

Summer 2024/25

San Doctor

collaborating with our GPs
to provide coordinated
community care



Message from Brett Goods, Chief Executive Officer

It has been wonderful to see so many doctors actively participate in San Doctor throughout 2024. It is a pleasure to be able to share their knowledge and expertise across a range of specialties with you.

We are elated to share that in the 2024 Bureau of Health Information Outpatient Cancer Clinics Survey, the San continues to lead the way in cancer outpatient experience for the seventh year running. The Integrated Cancer Centre at Sydney Adventist Hospital (the San) ranked first among metropolitan NSW hospitals in the annual survey, whilst it also ranked first in private services in NSW in the survey.

We take great pride in our consistent performance in this survey and are truly grateful to all the teams involved in this achievement and the wonderful support and care they provide to our community.

Among the stories in this edition is an article about a recent ergonomics study involving ENT surgeons at the San, which showed the use of head-mounted displays such as exoscopes (robotic microscopes) result in less musculoskeletal strain than using traditional fixed operating microscopes.

You will also read about a new non-invasive treatment option for kidney cancer, as well as the role of screening in familial cardiovascular disease. In late 2024 we also celebrated exceptional contributions of our accredited doctors at our Thrive Awards.

On that note, I would like to add that we have been delighted by all our successes in 2024, and we look forward to seeing what we can achieve in 2025 by working collaboratively.

Brett Goods, CEO
Chief Executive Officer
Adventist HealthCare Limited

AN ARTICLE
FEATURING**A/Prof Payal Mukherjee and
A/Prof Raewyn Campbell**

Ergonomics Exoscope study

HEAD-MOUNTED DISPLAYS MAY HELP REDUCE SURGEONS' WORKPLACE INJURIES

A recent ergonomics study involving ENT surgeons at the San showed the use of head-mounted displays such as exoscopes (robotic microscopes) result in less musculoskeletal strain than using traditional fixed operating microscopes.

“With symptoms of musculoskeletal strain reported as high as 97% in a Canadian study of ENT surgeons, we set out to explore the ergonomics of using a 3D exoscope versus an operating microscope in otologic surgery,” said Dr Ankit Ajmera, ENT registrar and the study’s principle investigator. “While our study particularly looked at ENT surgeons in the field of otology, it has applications for surgeons and trainees across many surgical subspecialties.”

A/Prof Raewyn Campbell, rhinologist and skull base surgeon and co-investigator of the San’s ergonomics study, said it is not well-recognised that the risk of musculoskeletal injury to surgeons in operating theatres is so high. “The most common work-related injuries reported by surgeons involve the neck, lower back, thoracic spine, upper back and shoulders. This becomes a workforce issue as well, with 10-15% of surgeons having to retire early because of a work-related musculoskeletal injury.”

The ergonomics study also highlights the importance of preventative measures to reduce the high rates of workplace injuries surgeons experience. A/Prof Payal Mukherjee, who specialises in otology (and is co-investigator in this study), noted that the accepted risk of injury in other industries is far less than what surgeons accept. “In ear surgery particularly, you’re operating using a microscope in very small tight spaces requiring microscopic accuracy with advanced visualisation. Further, to improve dexterity and reduce micro-tremor, otologists routinely also fix their hands and fingers on the patient’s ears, which reduces limitation of movement of the shoulder. Major cases therefore cause prolonged neck and shoulder strain, leading to a high rate of neck injury during an otologist’s career. We thought this a worthwhile study – to see whether the use of a head-mounted display would provide ergonomic benefits over the traditional operating microscope.”

What is an exoscope?

An exoscope, or robotic microscope, is a head-mounted display similar to the technology in virtual reality headsets used in gaming. “It is a high-definition digital microscope placed over the surgical field which transfers images through two digital cameras to a head-mounted device, providing a magnified 3D image,” said Dr Ajmera. “The surgeon wears ‘goggles’ into which the images are projected, and they can see the surgical field no matter where the head is turned or positioned.”

While each new iteration of exoscope tends to focus on better optics, the purpose of this study was to evaluate whether robotic scopes can benefit surgeons ergonomically.



*Posture during otological surgery -
Roboticscope (exoscope).*

The study

In a number of other studies, prolonged musculoskeletal strain and injury experienced by surgeons has been shown to lead to long-term degeneration, injury-related leave, impact on clinical decision making (and therefore patient care), lower job satisfaction, burnout and early retirement.

Dr Ajmera said current literature shows that surgeons using the microscope spend around 70-80 percent of the time with their neck in a high-risk position. “Consider a surgeon who uses a microscope for three hours for one operation, and then has concurrent cases – musculoskeletal strain builds up throughout the day.”

A/Prof Campbell observed that combining a high level of concentration, repetitive movements and awkward postures for prolonged periods is a ‘perfect storm’ for injuries. “With our study we wanted to explore whether the exoscope frees up the surgeons to be able to move more, so they’re not so tethered to a tool like you are with the microscope. It is important to improve ergonomics in the operating theatre and find ways to lower injury rates.”

A/Prof Mukherjee concurs. “It is devastating to see fellow surgeons experience debilitating pain or have their careers cut short because of the musculoskeletal injuries they experience. Ultimately, reducing injury in surgeons will translate to better patient outcomes.”

In the San study, half the study participants used the traditional operating microscope, and half used the head-mounted exoscope. The study included an objective measure – Rapid Upper Limb Assessment (RULA) – a survey method to assess ergonomic risk.

“RULA is a scoring system that looks at the angles of your head, neck, shoulders, upper limbs and your back, and provides a risk score of low to high, with the highest risk being a score of seven. Photos were also taken of surgeons while operating. This provided different snapshots in time – looking at their posture and work-space setup,” said Dr Ajmera.

Key findings

The primary objective of the study was ergonomics. “When we looked at surgeons who used the operating microscope, this group had a moderate risk RULA score of 5.9 out of 7. In the group of surgeons who used the exoscope, there was a reduction in the operating risk with a RULA score down to 4 out of 7 – a low risk,” said Dr Ajmera.

“With the exoscope, the surgeon has freedom of movement in body position without disrupting their view. This allowed for more rest, reduced static time, and an ergonomically more favourable neutral posture. Furthermore, adjustments can be made by a combination of a foot pedal and head movements; again aiming to lessen strain without disrupting the field of view,” said Dr Ajmera.

Feedback from surgeons who used the exoscope showed that while the exoscope had good manoeuvrability, there were a few drawbacks including the ‘bulkiness’ of it, which meant they weren’t able to be right next to the patient. “This meant that, as a result, their hands were a bit more extended out, which could explain why the injury risk doesn’t drop down to zero when using the exoscopes,” said Dr Ajmera. “The other confounder is that the exoscope is a new device; surgeons are not quite used to using it.”

A/Prof Mukherjee said that while the study showed a notable reduction in the RULA risk score in the group that used the exoscope, it didn’t come down to the industry-accepted RULA score of 2 (low risk). “There are a few things to consider in the design of exoscopes, with new technology evolutions. The study also highlighted other things to consider as well, such as the setup of our operating workspace, personal posture, rest, stretching, and the way we plan our operating lists. This is an area of huge growth. We would love to do more research, to see if we can get the injury risk down to an acceptable, safe standard.”

Dr Ajmera said that by improving workplace ergonomics and reducing injury, the hope is that it will reduce the number of surgeons taking time off from work or having to retire early due to injury. “This is particularly important when addressing workforce shortages and improving accessibility to patients. This will hopefully improve overall patient outcomes.”



A/Prof Payal Mukherjee
MBBS, FRACS (ORLHNS), MS (USyd)
SAH Head of Department, ENT Surgery

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.

A/Prof Mukherjee was a past Chair of the Royal Australasian College of Surgeons NSW State Committee (2020-2022), a committee member of the Advisory Committee of Therapeutic Goods Administration and an expert panel of the Medical Devices Fund, NSW Health. She is the Deputy Chair of the RACS Section of Academic Surgery, Chair of the Research and Evaluation for ASERNIPS (Australian Safety and Efficacy Register of New Interventional Procedures in Surgery) and a Co-director of a statewide innovation program for ENT called Beyond Science. She is innovation lead at the RPA Hospital Institute of Academic Surgery.

A/Prof Mukherjee is passionate about gender equity in surgery as well as developing STEM skills in young girls. She was awarded a Woman in Surgery Leadership Award in 2022 and was finalist of the NSW Premier Woman of the Year Award in 2019.

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A/Prof Raewyn Campbell
BMed (Hon), FRACS, FARS,
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A/Prof Raewyn Campbell completed training and achieved fellowship of RACS in 2011. She then undertook two rhinology fellowships at Auckland City Hospital, New Zealand and The Hospital of the University of Pennsylvania in Philadelphia, USA. A/Prof Campbell then undertook a further fellowship in skull base surgery in Columbus Ohio, USA. She specialises in rhinology and skull base surgery.



Dr Ankit Ajmera
M.Surg, B.Med

Dr Ankit Ajmera is an ENT Registrar, working at Dubbo Base Hospital for the 2025 clinical year, and was previously the ENT registrar at Sydney Adventist Hospital. He completed his medical degree at the University of Newcastle and University of New England, a Masters of Surgery through the University of Sydney and is currently a Masters of Philosophy candidate assessing robotics in ENT surgery at Macquarie University. As part of his candidature, he is assessing various robotic systems including being the principle investigator for this 3D-Exoscope study. He has completed his junior years rotating through Royal Prince Alfred, Concord Hospital, Canterbury Hospital and Wagga Wagga Base Hospital and has an interest in a range of Ear Nose and Throat and Head and Neck conditions.

AN ARTICLE
BY**Dr Joe
Chang**

Stereotactic ablative body radiotherapy (SABR)

A NEW NON-INVASIVE TREATMENT OPTION
FOR KIDNEY CANCER

Kidney cancer, of which renal cell carcinoma (RCC) is the most common type, is an increasingly common problem in Australia, being the seventh most common cancer. The incidence increases with age, with most cases diagnosed in those aged 70 to 74 years old. The standard treatment of RCC in those with localised disease is surgery, which is curative in most patients. However, elderly patients and those with significant comorbidity may not be surgical candidates.

Many patients who are not surgical candidates are managed initially with active surveillance. Those with progressing or symptomatic tumours are often considered for local ablative therapies including radiofrequency ablation, cryoablation, and stereotactic ablative body radiotherapy (SABR). Radiofrequency ablation and cryoablation have important technical limitations, with larger tumours (>3-4cm) and central tumours (in the hilum or central collecting system) having lower treatment success rates. More importantly, both radiofrequency ablation and cryoablation are still invasive procedures, requiring either percutaneous or laparoscopic access to the tumour, which many patients in this population may not be able to tolerate.

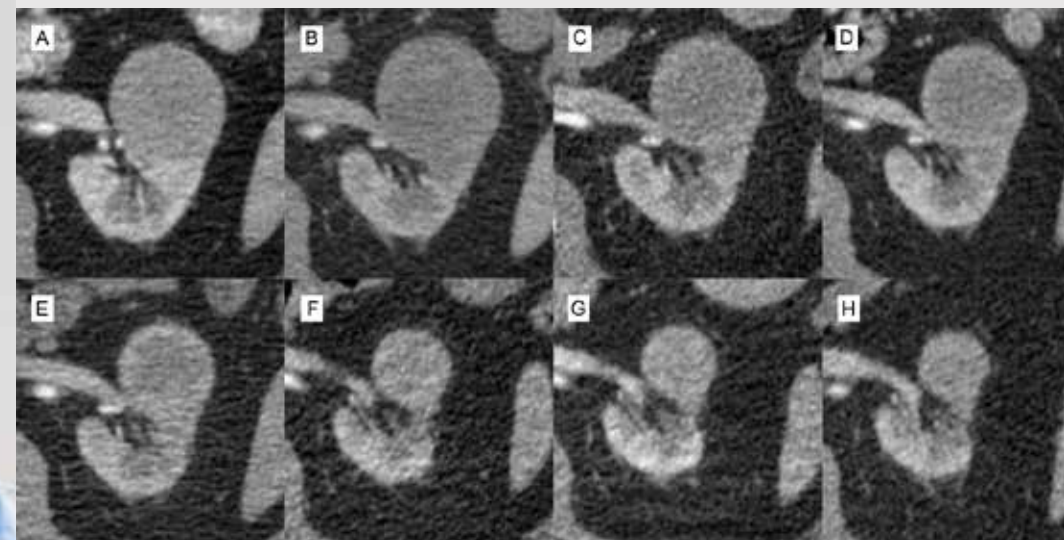
What is SABR?

SABR offers a completely non-invasive approach that may potentially overcome many of the limitations of the other local ablative therapies. SABR refers to the precise delivery of highly conformal and image-guided external beam radiotherapy, delivered in few fractions with extremely high doses of radiation delivered to the target and steep dose gradients beyond the target, such that doses to the surrounding organs are minimised.

Previously SABR for renal cell carcinoma was considered to be an experimental technique⁽¹⁾, however recent publications have brought this into mainstream practice. The FASTRACK II trial⁽²⁾ is a prospective multicentre Australian-led trial of 70 patients with biopsy-confirmed RCC, who were not surgical candidates, with tumours less than 10 cm in maximum diameter. The reported local control was 100%, with 10% of patients developing grade 3 adverse events. A meta-analysis⁽³⁾ including a total of 190 patients showed a 5-year local control of 94.5% with only 1% of patients developing grade 4 adverse events. This is an important option to consider in those who can't have surgery.

Who is eligible for SABR for RCC?

In patients who are fit to have surgery, surgery is still the preferred treatment option. SABR is a good option for those that are not fit for surgery. Patients with severe pre-existing kidney dysfunction and those with bowel in direct contact with the tumour would be considered to have a higher risk of complications with SABR and in these patients, other treatments such as radiofrequency ablation or cryoablation may be more appropriate.



An example case of serial computed tomography scans of the abdomen (zoomed in on the left kidney) before (A) and 3 months (B) to 42 months (H) post stereotactic ablative body radiotherapy.



Dr Joe Chang

MB ChB, FRANZCR, PhD

Dr Joe Chang is a radiation oncologist with a special interest in genitourinary cancers, central nervous system tumours, skin cancer, sarcoma, and stereotactic radiotherapy. He completed his undergraduate training at The University of Otago, specialty training at the Peter MacCallum Cancer Centre in Melbourne, and a PhD on functional and molecular imaging in prostate and head and neck cancer at the University of Melbourne. He undertook a one-year clinical fellowship in stereotactic ablative body radiotherapy (SABR) and intracranial stereotactic radiosurgery (SRS) at the Sunnybrook Odette Cancer Centre in Toronto, Canada. He currently holds appointments at Liverpool Hospital, Campbelltown Hospital, and ICON Cancer Centre Wahroonga. He is the chair of the Sydney SABR Consortium. He has published extensively in the field of stereotactic radiotherapy.

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AN ARTICLE
FEATURING**Dr Charles
Nelson**

The role of screening in familial cardiovascular disease

Good medical practice is to take a family history, including for familial cardiovascular disease, and, if indicated, screen your patient for the relevant disease. Conversely when familial cardiovascular disease is detected in your patient, ideally, the relatives should be screened.

It is my practice to provide my patient with a letter to pass on to their relatives alerting them and their general practitioner of the risk of the disease and role of screening. Adequately resourced specialised publicly funded clinics carry out “cascade screening”: screening first-degree relatives (1stDR) and then screening the 1stDR of any relative in whom the disease was detected.

Familial hypercholesterolaemia has a prevalence of ~1 in 300, 18 times higher in the presence of atherosclerotic coronary disease (CAD). Diagnosis is via clinical scores. 1stDR should be screened with a clinical score. Inheritance is autosomal dominant.

Idiopathic dilated cardiomyopathy (IDC) has a prevalence of ~1 in 250. Up to over 50% of relatives of patients initially diagnosed with IDC are found to have dilated cardiomyopathy. 1stDR should be screened with echocardiogram and ECG and even if negative should be followed-up every 3-5 years as the phenotype may manifest in subsequent years. Ideally the proband should undergo genetic testing. 1stDR may then be screened for the causative gene with those positive being followed up. Most inheritance is autosomal dominant, though other patterns occur.

Prevalence of hypertrophic cardiomyopathy (HCM) is 1 in 500. Probands should undergo genetic testing. 1stDR of probands with pathogenic genetic mutations should be screened with ECG and

echocardiogram. If clinical evidence of HCM is detected genetic testing is optional. If no clinical evidence of HCM is detected genetic testing is recommended with positive cases being followed up and negative cases reassured.

Prevalence of hypertension is up to 47%. Ideally blood pressure should be assessed at least annually in every adult from age 18. Heritability of blood pressure is up to 50%. Hypertension is 2.5 times more likely in patients who have 2 hypertensive parents.

The 2019 European Society of cardiology guidelines state that screening for CAD “may be considered” in selected but asymptomatic high risk patients with diabetes e.g. those with atherosclerotic disease in non-coronary territory, high calcium score or proteinuria. ~30% of diabetic patients with no clinical evidence of coronary disease have obstructive CAD. The main change to management resulting from diagnosing obstructive CAD in an asymptomatic diabetic is prescription of low-dose aspirin.

Patients with a family history of sudden cardiac arrest (SCA) have a modest 1.5–1.8 fold increase in the risk of SCA. Relatives of patients with SCA should be screened for coronary risk factors along standard guidelines. Routine additional testing is not recommended. There is no evidence such testing identifies patients at higher risk.

Up to 8% of males > 50yo have abdominal aortic aneurysm (AAA). Aneurysmal disease is the cause of death in 0.13% of males and 0.07% of females. A positive family history doubles the risk of AAA. It is recommended to screen with ultrasound males age 65-75 who have a first-degree relative with AAA or males who have ever smoked. Screening reduces mortality. Screening of females is not routinely recommended but may be reasonable in individual cases.

Thoracic aortic aneurysms (TAA) account for one third of hospital aortic aneurysm admissions (with the remainder being due to AAA's). 1stDR of patients with TAA should undergo screening with Echocardiography or CT. There is a 20% chance that a 1stDR will have TAA. For patients with a positive family history genetic testing is recommended. For relatives with positive genetic testing imaging with echocardiography or CT is recommended. For those gene positive but imaging negative, follow-up is indicated.

AAA is present in ~20% of patients with TAA. Up to 40% of patients with AAA have at least 1 iliac artery aneurysm (IAA). 86% of patients with IAA have AAA.

Patients with a popliteal artery aneurysm have a high incidence of aneurysm in the contralateral popliteal artery. Femoral arteries and abdominal aorta and should be screened for these with ultrasound.

Bicuspid aortic valve (BAV) affects 1% of the population. The prevalence of bicuspid valve in first-degree relatives is ~10%. Inheritance is consistent with an autosomal dominant pattern with incomplete penetrance. Aortic dilatation is present in up to 84% of BAV patients and coarctation in 6%. 1stDR of BAV patients should be screened for BAV and thoracic aortic disease with echocardiography +/- MRI/CT.

The prevalence of congenital long QT syndrome (LQTS) is probably 1 in 1000. There are autosomal dominant and autosomal recessive forms. The prevalence of Brugada Syndrome is probably 1 in 1000. Inheritance is autosomal dominant with variable penetrance. 1stDR of patients with LQTS or Brugada Syndrome should be screened with ECG and genetic testing.

Thus screening plays a significant role in the care of patients and families with familial cardiovascular disease.

Dr Charles Nelson

MBBS, MPhil, FRACP, FCSANZ

Dr Nelson is a General Cardiologist with a subspecialty interest in Imaging. He graduated from the University of New South Wales in 1989 and has trained at St Vincent's, St George and Prince of Wales hospitals in Sydney. He completed a Clinical Research Fellowship and Master of Philosophy in Cardiac Imaging Science at University of Queensland / Princess Alexandra Hospital / The Wesley Hospital in Brisbane and a 2 year Clinical Echocardiography Fellowship at Hearts 1st Laboratory at Greenslopes Private Hospital in Brisbane. He is also certified in Cardiac / Coronary CT.

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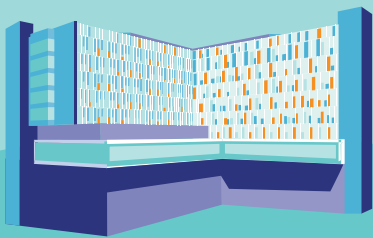
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