

Winter 2025

San Doctor

collaborating with our GPs
to provide coordinated
community care



Message from Brett Goods, Chief Executive Officer

This San Doctor Winter edition contains some important messaging about early onset bowel cancer, with data showing incidences are increasing. We look at what's causing the rise and how to better detect CRC in younger people.

We're also pleased to share with you some photos of a surgical robot which was recently acquired by the San for spinal surgeries, enhancing patient outcomes with less invasive procedures. We know there's a lot of interest in robotics and we'll have more articles on other areas of medicine where they're also making a big difference, in our Spring edition.

Brett Goods, CEO
Chief Executive Officer
Adventist HealthCare Limited

AN ARTICLE
BY

Dr Avelyn Kwok

AUSTRALIA HAS THE HIGHEST INCIDENCE
RATE OF EARLY-ONSET COLORECTAL CANCER
AMONGST 50 ANALYSED COUNTRIES

Early Onset Bowel Cancer



According to data extracted from the WHO-International Agency for Research on Cancer Incidence in Five Continents Plus Database, Australia was found to have the highest incidence rate of early-onset CRC (diagnosed between 25-49 years of age) amongst 50 countries of 16.5 per 100 000 person-years between 2013 and 2017.

This compares to the US with 15.2 per 100 000 person-years, New Zealand with 14.8 per 100 000 person-years, South Korea with 14.3 per 100 000 person-years and the lowest in Uganda with 4.4 per 100 000 person-years, and India with 3.5 per 100 000 person-years (1).

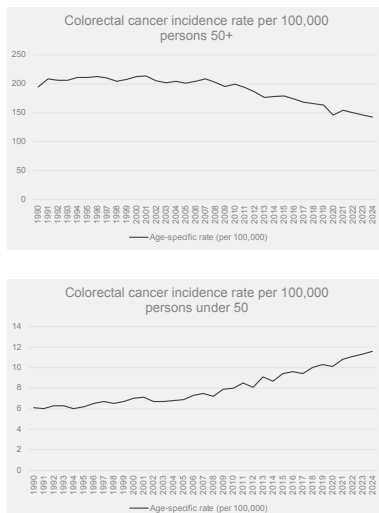
Colorectal cancer incidence rates have decreased more than any other cancer but not in the younger population.

Colorectal cancer (CRC) was the most commonly diagnosed cancer in Australia in 2000 but by 2024 it is estimated to have dropped to 4th place. In 2000, the risk of being diagnosed by the age of 85 was 1 in 15 whilst in 2024, the estimated risk had decreased to 1 in 21 people (1 in 19 for males and 1 in 23 for females). The reduction in CRC age-adjusted incidence rates since 2000 is greater than any other cancer (33% reduction between 2001 and 2024) (2).

The most significant decreases of CRC incidence rates have coincided with the introduction of the National Bowel Cancer Screening Program (NBCSP) in 2006. One of the aims of the NBCSP is to reduce morbidity and mortality from colorectal cancer through early detection of adenomatous polyps, some of which can develop into cancer.

Early onset CRC is defined as CRC diagnosed in those less than 50 years of age. Whilst the CRC incidence rate for the population 50 years and older has been decreasing over the past 20 years (213 to 142 cases per 100 000 between 2000 and 2024), which may at least partly be due to prevention through NBCSP, the incidence rate in the population aged under 50 has increased from 7 to an estimated 12 cases per 100,000 people in the same timeframe. In 2024, around 13% of colorectal cancer cases are estimated to be diagnosed in the population under 50 years of age, an increase from 8% in 2000 (2).

Early-onset colorectal cancer affects both males and females almost equally (12 cases per 100,000 females compared to 11 cases per 100,000 males in 2024) (2).



Source: Australian Institute of Health and Welfare (2024) Cancer data in Australia, AIHW, Australian Government, accessed 26th May 2025.

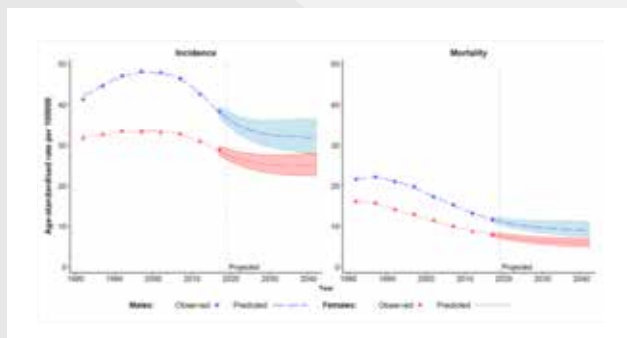
There has been a disproportionate increase in the mortality of early-onset CRC

The rise in incidence, coupled with an increase in population, has led to an increase of 35% in the number of deaths from early-onset colorectal cancer between 2000 and 2024. Over the same time, the number of deaths from colorectal cancer increased by 5% in the population over 50 years of age. To further distinguish between the differing trends, the population increase for people aged under 50 was 29% between 2000 and 2024 while for the population over 50 it was 77% (2).

In 2024, colorectal cancer is estimated to be the leading cause of cancer death among men aged under 50 (estimated 164 deaths) and the second leading cause of cancer death in women aged under 50 (estimated 153 deaths for colorectal cancer following an estimated 266 deaths for breast cancer) (2).

Population aged-based screening guidelines have recently changed to reflect the recent trends

The increase in colorectal cancer diagnoses in the younger population has coincided with the lowering of the screening age in many countries, including Australia. In 2021, at-risk people in the USA were recommended to be screened for colorectal cancer starting at age 45, rather than the previous recommendation of 50 (3). On 1st July 2024, the Australian Government lowered the starting age of the NBCSP to include eligible people between the ages of 45 and 49 (4).



Reference: Luo Q et al. Cancer incidence and mortality in Australia from 2020 to 2044 and an exploratory analysis of the potential effect of treatment delays during the COVID-19 pandemic: a statistical modelling study. *Lancet Public Health*. 2022 Jun;7(6):e537-e548. doi: 10.1016/S2468-2667(22)00090-1.

Most commonly diagnosed subsite of CRC varies by age

One of the main subsites for the increase in colon cancer in people under 50 years of age is appendiceal cancer. Although rare within the population overall, it is the most common colon cancer subsite for people under the age of 30.

In 2020, the most commonly diagnosed subsite in the early-onset age group was the sigmoid colon (29%), followed by the appendix (26%). Rectal cancer represents proportionally more cases of colorectal cancer for the 45 to 59 age group (2).

In contrast, the proportion of caecum, ascending colon and transverse colon cancers were more likely to increase with increasing age groups, occurring more frequently in people aged 65 years and older. These subsites (caecum and ascending colon) made up about 44% of all colon cancers diagnosed in the older age groups combined (2).

What is causing the rise in early-onset CRC?

The factors causing this increase are not yet clear. It is likely to be multifactorial including a change in lifestyle factors, genetic factors, as well as a delay in diagnosis.

Risk factors for CRC in general include obesity, sedentary lifestyle, alcohol and tobacco, processed meat, high consumption of ultra-processed foods and sugary beverages.

Observational studies suggest that obesity is associated with an increased incidence of early-onset CRC and related mortality. The prevalence of obesity and overweight has increased in Australia, with over a quarter of children and adolescents classified as overweight or obese in 2022 (5).

Increased physical activity has been shown to reduce the risk of CRC, whereas sedentary behaviour is associated with an increased risk of early onset CRC. Data from the National Health Survey in 2021 indicated that 83.2% of young people aged 15-17 did not meet the recommended 60 minutes of physical activity per day (6).

Diet is also likely to play a role. The Nurses' Health Study, involving 89,278 women aged 24-42, found that those who consumed the most components of a Western diet (high in ultra-processed foods) had an odds ratio (OR) of 1.67 for developing early-onset advanced adenomas. Those who consumed sugar-sweetened beverages daily had a higher risk of early-onset CRC (7).

Genetic factors almost certainly play a role in early-onset CRC. Up to 1/3 of patients diagnosed with early-onset CRC have some family history of CRC. When definitively excluding patients with germline hereditary syndromes, around 15% of patients with early-onset colorectal cancer have a first-degree relative with colorectal cancer (8). It is difficult to fully characterise family history as patients often have poor knowledge of family history of CRC or advanced adenoma.

The prevalence of a mutation in a high-penetrance cancer-susceptibility gene is relatively high among patients younger than 50 years of age. 16 to 25% of patients with early-onset CRC have a pathogenic germline variant, which compares with 10 to 15% in unselected patients with colorectal cancer. The most common pathogenic variant is Lynch syndrome, others include APC mutation, then biallelic MUTYH mutation along with a wide range of germline variants with moderate penetrance (8).

Environmental and lifestyle factors can lead to epigenetic modifications, which may contribute to early onset CRC. These changes can affect gene expression without altering the DNA sequence itself, potentially leading to cancer development at a younger age.

The diagnosis in younger people may be delayed as the symptoms may be attributed to other causes, particularly given that colorectal cancer is more commonly associated with older age groups. Early-onset patients are also more likely to be diagnosed in the later stages when it is more difficult to treat.



Reference: Sinicrope FA. Increasing Incidence of Early-Onset Colorectal Cancer. *N Engl J Med.* 2022 Apr 21;386(16):1547-1558. doi: 10.1056/NEJMr2200869. PMID: 35443109.

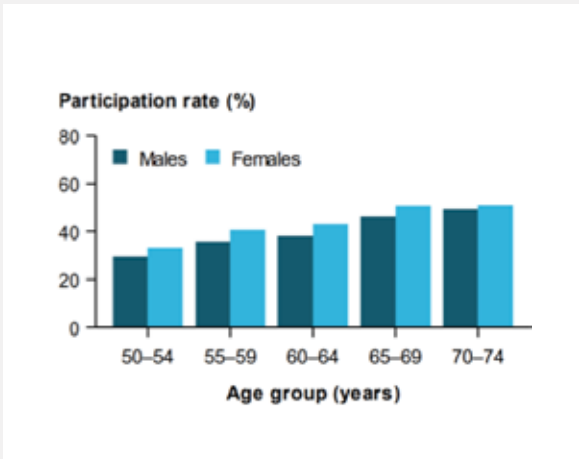
Symptoms in those presenting with early-onset CRC

In a systematic review and meta-analysis including 81 studies and more than 24.9 million patients, nearly half of individuals with early-onset CRC presented with haematochezia (per rectal bleeding) and abdominal pain and one-quarter presented with altered bowel habits (9).

These symptoms are frequently attributed to common, benign conditions such as haemorrhoids or irritable bowel syndrome. Delays in diagnosis of 4 to 6 months from time of initial presentation were common (9).

Early-onset CRC presents at a later stage

Possibly because of the longer duration of symptoms, delays to diagnosis, or because of different tumour biology, early-onset CRC tends to present with a more advanced stage of disease. It may also reflect, in part, a reduction in the stage at diagnosis in patients 50 years of age or older due to screening (2).



Source: Australian Institute of Health and Welfare (2024) National bowel cancer screening program monitoring report 2024, catalogue number CAN 160, AIHW, Australian Government.

How do we better detect and prevent CRC in the younger population?

The NBCSP recommends screening people aged 45-74 every 2 years without symptoms of bowel cancer with immunochemical faecal occult blood testing. This provides the best balance of effectiveness, safety and value for money whilst avoiding unnecessary testing (10). This is provided free of charge to all eligible people but those aged 45-49 are required to request the kit from the website rather than the automatic mail out.

Participation rates are higher for females than males and for older age groups. Studies have consistently shown lower than comparable screening programs in Australia and internationally. Our focus as health care providers should be increasing participation for those eligible. Monitoring uptake in the newly eligible 45-49 age range is vital to assessing and changing the impact of screening on early-onset CRC.

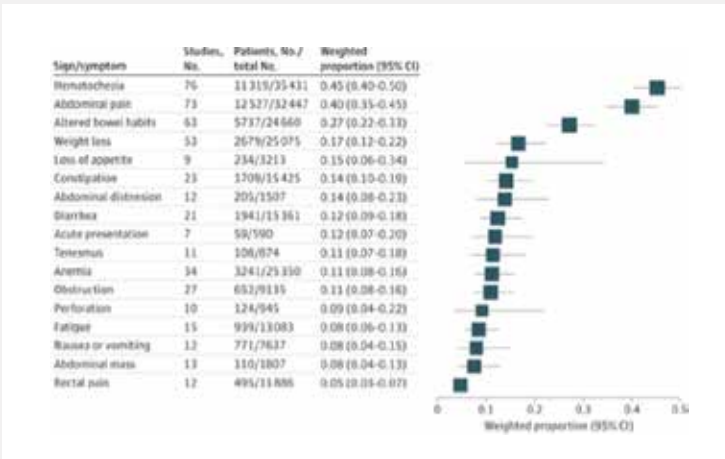
In younger individuals with symptoms, especially the more common symptoms associated with early-onset CRC (per rectal bleeding, abdominal pain or change in bowel habits), referring for a specialist opinion regarding the risks and benefits of a colonoscopy should be considered.

In those who are asymptomatic but with a family history of bowel cancer, there are specific guidelines on screening (11). An accurate family history is the key factor in determining the screening pathway. Those with no family history or a first-degree relative diagnosed with CRC >60 years of age are considered category 1 risk and are recommended to have iFOBT every two years between 45 and 74 years of age.

Category 2 risk is defined as 1 first-degree relative diagnosed <60 years of age; or 1 first-degree relative AND one second-degree relative diagnosed at any age; or two first-degree relatives diagnosed at any age. The recommendation for this group is to undergo colonoscopy every 5 years from 10 years younger than age of the youngest relative at diagnoses or 50 years of age, whichever is earlier, to age 74.

Category 3 risk is defined as 2 first-degree relatives AND one second-degree relative diagnosed with CRC, with at least one diagnosed before 50 years of age; or two first-degree relatives AND two or more second-degree relatives diagnosed at any age; or three of more first-degree relatives diagnosed at any age. In this group colonoscopy should be offered every 5 years from 10 years younger than the earliest age of diagnosis of the first-degree relative or age 40, whichever is earlier, until age 74. Consideration of referral to a family cancer clinic should be considered.

Scan the QR code to view list of references >



Reference: Demb et al, *JAMA Netw Open.* 2024;7(5):e2413157. doi:10.1001/jamanetworkopen.2024.13157

Case Study – Bowel Cancer

Many people mistakenly believe bowel cancer is something for people aged over 50 to worry about. But Nina had already had a wake-up call, when it claimed the life of a dear friend at age 35, leaving behind a husband and baby boy. Her friend hadn't been diagnosed until she was already at stage four and died three months later.

So, when Nina had some unexpected symptoms of her own, including passing a lot of blood when she went to the toilet, she went straight to her GP and requested a referral for a colonoscopy, and managed to see Gastroenterologist Dr Avelyn Kwok at the San, the very next day.

Nina did not have any of the specified risk factors but wanted the colonoscopy for peace of mind, as her friend's tragic experience still haunted her. In the end, it was a saving grace, as it revealed an issue.

"I woke up to Dr Kwok standing beside me," Nina recalled. "She said Nina there was a polyp that was too large for me to remove so it will need to be surgically removed.

"I could see she was holding some surgical photos and said to her, "Dr Kwok, you have seen enough of these, does this look cancerous?" She nodded and said, "I'm afraid so. Sit up and drink this liquid, it is contrast, I'm sending you for a CT scan now to see if there is any cancer anywhere else in your body".

Fortunately, the CT scan didn't show anything apart from something on the liver, which would require an MRI to clarify. It confirmed the liver was fine, clearing the way for Nina to have surgery and potentially some chemotherapy.

Prof Stephen Pillinger carried out the surgery, known as a High-Anterior Resection with the Da Vinci robot, and Nina says he reported that from what he could see, "...the cancer had not passed the bowel wall but the pathology results of the lymph nodes he removed would be the deciding factor to if I would be requiring any chemotherapy."

Within days Nina was back home in the comfort of her home and reassured further when Prof Pillinger rang with news her lymph nodes were clear and she would not need chemotherapy. The tumour had been completely contained. Her scare was over, and she just needed to focus on recovery.

Nina describes the fortnight that passed between her bleeding until the all-clear as a complete whirlwind. She considers herself to be incredibly lucky and living testimony that early detection really is vital.

Five years' on, she remains well and grateful to Dr Kwok and Prof Pillinger.

"I can't thank Dr Kwok and Prof Pillinger enough for how they looked after me and to be brutally honest – they saved my life!"



Dr Avelyn Kwok

BSc(Med) MBBS(Hons) FRACP

Dr Avelyn Kwok graduated from the University of NSW with honours, and completed her advanced Gastroenterology training at The Canberra Hospital and at Concord Repatriation General Hospital. Dr Kwok has been a visiting gastroenterologist at Sydney Adventist Hospital since 2011.

Dr Kwok's subspecialty interest is in diagnostic and therapeutic Endoscopic Ultrasound. Dr Kwok received further overseas fellowship training from world leading experts in this field at the Medical University of South Carolina and Oregon Health and Sciences University. Dr Kwok was selected as the 2010 recipient of the prestigious American College of Gastroenterology International Training Grant.

Dr Kwok is a member of the Gastroenterological Society of Australia and is accredited for gastroscopy, colonoscopy and endoscopic ultrasound by the Conjoint Committee for the Recognition of Training in Gastrointestinal Endoscopy. She is committed to providing personalised quality care to all of her patients in an approachable manner. Parkway San Clinic

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Nina - bowel cancer survivor

AN ARTICLE
FEATURING

Prof. Brian Owler

Globus EPGS Robot - Arming the San with robotic navigation

A new surgical robot is arming the San with more options for minimally invasive procedures for patients with spinal disorders, through a revolutionary robot navigation system.

The Excelsius GPS robot is designed to improve safety and accuracy in the operating room through enhanced visualization of patient anatomy throughout their procedure.

It uses world-first technology to combine a rigid robotic arm and full navigation capabilities into one adaptable platform, for accurate trajectory alignment in spine surgery. The system is designed to streamline surgical workflow and reduce radiation to surgeons and staff.

“This is an exciting technological development for the San and patients needing spine surgeries,” Professor Owler explained.

“It means less invasive procedures, because it allows the surgeon to separate muscles surrounding the spine rather than cutting through them. We operate through small incisions along the spine.

“Medical images are taken and imported into the robot to help determine the size and placement of any implants needed.

“Then the rigid robotic arm is guided to the relevant area of the spine, similar to a planned route on a GPS, to accurately place the implants.

“We can see live feedback throughout the procedure for even more precise placement.

“We’re using the new system for a variety of procedures including spinal fusion surgeries and patients have been recovering quickly and with less pain or complications.

“And that’s what we always want – the best patient outcomes possible.”





Prof. Brian Owler

MBBS BSc(Med)(Hons) PhD FRACS

Clinical Prof Brian Owler is an Australian trained Neurosurgeon and offers a comprehensive neurosurgical service covering both paediatric and adult conditions. He is trained in both cranial neurosurgical conditions as well as spinal disorders. Prof Owler holds the position of Associate Professor of Neurosurgery, Discipline of Paediatrics and Child Health, Children's Hospital at Westmead Clinical School, University of Sydney. Prof Owler's special interests include tumours of the brain and spine, complex spinal disorders such as basilar invagination, hydrocephalus and pseudotumor cerebri. He is involved in several clinical studies including those on the topic of normal pressure hydrocephalus and deep brain stimulation surgery for the treatment of cerebral palsy.

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AN ARTICLE
FEATURING**Dr Omar Ahmad
and Dr Peter Puhl**

Duodopa & Apomorphine: Device-assisted therapies offer advanced treatment options for Parkinson's disease

For many people with Parkinson's disease, there comes a time when the response to oral and transdermal medication changes. Motor fluctuations and dyskinesias affect nearly 50% of patients on therapy, and this can become unpredictable and difficult to manage. It can also negatively impact quality of life.

Device-assisted therapies (DATs) are an important facet of Parkinson's treatment. DATs include Duodopa, Apomorphine, and deep brain stimulation. This article focuses on Duodopa (delivered directly into the small intestine) and Apomorphine (intermittent or continuous subcutaneous injection), for the ongoing management of patients with poorly controlled motor symptoms.

"The aim of device-assisted therapies is to help patients with advanced Parkinson's disease to better manage the ups and downs of function during the day, which becomes more and more problematic as the disease progresses," says Dr Peter Puhl, Consultant Neurologist and Neurophysiologist at Sydney Adventist Hospital (the San). "Some people also have difficulty

absorbing medication effectively, which means medications lose their benefit and patients become more and more disabled – despite increasing doses. In these scenarios, administering medication via different routes is a much more efficient way to achieve better symptom control and improve life quality for patients," adds Dr Puhl.

One of the challenges of Parkinson's disease is being able to smooth out the labile nature of 'Off' and 'On' periods. 'Off' periods are when the effectiveness of medications wear off, and symptoms return or worsen. 'On' periods are when the medication is working well, or symptoms are not as noticeable, although this can be associated with involuntary movements called dyskinesia.

"During 'Off' times, patients can't move particularly well, they may also freeze, become unable to keep walking or cannot initiate movement," says Dr Puhl. "The aim with DATs is to minimise the amount of time people are 'Off' during the day, and allow them to be 'On' as much as possible. The aim is also to reduce an over-shooting reaction you can often get with tablets, which results in dyskinesia."

Device-assisted therapies managed by an expert multidisciplinary team in a specialist movement disorder clinic provides optimal Parkinson's disease management. "We have that here at the San," says Dr Omar Ahmad, Consultant Neurologist. "We offer comprehensive care for Parkinson's disease with an expert team including neurologists, neurosurgeons, nurses, neuropsychology, psychiatry and physiotherapy. Having nursing support for assessment, co-ordination of care, and linking with community services is invaluable for patients. We have the ability to assess patients in a timely manner and, depending on the DAT needed, patients have the option to start device-assisted therapy as an outpatient or to be admitted to hospital for titration and optimisation of therapy."

"The San is the only hospital that offers all device-assisted therapies for Parkinson's disease in the one location in northern Sydney," notes Dr Ahmad. "We are pleased to offer this service to our patients, as it's important they have access to all the current, complex therapies including Duodopa, Apomorphine, deep brain stimulation, and likely other new treatments as they become available."



Duodopa

Duodopa is a combination of levodopa and carbidopa, and is administered by pump as a continuous gel infusion directly into the small intestine via a PEG-J tube.

“Duodopa replaces some of the oral therapies, because it contains levodopa, which is usually given as a baseline treatment for Parkinson’s disease,” says Dr Puhl. “Having to take less pills every day is a further improvement in life quality for many patients.”

Dr Ahmad notes that Duodopa is somewhat more invasive than Apomorphine (see below), and complications from PEG-J insertion need to be considered – such as tube blockage or infection. However, Duodopa is generally well tolerated, even in patients with mild dementia.

“Duodopa is highly efficacious, with an increase in ‘On’ time of 4.8hrs and a reduction in dyskinesias – close to deep brain stimulation in its effect,” says Dr Ahmad. “Duodopa is introduced in two phases while the patient is in hospital. It is titrated first with NJ tube, before insertion of PEG-J tube.”

“In the brain of a person without Parkinson’s, dopamine is constantly stimulated; it’s delivered constantly to the brain nuclei. Duodopa via the pump mimics that by delivering a steady-state level of dopamine; it provides continuous levodopa delivery into the small bowel and approximates to the physiological state,” adds Dr Ahmad.

Once the Duodopa pump is in place, it can continue indefinitely. “Unfortunately Duodopa does not stop the underlying disease and therefore doesn’t stop potential progression of the condition,” notes Dr Puhl. “But it does help to minimise the impact of the condition over time, and reduces the need to remember to take tablets five or six times a day.”

Apomorphine

Apomorphine can be administered either as an intermittent subcutaneous injection via a ‘pen’, or as a continuous subcutaneous infusion – administered via a small plastic tube sitting just under the skin.

“It is usually given during the day and capped at night,” says Dr Puhl. “It is commonly initially prescribed as a pen that can be used several times a day to complement oral tablets, but may then progress to the continuous subcutaneous infusion given throughout the day. Apomorphine can be initiated in the outpatient rooms; it does not require a stay in hospital.”

“Apomorphine is not as invasive as Duodopa because you don’t need an abdominal tube inserted,” adds Dr Puhl. “It’s also different to the levodopa people already take, and therefore it sometimes works well to combine these two types of medications to minimise Parkinson’s symptoms. Some people tolerate it very well and have an excellent response.”

Dr Ahmad notes that Apomorphine is convenient and has moderate efficacy with a good effect on dyskinesia. “Some

side effects include nausea, hypotension, confusion, and skin nodules over time. It is a good way to introduce a complex therapy, and can be ceased easily.”

“There are many studies showing these medications substantially improve functional abilities and quality of life. Apomorphine is the most potent dopamine agonist available, with an average improvement in ‘On’ time of ~2.5hrs, and marked effect on dyskinesias. It requires dose challenge and titration – which can be done out of hospital – and is the simplest complex therapy to initiate and the simplest to cease,” adds Dr Ahmad.

Dr Ahmad says it’s a misconception that a patients’ advanced age or cognitive state is a barrier to DATs. “People worry it’s too early to start DATs, or that they’re too frail, or that mild dementia may exclude them. These therapies are not difficult to sustain. And too often they are considered too late – mainly due to lack of knowledge about them, lack of access to them, or reluctance to try them. However, quality of life improvements are significant and could benefit patients much earlier.”



When to switch to DATs?

Dr Puhl says device-assisted therapies offered at the San are given to patients depending on their individual needs, patient preference, their pre-existing conditions and comorbidities.

“This is best discussed with the patient, family and doctors following a thorough assessment.”

“We find that patients, later in their disease progression, often fluctuate between overshooting and involuntary movements to becoming frozen, and then back to having involuntary movements again, and this is very unpleasant. The aim with DATs is to keep them in that middle range, for longer periods of the day where the patient can move freely without involuntary movements. It's a very delicate balance, and this is where DATs are very useful.”

Dr Puhl says it's a good discussion to have with patients, far in advance of them needing DATs, so they can be encouraged by knowing there are options. “It is awful for patients to think they are stuck taking tablets six times a day – with unpredictable effect – as their only option. We explain to them that should their symptoms become poorly controlled or worsen, there are other very effective long-term options that we can use, such as DATs.”

“Patients can be encouraged that with DATs, the benefits are pretty immediate and they work. Often we see quite a dramatic improvements in people, especially with Duodopa. Sometimes it's quite amazing how people go from not being very well, to actually having significantly improved morbidity and mobility, and reduced falls risk.”

Dr Ahmad says feedback from patients is often regret at not moving to device-assisted therapies earlier, because they're so much better after these treatments. “In some cases, it comes down to lack of access for patients; not a lot of centres offer device-assisted therapies for Parkinson's disease, so we are very fortunate at the San to be able to offer these for patients.”

So how do you know when it's time to try DATs? Dr Ahmad suggests it may be time to move from existing Parkinson's treatment to device-assisted therapies like Duodopa or Apomorphine when (1) there is noticeable development of troublesome motor fluctuations and increasing medication requirements, or (2) troublesome dyskinesias and significant off symptoms.

“A useful guideline for when to consider switching from current therapy to device-assisted therapies, is this: If you have significant 'Off' time of greater than two hours a day, troublesome dyskinesias, or you're taking five or more doses of oral medications per day, then it's time to consider device-assisted therapy.”



Dr Omar Ahmad

MBBS (Hons), BMedSci, FRACP

Dr Omar Ahmad graduated in Medicine from the University of Tasmania in 2000 and completed his training in Neurology in 2009. He completed a Stroke Fellow in 2006 and was Chief Medical Registrar 2009 at the Canberra Hospital. He has gained further clinical and research experience at the Southern General and Western General Hospitals in Scotland.

His main interests are in cerebrovascular diseases and movement disorders. He is also highly accomplished in electroencephalography (EEG) performs this service for the SAN and Hornsby campuses. He is also registered to perform botulinum toxin administration for various disorders including migraine, dystonia, hyperhidrosis and spasticity.

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Dr Peter Puhl

MBBS, FRACP

Dr Puhl is a general neurologist with subspecialty interests in clinical neurophysiology, stroke and movement disorders in addition to the use of botulinum toxin in a variety of neurological disorders including dystonia, spasticity, migraines and others. He has expertise in the use of ultrasound for carotid as well as transcranial Doppler and duplex scanning and is undertaking clinical research in the application of transcranial sonography in movement disorders.

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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A trial in Rosacea now open at ICON Wahroonga (at the San)

Rosacea is a common disease that many people suffer from with no known cause nor cure. It often starts in the 30s and lasts for decades. It follows a relapsing course and triggers differ between people.

Recent experience has shown that radiotherapy may be able to make a difference. To test this, we have opened the ROSEND trial at Sydney Adventist Hospital. This is a randomised trial of a moderate dose of radiotherapy versus dermatology standard of care for recalcitrant and relapsing rosacea. Already 10 patients have been randomised. We need a total of 40. Professor Fogarty, a radiation oncologist with an interest in skin and benign pathologies, is the principal investigator of the trial and is on the staff at San.

Figure one shows the difference that radiotherapy can make.

Pre treatment



Six months post treatment



Professor Gerald Fogarty

Bsc MBBS FRANZCR PhD

Professor Gerald Fogarty is a Radiation Oncologist with a special interest in the treatment of skin disorders. He completed his undergraduate training at UNSW and specialty training at the Peter MacCallum Cancer Centre in Melbourne, followed by a lab based fellowship in skin cancer and a junior consultancy at Ballarat. Since then he has held positions of Director of Radiation Oncology at St Vincent's Hospital and Mater Hospitals, Sydney. He has over 180 publications and H-index of 29. He has helped discover several new applications for RT in including extended skin field cancerisation and the adaptive split course for locally advanced skin cancers in the elderly and some applications in benign disease. He was a board member of the Melanoma and Skin Cancer Trials Group (www.masc.org.au) for 9 years and Chair of the Australian Merkel Interest Group (<http://amigos.org.au/>). He authored the radiotherapy section of the 2019 NHMRC National Clinical Practice Guidelines for Keratinocyte Cancer. He is also the Master of Warrane College, an affiliated residential College at UNSW. (<http://warrane.unsw.edu.au>).

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To be a part of the trial, patients need to be 60 years of age or over, have had rosacea for at least 10 years, which has relapsed following treatment with at least one systemic therapy and one topical therapy. All the radiotherapy given on the trial is for free.

If interested one can contact ICON Cancer Centre at Sydney Adventist Hospital, 185 Fox Valley Road, Wahroonga NSW 2076. Ph (02) 94804200; Email admin.wahroonga@icon.team.

Reference note: This trial was approved to be conducted through Icon Group Research Office (Ref: ICON/2024/01/02) and acknowledged by the AHCL Research Office (Ref: 2025-002).

AN ARTICLE
BY

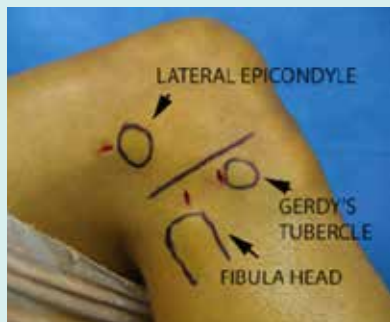
Dr Jobe Shatrov

Improving Outcomes in ACL Surgery

Since 2013 when the Journal of Anatomy published a paper on a new ligament in the knee [1], subsequently reported in The New York Times, there has been a surge of interest and research on lateral extra articular procedures, known as “LEAP” procedures in anterior cruciate ligament (ACL) surgery.

LEAP procedures were largely abandoned in the 1980s with clinicians attributing poor outcome to their use [2-4]. However, these results were confounded by the use of extensive open approaches and extended immobilisation often in plaster. Many variations of LEAP procedures have been described, with most being considered 'non-anatomic' whereby tissue is taken from iliotibial band and is re-routed beneath the lateral collateral ligament. Whilst such procedures have been shown to reduce re-rupture rates following ACL surgery, their non-anatomical nature has been attributed to delayed muscle recovery and have increased swelling or increased stiffness. Anterolateral (ALL) ligament reconstruction which in contrast is an anatomical type of LEAP has been proposed as an alternative that may avoid such issues.

Up to 90% of anterior cruciate ligament (ACL) ruptures have an associated anterolateral ligament injury (ALL) injury [5, 6]. The ALL has also been shown to have a role in rotational control of the knee [1],[7-9], and when reconstructed reduces risk of ACL re-rupture by as much as 50% and has crucially has been shown to restore the normal kinematics of the knee [10-12].



The incisions use for the percutaneous double bundle ALL reconstruction

More recently, several studies have demonstrated a multiple of advantages of combining ACL and ALL procedures including a reduced rate of ACL graft rupture by 30% and reoperation for secondary meniscectomy by a similar rate [10-14]. Additionally, these combined procedures have improved knee stability and the rate of returning to a preinjury level of sport. [12, 15] Furthermore, advantages have been shown in high-risk patient populations such as hyperlaxity syndromes, chronic ACL injuries and young patients participating in pivoting sport and revision (repeat surgery) cases [12, 15-17]. These advantages are thought to be a result of load sharing with the ACL graft and restoration of normal knee kinematics [18-20].

During my international knee fellowship, I was fortunate enough to train at the SANTY Orthopedique Clinic – Lyon with Dr Bertrand Sonnery-Cottet. Dr Sonnery-Cottet pioneered and published extensively on a percutaneous minimally invasive ALL reconstruction technique. In this technique, the ACL graft is continuous with the ALL construct, creating a single graft for the ACL and ALL that effectively controls rotational forces (that occur when pivoting) effectively.

I was particularly impressed by the technique's combination of anatomical reconstruction, minimal soft tissue disruption, time efficiency, and the potential for faster recovery. Published outcomes have shown that this method is at least as effective as traditional LEAP procedures, seemingly without many of their associated complications.

The technique has also been successfully used in some of Europe's most elite footballers.

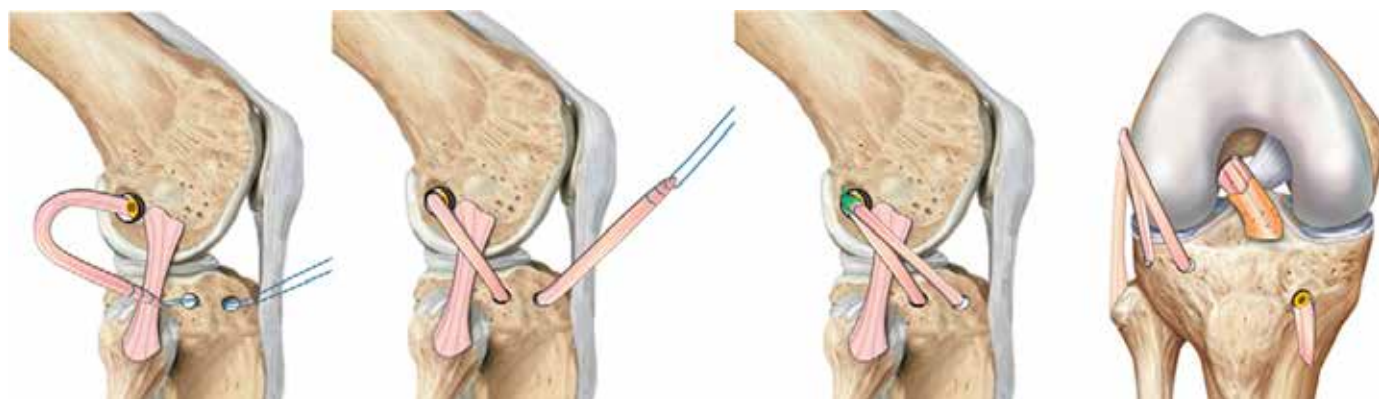
In my practice in Sydney, this technique has become my preferred method for ACL reconstruction. While traditional LEAP procedures still have a role in selected cases, the results of percutaneous ALL reconstruction speak for themselves. As a former physiotherapist, I place particular emphasis on postoperative muscle recovery, and the ALL technique certainly facilitates this — in addition to its other published benefits, including:

- Reduced re-rupture rates
- Reduced need for further surgery
- Reduced incidence of secondary meniscal tears
- Improved rates of return to sport



The ACL + ALL Reconstruction is done using a tripled semi-tendinosis hamstring graft.

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The ALL reconstruction is performed via Double-bundle technique and in this diagram is depicted using a gracilis tendon. The ALL construct is continuous with the ACL reconstruction.

AN ARTICLE
FEATURING**Dr Jobe Shatrov**

A New Era in Musculoskeletal Care: Introducing the Rapid Access Orthopaedic Injury Service (RAOS) at Sydney Adventist Hospital

Delivering timely, coordinated, and high-quality care is at the heart of what we do in healthcare. In response to the challenges faced by patients with acute musculoskeletal injuries, Sydney Adventist Hospital has introduced the Rapid Access Orthopaedic Injury Service (RAOS) - a streamlined, affordable pathway designed to simplify and accelerate the journey from injury to specialist care.

The inspiration for RAOS stems from the international experience of SAN orthopaedic specialists, where patients benefit from coordinated assessment and early intervention. Traditionally in Australia, patients with acute sporting or recreational injuries often face a fragmented and frustrating experience: prolonged waits in emergency departments, difficulty accessing advanced imaging, delays in specialist review, and significant out-of-pocket costs.

RAOS has been developed to solve these challenges, offering:

- Timely specialist assessment
- Expedited access to imaging (X-ray, CT, MRI)
- Early diagnosis and tailored management plans
- Clear communication with referring GPs, physiotherapists, and allied health providers

Orthopaedic specialist Dr Jobe Shatrov, who helped establish RAOS, explains the inspiration behind the service:

“For several years, we’ve been providing high-level care for musculoskeletal injuries through the SAN Emergency Department. I’ll never forget one particular patient- a simple ankle injury - who within four hours of presenting to ED had undergone an X-ray, CT and MRI, received a diagnosis from a specialist, and left with a complete management plan. It struck me how far this experience was from the norm, even in our world-class healthcare system. There was no reason why this couldn’t be standard care for everyone.”

The typical story we hear is different:

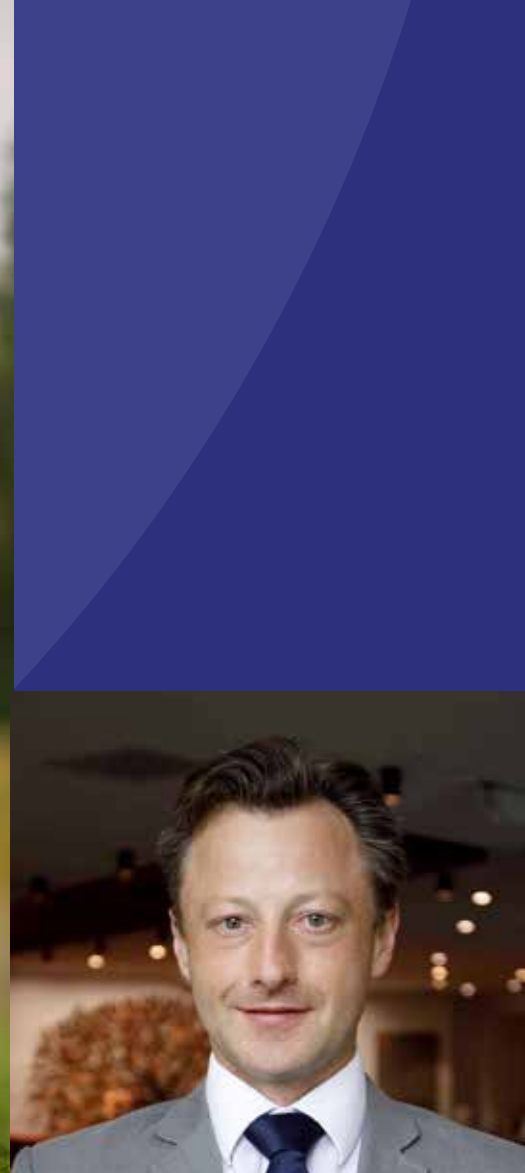
Patients presenting to ED with acute sporting injuries often endure waits of 6–10 hours, only for an X-ray to show no fracture. They are discharged with instructions to follow up with their GP, where they encounter delays arranging appointments, further imaging, and eventual specialist review—sometimes weeks after their injury. Meanwhile, they are still in pain, off work, and anxious.

“I’ve seen firsthand how unnecessarily difficult this pathway can be,” Dr Shatrov says. “Patients deserve better - and with RAOS, now they can expect better.”

How RAOS works:

1. Patients present to the SAN Emergency Department with an acute musculoskeletal injury.
2. They are triaged and, if appropriate, referred into the RAOS pathway.
3. A single flat fee of \$385 covers the entire assessment process.
4. Advanced imaging (MRI or CT), when required, is bulk-billed - with no extra cost.
5. Patients are then referred for orthopaedic specialist review, often within days, not weeks.

Already, hundreds of patients have benefited from this new streamlined model of care.



What sets RAOS apart:

- 24/7 emergency care access
- Onsite advanced imaging
- Direct access to orthopaedic specialists across all areas (lower limb, upper limb, spine)
- Surgical intervention available if required
- One location, one streamlined pathway, one comprehensive episode of care
- Referral is simple:
- Patients can self-present to the SAN Emergency Department.
- Referrals can also be made by GPs, physiotherapists, and other allied health providers.
- Direct contact numbers for the Admitting Officer are available to local GPs for urgent referrals.

"This is the future of musculoskeletal care," says Dr Shatrov. "It's a service I would recommend to my friends, colleagues, and patients. While no new system is without its learning curve, I'm proud to be part of a team committed to raising the standard of care for our community."

Rapid care. Expert treatment. The patient experience they deserve.

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references >



Dr Jobe Shatrov

FRACS FAOrthoA MBBS (Hons) Bsc.
(Physio) Grad Dip. (Surgical Anatomy)


An orthopaedic knee surgeon, at the forefront of research, innovation and teaching, Dr Shatrov has completed prestigious fellowships, including at the FIFA Medical Centre of Excellence in France focusing on robotic knee surgery; and the Centre Orthopedic SANTY, a leading treatment centre for professional footballers from across Europe and the Fortius Clinic in London, UK, centre responsible for managing acute sports injuries for premier league football players and international level sports players. His fellowship in London included time spent with the Chelsea football team as well as numerous other international sporting teams.

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AN ARTICLE
FEATURING

Dr Katrina Adorini



New OncoHeart service at the San - managing cardiovascular issues associated with cancer treatment

ONE IN FOUR CANCER SURVIVORS DIE FROM CARDIOVASCULAR-RELATED CAUSES WITHIN SEVEN YEARS OF THE ORIGINAL CANCER DIAGNOSIS.

OncoHeart, a new cardio-oncology service at the San, is answering the need for assessment, treatment and surveillance of cardiovascular issues before, during and after cancer therapy.

“Cardiovascular problems are the leading cause of death in cancer survivors,” said Mr William Hadchiti, Director and Cardiac Physiologist at OncoHeart. “There are a number of reasons for this. Patients may have underlying conditions that complicate cancer treatment, or cardiovascular issues arise as a direct result of cancer therapies. Also, because more people survive cancer now, they live into older age – with the possibility of age-related cardiac issues.”

Currently in Australia, the five-year survival rate for all cancer types is around 70%, up from 55% in the 1990s. For some cancers, such as breast and prostate cancer, the five-year survival

rate reaches the high 90% mark. “Patients fight hard to survive cancer. It’s deeply unfortunate that, after overcoming such a serious illness, some later die from cardiovascular-related events – some of which may be preventable,” added Mr Hadchiti.

“When cancer is diagnosed, it is naturally necessary to focus on the immediate cancer therapy. Cardio-oncology services like OncoHeart ensure potential cardiac issues are not forgotten. This vigilance aims to lower the risk of cardiac-adverse events and promotes better quality of life and survivorship.”

What is cardio-oncology?

Cardio-oncology is the care of cancer patients with cardiovascular disease - whether the cardiovascular disease pre-existed or was acquired during treatment or becomes evident in survivorship. It is a relatively new subspecialty gaining momentum around the world, and it fills a gap in cancer care that has existed for a long time.

"The subspecialty has emerged to specifically address the issues that arise when cancer treatment and cardiovascular problems intersect," said Dr Katrina Adorini, Cardiologist and OncoHeart co-founder. "The ultimate aim is to ensure the safe continuation of anti-cancer therapies while optimising long-term cardiovascular health. At OncoHeart we focus on prevention, early detection, risk stratification, treatment and monitoring of cardiovascular complications in cancer patients."

Cardio-oncology is an invaluable part of the multidisciplinary approach to caring for patients with high baseline risk of cardiovascular disease, as well as dealing with problems that may arise during treatment, such as ischaemia, arrhythmias, cardiotoxicity, hypertension, valvular pathologies, heart failure and cardiac issues associated with radiation.

Dr Adorini notes that in the past 20 years there have been major breakthroughs in cancer therapies including more targeted therapies. "And in the past decade, we've seen breakthroughs in immunotherapies, and more new cancer therapies will emerge, such as viral therapies. What is happening concurrently is that as we get deeper and more targeted with these new cancer therapies, they're hitting cardiovascular pathways."

"With the chemotherapies that came out in the 1960s, 70s and 80s, some people were getting heart failure from those therapies. Now, even though new therapies are much more targeted, there is still a risk of heart-failure, however we've seen a shift to non-heart-failure effects - such as hypertension, conduction issues and cardio-metabolic dysfunction. These significantly contribute to mortality if not addressed."

A patient's experience:

Joe is an 83-year-old man with a history of metastatic melanoma. After experiencing recurrences, he commenced immunotherapy but unfortunately the disease progressed. He then started on dual-targeted therapy with BRAF-gene and MEK-gene inhibitors and achieved a complete metabolic response.

However, in the months following treatment, he began experiencing significant breathlessness, fatigue, and reduced energy levels. During a preoperative workup for a planned knee operation, an echocardiogram revealed a reduced left ventricular ejection fraction (LVEF) of 30-35%, compared to 51% one year earlier.

Joe also has a known history of ischaemic heart disease (with prior stent placement), a pacemaker, paroxysmal atrial fibrillation, and left ventricular hypertrophy. He was referred to OncoHeart, where he underwent a comprehensive cardiac evaluation, medication adjustments, and collaborative management between cardiology and oncology teams.

Following these interventions, Joe continues to receive his life-saving cancer therapy under close monitoring. His cardiac function has since improved, with a current LVEF of 55%.

OncoHeart service at the San

The OncoHeart Specialist Care service is located in the San's Integrated Cancer Centre. Patients don't have to be receiving cancer treatment at the San in order to use OncoHeart's services - it is open to oncology patients from anywhere.

"A referral from the GP or specialist is all that is required," said Mr Hadchiti.

"Our cardiologist does a very detailed consultation and may order cardiac imaging and pathology. Regular follow-up continues throughout cancer therapy and, depending on the patient's diagnosis and comorbidities, surveillance continues even after active cancer therapy ceases, to monitor for any late-onset cardiovascular issues that may emerge."

"Cardio-oncology is resource-intensive specialty that requires knowledge and care, and follows rigorous guidelines," added Mr Hadchiti. "The San has been very forward-thinking in implementing the service for this community."

Similar risk factors are shared between cancer and cardiovascular disease, such as genetic predisposition, obesity, diet, sedentary lifestyle, hypertension, tobacco and alcohol abuse, hyperlipidaemia and diabetes.

"Our vision is for OncoHeart to be a cardio-oncology wellness centre," said Dr Adorini. "This fits well with the San's focus on whole-person health. It requires a multidisciplinary approach to look after people really well throughout their cancer journey; not just medically but to also address lifestyle factors. Integrating OncoHeart's services with dieticians, exercise physiologists, psychologists and other allied health professionals will promote optimal cardiovascular health during and after cancer therapy."



Dr Katrina Adorini

MBBS, B.Med.Sci, FRACP, FCSANZ

Dr Adorini has a special interest in pulmonary hypertension after completing 18 months of training in the Cardiac Transplant Unit at St Vincent's Hospital, Sydney. After graduating from Medicine at the University of Sydney she has worked at Concord Hospital and St Vincent's Hospital with a focus on heart failure, transplant medicine and pulmonary arterial hypertension. She now practices at Sydney Adventist Hospital and has joined Specialist Cardiology at the San Clinic.

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AN ARTICLE
FEATURING

**Prof. Brian Owler,
A/Prof Raewyn Campbell
and A/Prof Payal Mukherjee**

Comprehensive 360-degree skull-base service at the San

FOR A NUMBER OF YEARS SYDNEY ADVENTIST HOSPITAL (THE SAN) HAS PROVIDED A COMPREHENSIVE 360-DEGREE SKULL-BASE SERVICE. IN THE HANDS OF A HIGHLY-EXPERIENCED TEAM, AND WITH ADVANCES IN TECHNOLOGY, MORE CONDITIONS CAN BE TREATED USING LESS INVASIVE METHODS.

What is a 360-degree skull-base service?

Skull-base surgery refers to surgery to address lesions that occur around the base of the skull, from anterior to lateral to posterior – hence ‘360-degrees’. The skull base is traditionally a complex and more difficult place to access and operate.

“With the expertise we’ve brought together at the San over a long period of time now, we have a world-class skull-base service,” said neurosurgeon Prof Brian Owler, Head of Department of Neurosurgery at the San. “The surgery that can be performed is not only cutting edge but of a very high standard. It is reassuring for patients and their GPs to know that if a patient has a tumour of the skull base, we have the surgeons and facilities here at the San.”

“The base of skull houses all the cranial nerves – nerves which supply various things like smell, hearing, balance, swallowing, sensation to the face, and the movement of the eyes, face and tongue,” said Prof Owler. “Arteries that supply blood to the brain run through the skull base, as well as the veins that drain blood from the brain. We work through very defined corridors to avoid important structures, and use microsurgical techniques and endoscopic

techniques to access these areas without disturbing neurological structures.”

“Surgery therefore can be quite challenging; sometimes it is best to monitor the patient to avoid the morbidity of surgery. Alternatively, when surgery is performed, we need a highly-skilled team to allow the patient to be rehabilitated for each of the functions the disease impacts,” he added. “The San provides this comprehensive, mature service with an expert team and excellent support services.”

Because different skull-base procedures require different skill sets, the team includes neurosurgeons and ENT surgeons (ears, nose & throat specialists), ophthalmologists, endocrinologists, radiation oncologists, medical oncologists, radiologists, audiologists, physiotherapists, and speech therapists – among others.

From a technical point of view, typically, when surgeons access the skull base from the front – via the nose – it is done with an endoscope. “When access is from side of the head, via the ear, it is most commonly done with a microscope,” said A/Prof Payal Mukherjee, ENT and lateral skull-base surgeon. “However, we live in an exciting time with evolution of new technology that allows us to plan and perform our procedures in innovative ways.”

A/Prof Raewyn Campbell, rhinologist and skull-base surgeon, said more and more lesions are now removed via minimally invasive approaches rather than having to perform a craniotomy. “We’re developing techniques and tools that allow us to go further and further and get more and more out without the morbidity of a craniotomy. The majority of the time we don’t have to make an incision in the face or the skull; we use natural body orifices via minimally invasive techniques. The benefits are that there are no outside scars, it’s a much faster wound healing process, patients don’t have to stay in hospital as long, and they tend to recover faster.”





Patients benefit

It is important to be able to offer a comprehensive skull-base service for patients in their local community. Prof Owler said that another strength of the skull-base service is the collegiality between specialists – often operating together for the one patient. “In most other operations, the surgeon would do the whole operation by themselves. But because of the nature of the access to the brain and the expertise that’s needed to gain access, we end up working together collaboratively, which is a nice way of managing patients.”

A/Prof Campbell concurs. “We also rely on each other for advice regarding the management of particular pathologies. This is reassuring for patients; the San is able to provide multiple experts for the one patient, procedure and pathology. Within this service we have the expertise such that anyone with a skull-base tumour is able to have it managed at the San.”

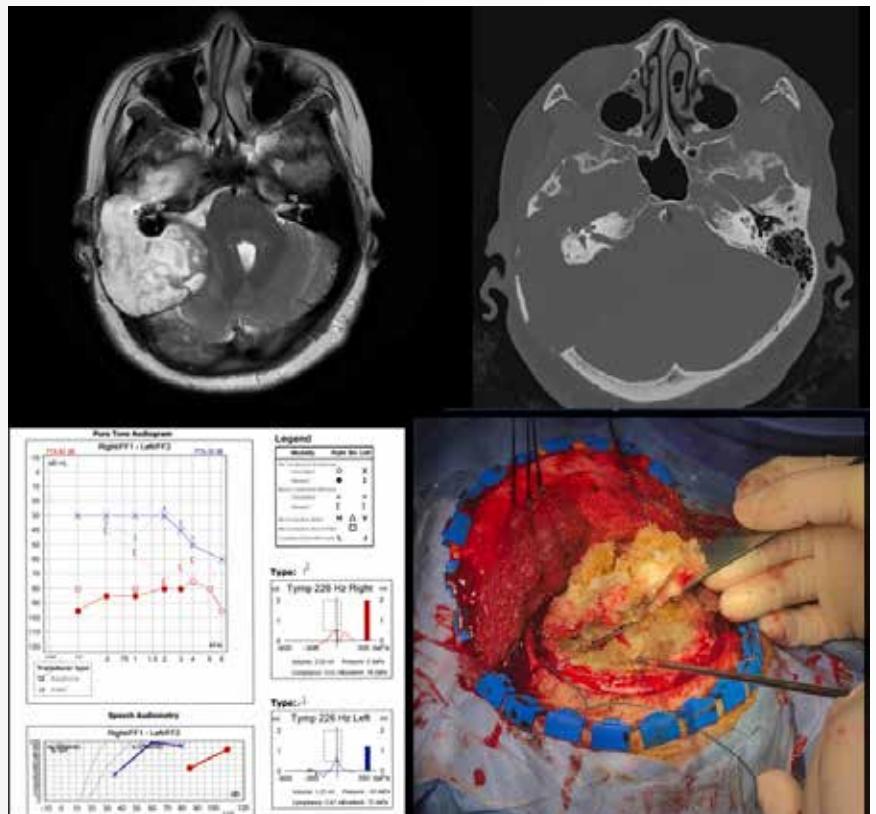
A/Prof Mukherjee noted that sometimes skull-base cases can be indolent – progressing slowly, causing little or no pain. “One such example was when a patient presented to the audiologists at the San to have a hearing test for a six-month history of hearing loss. The patient’s ears looked completely normal but, given the hearing loss, I referred the patient for imaging. At the San I know the radiologists always call me if there are unexpected findings on a scan, and it allows them to do any additional investigations whilst the patient is with them. On this occasion, that’s what happened, and the patient was found to have a large 8cm lesion in the brain called an epidermoid. The epidermoid was compressing the brain to a third of its size. I called Brian (Prof Owler) and we discussed the case and were able to co-ordinate our care for the patient and organise theatre quickly.”

“The news of this unexpected and life-threatening finding was delivered to the patient in a co-ordinated manner and with a plan. This helped the patient deal with initial shock and uncertainty and prepare for surgery,” added A/Prof Mukherjee. “Postoperatively, the patient needed the careful support of the intensive care team, physiotherapists and audiologists for all possible rehabilitative options so she could live a full life. The patient made a fantastic recovery and it is really rewarding working as a team to get such outcomes for such complex patients. Cases like this illustrate the importance of having a great team and facilities to provide a comprehensive skull-base service.”

What conditions are treated?

The range of conditions treated in the skull-base service include acoustic neuromas, pituitary adenomas, aggressive cholesteatomas, meningiomas, and other cancerous and benign lesions. “There are also conditions that are trauma related, infection related, or leaks of cerebrospinal fluid from the nose or ear,” said A/Prof Mukherjee.

A/Prof Campbell added that anterior skull-base surgeons look after tumours that are accessed via the nose and sinuses, including sinus tumours and pituitary tumours. “For these we tend to access the skull base via the nostrils, endoscopically. There are also advances now with adjuvant treatment which is another benefit for patients,” added A/Prof Campbell. “The San has onsite medical oncology and radiation oncology. Not only can patients have their skull-base surgery at the San, but all the other treatments for their tumour as well – including chemotherapy, radiotherapy, and immunotherapy.”



(image supplied by A/Prof Mukherjee)

Please see page 7 for
Professor Owler's
contact details.



A/Prof Payal Mukherjee

MBBS, FRACS (ORLHNS), MS (USyd)

A/Prof Mukherjee is an Adult and Paediatric ENT surgeon in Sydney subspecialising in advanced ear surgery, Cochlear implants and lateral skull base surgery. Her research specialises in ear bionics using implantable hearing aids, 3D printing and bioprinting. Awarded the prestigious RACS Michael Donellan Medal for Outstanding Contribution to the Art and Science of Surgery and a Eureka Prize Finalist for Interdisciplinary Research in 2022, she has a passion for global translation of Australian innovation in biotechnology.

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A/Prof Raewyn Campbell

BMed (Hon), FRACS, FARS,
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BAPPSc (Physio)

Dr Raewyn Campbell completed training and achieved fellowship of RACS in 2011. Dr Campbell then undertook two rhinology fellowships at Auckland City Hospital, New Zealand and The Hospital of the University of Pennsylvania in Philadelphia, USA. Dr Campbell then undertook a further fellowship in skull base surgery in Columbus Ohio, USA. Dr Campbell specialises in rhinology and skull base surgery.

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