to relieve the motor fluctuations related to medication dosing, which can be quite debilitating and interfere with normal daily activities such as holding down a job.

The main advantages are that it is easily adjustable and potentially reversible if needed, compared to previous lesioning therapy. However, it is not suitable for all PD patients, is costly, and in cases with a non-rechargeable system, requires replacement of the pulse generator.

After referral to our movement disorder service, patients go through a comprehensive work-up procedure prior to consideration for surgery. This includes:

- Neurologist assessment
- MRI brain
- Psychiatrist review
- Clinical assessment:
    - Videos
    - Rating scales (Unified Parkinsons Disease Rating Scale – UPDRS)
    - Dose challenge (to determine responsiveness to levodopa which helps predict likelihood of benefit from surgery)
- Clinical neuropsychologist review – particularly if there are cognitive concerns
- Neurosurgeon review

The DBS system includes bilateral intracranial electrodes inserted into a deep nucleus of the brain (subthalamic nucleus), connected via extension leads to the pulse generator located in the anterior chest wall. The pulse generator can be either a primary cell (requires replacement once battery depletes – on average every 5-6 years) or a rechargeable cell which does not require replacement at all. The rechargeable cell does require regular charging by the patient which occurs using wireless technology.

The surgery is typically performed in two parts, with the first performed while the patient is awake for insertion of the intracranial electrodes and the second part under general anaesthesia for tunnelling of the extension leads and insertion of the pulse generator into the anterior chest. During the first part, microelectrode recording is performed to ensure the correct location and allow stimulation to determine the best position for the permanent electrodes. Electrode position is confirmed with fluoroscopy.

We also have cases where the surgery is done with the patient entirely asleep, which is something that will be even more achievable with the recent addition of the cranial component of the Globus ExcelsiusGPS robotic system at the San. The San is the first hospital in the Asia Pacific region to use this robotic cranial arm for DBS. This technology will add further certainty to electrode positioning when we are unable to use intra-operative testing for the surgery due the general anaesthetic.

Stimulation is usually turned on within a couple of days of surgery and settings titrated to the patient's symptoms prior to discharge home. All programming is done using Bluetooth technology and the patients have a remote programmer to allow them to make minor adjustments to the system within the parameters set by the treating neurologist. This gives them some autonomy in managing their condition.

The patients have regular follow-ups to ensure the settings are working well and there are no stimulation side effects, such as balance or speech disturbance. Long-term reviews occur yearly with the treating neurologists and reviews with the neurosurgeons when the pulse generator requires replacement.

Dr Jacqueline McMaster

B.Med MSc FRACS

Dr Jacqueline McMaster is an Australian born and educated neurosurgeon. Dr McMaster has advanced fellowship training in stereotactic and functional neurosurgery, obtained from the University of British Columbia in Canada. Following the completion of her Fellowship in Canada, Dr McMaster returned to Australia as a consultant neurosurgeon. She offers treatment in a wide variety of neurosurgical disorders, both cranial and spinal, with a special interest in movement disorders.

Dr McMaster is a fellow of the Royal Australasian College of Surgeons, the Neurosurgical Society of Australasia, the Asian-Australasian Society for Stereotactic and Functional Neurosurgery and the World Society for Stereotactic and Functional Neurosurgery.

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Nurse Spotlight

At the heart of the San's highly specialised Parkinson's service is expert nursing care that supports patients every step of the way. Meet Suliana Manuofetoa, our Deep Brain Stimulation (DBS) Clinical Nurse Consultant.

Can you briefly describe your role and what a typical day looks like?

My role includes coordinating the care and management of people with Parkinson's Disease (PD) in the outpatient and inpatient setting. This may range from patient education and carer support to initiation of device assisted therapies (DAT) such as DBS or vyalev infusion with regular follow-ups. I work closely with the Neurologists, assist with referring patients to allied health and providing nursing staff education on the management of patients with PD.

How long have you been working in neurosurgery/ the Neuro Ward at the San?

I've been working at the San since December 2023. Before that I was working in Neurology for 10 years with two years specialising in Parkinson's disease.

What drew you to this area of nursing?

I've always been fascinated with the brain and loved Neurology. I was drawn to patients with Parkinson's as I observed how difficult their condition was, and I noticed there was not much awareness, recognition, or support for them. I wanted to work in this area to try and bridge the gaps for people living with Parkinson's.

From your perspective, what makes the Neuro team at the San unique?

The Neuro team at the San is unique because we are one of very few private hospitals in New South Wales that offer all services for Neuroscience.

Can you explain your role in supporting DBS patients before, during and after surgery?

DBS patients are referred to me by the Neurologists for a preliminary assessment which includes a review of their Parkinson's history and symptoms and a levodopa dose challenge to assess responsiveness to dopaminergic therapy.

If they have a positive response, they will undergo the remainder of their DBS workup and once complete, the DBS neuromodulation team meet to set the surgery date.

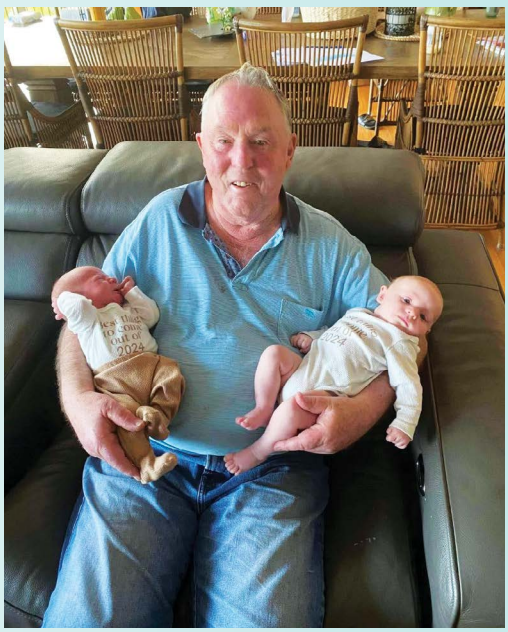
Support of the patient during surgery involves liaising with the Neurologist in assessing their response to stimulation and programming the DBS accordingly. Post-op, I follow them up weekly via telehealth for six weeks until they're reviewed by the Neurologist and then keep regular contact with the patient and carer to monitor symptoms and monitor for any side effects.

What do you find most rewarding about your role?

Seeing patients smile after improvement of their Parkinson's symptoms, whether it's due to medication changes, allied health input, or continuous dopaminergic therapies. It improves their quality of life, and as part of their interdisciplinary team I am happy to add a positive impact in their life.

Patient story:

Peter's Journey with Parkinson's



When Peter Woodbury first noticed a slight twitch in his left thumb, he didn't expect it would lead to a Parkinson's disease diagnosis.

Diagnosed in 2019, Peter, a 69-year-old grandfather of seven, began to experience a gradual progression of symptoms, including balance issues and involuntary movements that increasingly impacted his day-to-day life. As his condition progressed, Peter made the difficult decision to sell the family business.

Managing his symptoms required medication every few hours, but tremor and movement difficulties continued to affect his independence and quality of life.

As his symptoms became more difficult to manage, Peter was referred to the team at Sydney Adventist Hospital to explore advanced treatment options. In April 2026, he became the first patient at the San — and in the Asia Pacific — to undergo robotic-assisted Deep Brain Stimulation (DBS) surgery using the hospital's new cranial arm technology.

For Peter, the ability to undergo the procedure under general anaesthetic made a significant difference.

Following surgery, Peter noticed an immediate improvement, and his recovery progressed so well he was able to return home within just a few days.

"I'm hoping this will help me regain my independence, get back to doing everyday tasks on my own and spend more time playing with my grandkids."

Peter also praised the care he received at the San.

"The whole team was incredible, from the surgeons through to the nurses on the ward, I couldn't have asked for better care."

For Peter, the procedure represents a step towards regaining control and getting back to the moments that matter most.

A New Era in Alzheimer's Disease at Sydney Adventist Hospital

An article by Dr Carly Oboudiyat

Alzheimer's disease has long been considered incurable, with few treatment options. While our diagnostic tools have advanced with increasingly sophisticated imaging and biomarkers, our treatments have remained largely symptomatic. That is now beginning to change.

At Sydney Adventist Hospital, we are entering a new phase in dementia care: one in which we can begin to modify the underlying biology of Alzheimer's disease and slow down the relentless progression of the disease.

Anti-amyloid monoclonal antibodies were approved in Australia last year, after multiple clinical trials showed they meaningfully slowed down the progression of the disease. We are a rapid adopter of these new treatments, as one of the first hospitals offering access to the new medications. We are cautiously optimistic, as clinical trials show that removing amyloid plaques can translate into a measurable slowing of clinical decline. In recent phase 3 trials, patients treated in the earliest symptomatic stages (mild cognitive impairment or mild dementia) experienced a slower trajectory of cognitive and functional loss.

The effect size is modest, but clinically meaningful. In a disease defined by progressive decline, even a shift in slope matters. However, interpreting the evidence requires nuance. A recent Cochrane Collaboration review assessed anti-amyloid antibodies as a class and concluded that overall benefits are small and must be balanced against risks. While methodologically rigorous, this approach groups together therapies with fundamentally different mechanisms and efficacy profiles.

From a clinical perspective, this reinforces an increasingly clear reality: not all drugs, and not all patients, are equal. We offer a nuanced and specialised approach to assessment and treatment of cognitive decline, and even dementia prevention. This is where the field is moving. Away from broad generalisation, and toward precision.

Clinical Takeaways

- Anti-amyloid therapies modestly but meaningfully slow decline in early Alzheimer's disease
- Class-level analyses (e.g. Cochrane) may underestimate benefit by pooling heterogeneous agents
- Plaque-targeting antibodies appear to drive the strongest clinical signal
- Careful patient selection is essential: early disease, biomarker confirmation, and risk stratification
- Dementia prevention should begin in midlife, using a personalised, precision medicine approach

Careful patient selection is critical. Treatment requires confirmation of amyloid pathology via PET imaging or cerebrospinal fluid biomarkers and is most appropriate in early-stage disease. Increasingly, we are incorporating clinical phenotype, vascular comorbidity, and genetic risk (including ApoE 4 status) into decision-making. The emerging evidence suggests that benefit is concentrated in a narrower, well-defined group, underscoring the importance of selecting patients judiciously, as we do in our clinics as a multidisciplinary team.

There are also important safety considerations, most notably amyloid-related imaging abnormalities (ARIA), which can present as cerebral oedema or microhaemorrhages. While often asymptomatic, ARIA requires structured MRI surveillance and coordinated clinical oversight.
For this reason, implementing these therapies at Sydney Adventist Hospital is not simply about access to a drug, it is about building a system. A multidisciplinary pathway involving neurology, radiology, nuclear medicine, infusion services, and nursing is essential to deliver these treatments safely and effectively.

At the same time, it is important to step back and consider the broader context. Dementia is not simply a disease of old age; it is a disease of midlife. The pathological processes that culminate in Alzheimer's disease begin decades before symptoms emerge.

This is an area I feel strongly about. Alongside treating early symptomatic disease, there is a critical need to identify and engage patients in midlife and early late life, when intervention may have the greatest long-term impact. In my practice, this means taking dementia prevention seriously, using a precision medicine framework that integrates lifestyle, vascular risk optimisation, metabolic health, sleep, and emerging biomarkers into a personalised brain health and longevity plan.

Anti-amyloid therapies are not a cure. But they represent a meaningful step toward disease modification and, importantly, they signal a shift in how we think about Alzheimer's disease: earlier, more biologically, and more precisely.

For clinicians, this is a moment of both opportunity and responsibility. We are being asked to diagnose earlier, think more critically about evidence, and engage in more nuanced discussions about risk and benefit. For patients and families, it offers something that has long been missing: a sense of progress.

Alzheimer's disease remains a formidable challenge. But at Sydney Adventist Hospital, we are no longer standing still.

Dr Carly Oboudiyat

MD, FRACP

Dr Carly Oboudiyat is a Neurologist with a focus in Cognitive Neurology, which involves the diagnosis and treatment of patients with cognitive impairment and dementia. Carly has a special interest in brain health and the prevention of dementia and cognitive impairment using lifestyle and precision medicine. She strives to provide personalised consultations for each of her patients.

Dr Oboudiyat attended New York University School of Medicine, one of the top 10 medical schools in the United States. She obtained her specialist training in Neurology at the University of Miami, where she was the chief resident. She is double board certified in the United States in both Neurology, as well as Behavioural Neurology and Neuropsychiatry, and is a fellow of the Royal Australasian College of Physicians in Neurology. She also holds a clinical lecturer appointment with the University of Sydney, teaching and fostering medical students and trainees.

Dr Oboudiyat has been involved in many clinical trials, clinical research, and epidemiological studies into the underpinnings of neurodegenerative diseases, including Alzheimer's disease and other dementias. She is interested in the development of biomarkers as treatment modalities, prevention of cognitive impairment, and dementia from all causes.

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Stroke Neuroimaging at San Radiology and Nuclear Medicine

Advanced CT and MRI imaging to support rapid stroke assessment and specialist decision-making at Sydney Adventist Hospital

At San Radiology and Nuclear Medicine, we provide advanced stroke neuroimaging services to support the rapid assessment of patients presenting with neurological symptoms at Sydney Adventist Hospital.

Through the integration of acute CT stroke imaging, MRI capability, RAPID AI analysis, and dedicated post-processing tools, we support clinicians in making prompt and informed decisions.

As part of a Primary Stroke Centre, imaging is a critical component of the stroke pathway, helping clinicians identify stroke, assess its extent, and guide urgent treatment decisions.

CT

In the acute setting, Computed Tomography (CT) is typically the first-line imaging modality due to its speed, accessibility, and diagnostic value. For patients with suspected stroke, our service can provide a CT Stroke Series, which includes non-contrast CT Brain, CT Neuro-perfusion, and CT Angiography of the Head and Neck. Together, these studies offer a comprehensive assessment of intracranial haemorrhage, large vessel occlusion, cerebral perfusion, and vascular anatomy.

The non-contrast CT Brain remains the essential first step in excluding haemorrhage and identifying early signs of infarction or other acute intracranial pathology. CT Neuro-perfusion provides functional assessment of cerebral blood flow and helps identify infarct core and potentially salvageable penumbra, supporting acute treatment selection. CT Angiography of the Head and Neck complements this assessment by visualising the extra-cranial and intra-cranial circulation, allowing detection of stenosis, plaque, dissection, and vessel occlusion.

RAPID AI

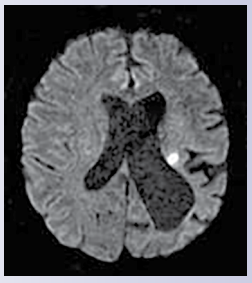
To further support clinical decision-making, San Radiology uses RAPID AI software to process neuro-perfusion data and generate automated perfusion maps. This provides additional support for clinicians assessing stroke severity and potential eligibility for reperfusion therapies. Our team also performs advanced vascular post-processing, including curved planar reformats and 3D maximum intensity projections, providing enhanced anatomical detail of the carotid and intracranial vessels.

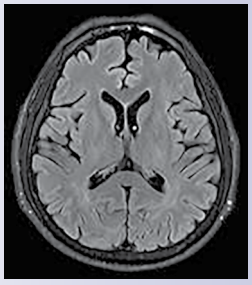
MRI

While CT remains the cornerstone of hyperacute stroke imaging, Magnetic Resonance Imaging (MRI) provides an important adjunct in selected patients. MRI is particularly useful where CT findings are equivocal, when there is suspicion of a small or posterior circulation infarct, or when alternative neurological diagnoses are being considered.

Stroke MRI protocols at San Radiology may include Diffusion Weighted Imaging (DWI), Perfusion Weighted Imaging (PWI), Magnetic Resonance Angiography (MRA), Susceptibility Weighted Imaging (SWI), and FLAIR sequences. DWI is highly sensitive for acute ischaemic injury and is particularly valuable in detecting small, early, or subtle infarcts that may not yet be visible on CT. PWI provides additional cerebral perfusion assessment and may also be processed using RAPID AI where appropriate.

MRA supports vascular assessment without ionising radiation, while SWI is useful in demonstrating microhaemorrhage, haemorrhagic transformation, and vascular abnormalities. FLAIR imaging assists in characterising established infarction, white matter change, and other background neurological pathology.





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