

ISSUE **2/2021**

Singapore National Eye Centre
SingHealth

SINGAPORE EYE RESEARCH INSTITUTE

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A publication of Singapore National Eye Centre & Singapore Eye Research Institute

SPOTLIGHT:
HIGHLIGHTS FROM
THE EYE
RUN/CYCLE 2021

ALL ABOUT EYES:
TIPS TO MANAGING
SCREEN TIME
DURING COVID-19

HERE'S LOOKING AT:
A DAY IN THE LIFE
OF AN OPERATING
THEATRE NURSE

ARTIFICIAL INTELLIGENCE IN EYE CARE

TRANSFORMING HEALTHCARE WITH SMART TECHNOLOGIES

SingHealth DukeNUS
ACADEMIC MEDICAL CENTRE

PATIENTS. AT THE HEART OF ALL WE DO.[®]



Editor's Note

While the global pandemic has propelled digitalisation across industries, artificial intelligence (AI) and other digital innovations are redefining the way eye care is delivered. In this issue's Cover Story (page 8), SINGVISION speaks to Assoc Prof Daniel Ting to learn how AI technology can potentially address some of the most urgent challenges facing healthcare providers and policymakers.

A new season beckons, as Prof Wong Tien Yin will be relinquishing his role as SNEC's Medical Director with effect from 1 January 2022. For more on our tribute to Prof Wong and the upcoming leadership transition at SNEC and SERI, go to page 6.

We are constantly striving to improve and expand our range of services. Armed with an array of equipment and an experienced crew, the SNEC e-Production Studio boasts diverse capabilities to deliver seamless virtual and hybrid event experiences (page 15). As part of our continued efforts to enhance wayfinding, some of our clinics at SGH Campus have been renamed and colour zoning implemented for patients and visitors to get around the institution more easily (page 21).

In the same section, we feature highlights of various events, including the inaugural The Eye Run/Cycle 2021 (page 16), the Assistive Technology Vision Week 2021 (page 20), the 22nd National Eye Care Day (page 23), and the 33rd APACRS (Asia-Pacific Association of Cataract & Refractive Surgeons)-SNEC 30th Anniversary Virtual Meeting (page 24).

With most aspects of our lives having shifted online ever since COVID-19 struck, the increased exposure to digital screens has brought on eye-related problems for many. Find out how you can alleviate the ill effects of screen time on page 26.

Have you ever wondered what does an operating theatre nurse do? Take a glimpse into a day of Staff Nurse Jason Mok's life on page 28, where he shares his daily responsibilities and the role he plays to keep patients safe during surgery.

As we celebrate this festive season, we hope you continue to keep safe and well. Here's wishing all our readers good health and happiness!

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Singapore National Eye Centre is the designated national centre within the public sector healthcare network.
It spearheads and coordinates the provision of specialised ophthalmological services, with emphasis on quality education and research.

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The Eye Run/Cycle 2021



New frontier in post-cataract surgery care

A novel treatment will eliminate the need for steroid eye drops after cataract surgery.

Cataract surgery is the most common eye surgery performed in SNEC. To control eye inflammation after the procedure, patients are typically prescribed steroid eye drops to be applied every three to four hours each day, for at least a month.

A majority of these patients are above the age of 50, who often find the eye drops difficult to apply, use them wrongly or forget to instil them altogether. This can lead to uncontrolled inflammation, which causes pain, blurred vision or even blindness in severe cases.

In collaboration with Utrecht University in the Netherlands, SNEC and SERI researchers have worked together since 2014 to tackle this problem, resulting in the development of a new treatment that removes the need for eye drops.

HOW IT WORKS

In this treatment, liposomal prednisolone (a steroid wrapped in layers of lipid nanoparticles) is applied onto the eye only once

New treatment eliminates inflammation after cataract op

Frequent application of steroid eye drops not needed with new method used by Spore, Dutch researchers

Harv'Zu Et

Patients who have undergone cataract surgery have to apply steroid eye drops every three to four hours each day, for up to one month or longer, in order to control eye inflammation that occurs after the surgery.

But it is common for them to find eye drops difficult to apply, or to use them wrongly or forget to use them. And when eye inflammation is not controlled properly, it can lead to pain, blurred vision and in severe cases, even blindness.

Researchers at the Singapore National Eye Centre (SNEC) and Singapore Eye Research Institute (SERI), in collaboration with Utrecht University in the Netherlands, have worked together since 2014 to address this problem. They have developed a new treatment that removes the need for eye drops. In this treatment, liposomal prednisolone, a steroid wrapped in layers of lipid nanoparticles, is ap-

plied onto the eye at the end of cataract surgery. The lipid layers make liposomal prednisolone more attractive to inflammatory cells, which are activated in response to surgery. The inflammatory cells then engulf the liposomal prednisolone, after which the steroid is released inside the cells to reduce inflammation.

In clinical trials, this drug treatment completely eliminated inflammation after surgery with no side effects, said Dr Wong Chee Wai, a consultant in the surgical retina department at SNEC and the principal investigator of the study. Cataract is the clouding of the eye's lens, which can lead to vision problems including dim or blurry vision and reduced night vision. In cataract surgery, the cloudy lens is replaced with an artificial lens.

Most patients who get cataract surgery are aged 50 and above.

Professor Tina Wong, head of the ocular therapeutics and drug delivery group at SERI, and co-principal investigator for the study, said the new drug treatment is a welcome alternative for doctors as well, as it removes the problem of patients not complying with instructions to use eye drops. "If you tell them to use these eye drops every three hours for one month... people will forget," said



Dr Wong Chee Wai (left), a consultant at SNEC seen here examining a patient's eyes, said the new drug treatment is more effective as it selectively targets inflammatory cells within the eye. Professor Tina Wong (above) of the Singapore Eye Research Institute said it is a welcome alternative for doctors as it removes the problem of patients not complying with instructions to use eye drops. PHOTOS: SINGAPORE NATIONAL EYE CENTRE

Prof Wong, who is also head of the glaucoma department at SNEC.

Dr Wong also said steroid eye drops have limited efficiency as less than 5 per cent of the drug actually reaches the site of inflammation. The drug can also be easily removed from the eye through tears or blinking, he said.

In comparison, the new drug

treatment is more effective as it selectively targets inflammatory cells within the eye. The lipids around the drug also keep it from being dispersed before it reaches the inflammatory cells.

The team concluded the first round of clinical trials last year. Hoswelle Eyak Rajyah Abubakar, 64, volunteered for the trials

when she had cataract surgery on her right eye at the end of last year.

Compared with using eye drops after an earlier cataract surgery on her left eye, the new treatment was more convenient and comfortable, she said. "It was a good operation with no complications."

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at the end of the cataract surgery. Inflammatory cells, which are activated in response to surgery, get attracted to the lipid layers and engulf the liposomal prednisolone. The steroid is then released inside the cells to reduce inflammation.

This new drug selectively targets inflammatory cells within the eye. The lipids around the drug also keep it from being dispersed before it reaches the cells.

COMFORT AND CONVENIENCE

The first round of clinical trials concluded last year. According to Dr Wong Chee Wai, Visiting

Consultant at SNEC's Myopia Centre and the study's Principal Investigator, the new drug treatment completely eradicated post-operative inflammation with no side effects during the trials.

Prof Tina Wong, Head of SNEC's Glaucoma Department, Head of SERI's Ocular Therapeutics & Drug Delivery Research Group, and Co-Principal Investigator for the study, added that the new treatment is also a welcome alternative for doctors, as they would not have to worry about patients' non-adherence to medication.

The Wallace Foulds Professorship

The SERI Professorship in Ophthalmology Research has been renamed the Wallace Foulds Professorship, in honour of the world-renowned eye specialist who provided the blueprint that led to the formation of SERI.

A world-famous leader in ophthalmic research, the late Prof Wallace Foulds made lasting contributions to the development of SNEC; he also charted the direction for SERI in its formative years. For more than 20 years, he was actively advising and mentoring the faculty of SNEC, SERI and National University of Singapore (NUS), constantly inspiring the researchers in these institutions. After his retirement, he continued visiting Singapore regularly until 2018.



Dedicating his life towards training young ophthalmologists and clinician-scientists, he contributed immensely to advancing research in retina diseases, myopia, and basic sciences in ophthalmology. He was even awarded a patent for myopia control when he was past 90 years old! Our ophthalmologists and clinician-scientists had always looked forward to his visits, as they benefitted immensely from his inevitably generous counsel. In fact, his guidance and mentorship were invaluable to many of the top eye specialists in Singapore.

As such, the Wallace Foulds Professorship is a befitting tribute to his legacy at SNEC and SERI. Through it, SNEC hopes to nurture more distinguished professionals like Prof Foulds. Its endowment of \$2.5 million will be used to support Research and Development (R&D) activities conducted by the Ophthalmology & Visual Sciences Academic Clinical Programme (EYE ACP). These include:

- building capabilities of R&D projects, programmes and initiatives
- funding infrastructure/refurbishment to support R&D activities
- organising conferences, courses, training and seminars
- training future generations of researchers

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Leadership transition at SNEC and SERI

A new chapter unfolds for SNEC and SERI as these changes take place:



PROF WONG TIEN YIN

After seven impactful years as SNEC's Medical Director (MD), Prof Wong is moving on to new endeavours. Other appointments that he is relinquishing include:

- Deputy Group Chief Executive Officer (Research & Education), SingHealth
- Vice-Dean, Office of Academic and Clinical Development, Duke-NUS
- Academic Chair, SingHealth Duke-NUS Ophthalmology and Visual Sciences Academic Clinical Programme (EYE ACP)

FROM 1 JANUARY 2022

- Senior Advisor, SingHealth Board of Advisors



PROF AUNG TIN

Under Prof Aung's leadership as Executive Director (ED), SERI has grown to be the largest eye research institute in Asia-Pacific, with excellent track records in garnering research grants, publishing scientific papers, winning international awards, and generating patents and spin-offs. Promoted from the role of SNEC's Deputy MD (Research) to our new MD, Prof Aung will continue to push the boundaries of ophthalmic care in the pursuit of quality clinical services and patient outcomes.

FROM 1 JANUARY 2022

- Medical Director, SNEC
- Academic Chair, SingHealth Duke-NUS EYE ACP



PROF JODHBIR MEHTA

Since 2018, Prof Mehta's various leadership roles – SNEC Distinguished Professor in Clinical Innovation, Head of SNEC's Corneal & External Eye Disease Department, SERI's Deputy ED, and Head of SERI's Tissue Engineering and Stem Cells Group – have boosted the institutions' development. He has played a major part in securing key funding to support research endeavours, and implementing high-impact projects and programmes, such as regenerative therapy, corneal transplant, and refractive surgery. His passion for research and novel innovations will elevate us to greater heights following his new appointments.

FROM 1 JANUARY 2022

- Executive Director, SERI
- Deputy Medical Director (Research), SNEC
- Academic Vice-Chair (Research), SingHealth Duke-NUS EYE ACP

THANK YOU, PROF WONG



Upon relinquishing his appointments, Prof Wong will assume the position of Founding Head of Tsinghua Medicine, a new medical academy at Tsinghua University in Beijing, China. Before he departs our shores, we would like to express our gratitude to Prof Wong for his exemplary leadership and vision, both of which have cemented SNEC's position as a global leader in eye care delivery, research and education.

At the SingHealth Duke-NUS Academic Medical Centre (AMC), Prof Wong made significant contributions to realise numerous joint initiatives with both local and international partners to advance and transform research. He also championed the continual upskilling and development of future-ready healthcare professionals by leveraging innovative learning technology and accelerating digital capabilities of the AMC, which is now home to half of Singapore's nationally funded clinician-scientists.

A believer in community care, Prof Wong advocated the use of teleophthalmology, and setting up of virtual

observation clinics and medication delivery service. He also spearheaded the establishment of Singapore's first Myopia Centre in 2019 and the VisionSave Mobile Eye Bus, which made eye screening more accessible for everyone.

Among the many innovative solutions pioneered by Prof Wong, the most prominent ones are the Singapore Integrated Diabetic Retinopathy Programme (SiDRP), and the subsequent implementation of SELENA+ (Singapore Eye Lesion Analyser Plus). To date, SELENA+ is the sole healthcare use case under the Smart Nation and Digital Government Office. During his tenure, Prof Wong also set up the SNEC Digital Transformation Office to drive digital solutions for the optimisation of clinical and research processes.

Prof Wong's instrumental role in advancing clinical and care outcomes has laid strong foundations that SNEC and SERI will build on to shape a better future of healthcare.

We are going to miss you and your forward-looking ideas, Prof Wong. Thank you, and all the best in your new endeavours!

Artificial Intelligence in Eye Care

Learn how artificial intelligence (AI) is transforming eye care delivery and its role in the future of healthcare.

In an era with unprecedented availability of data, including electronic health records, wearable sensors and biomedical imaging, digital innovations like telehealth and AI systems have created extraordinary new opportunities in healthcare.

Due to the ageing population, the eye care community has seen an increase in the number of patients who require continuous treatment and management. As a result of the COVID-19 pandemic, healthcare institutions have reduced clinic sessions as part of

safety measures. This has resulted in longer waiting times or even delayed treatment for patients.

AI and other digital innovations could potentially address some of the most urgent challenges facing health service providers and



Assoc Prof Daniel Ting
(second from left) with his AI team

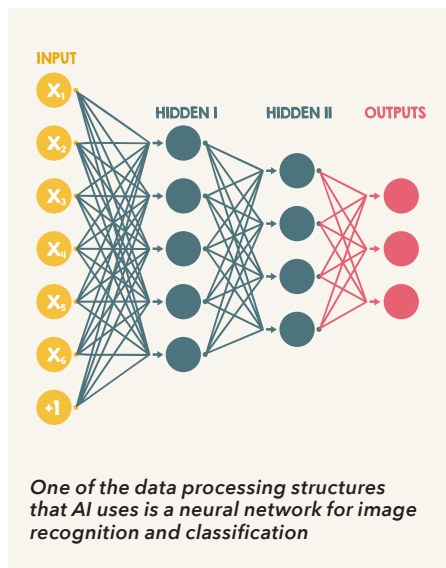
policymakers by fundamentally changing the screening and monitoring of diseases, enabling more accurate profiling of disease progression, and further personalising treatment.

To learn how AI technology is redefining the way eye care is delivered, and how it can shape the future of healthcare, SINGVISION speaks to Assoc Prof Daniel Ting, Head of SERI's AI & Digital Innovations Research Group, and Consultant at SNEC's Surgical Retina and Cataract & Comprehensive Ophthalmology Departments.

HOW IS AI TRANSFORMING EYE CARE?

By 2050, the world's population aged 60 years and older is estimated to be 2 billion. People are living longer, and the pace of ageing is much faster than in the past. As a result, there is a need for longer-term disease surveillance for ocular and systemic conditions like diabetic retinopathy (DR), glaucoma, age-related macular degeneration (AMD) and cardiovascular disease. Population expansion also increases the need to screen for important causes of childhood blindness, such as retinopathy of prematurity (ROP), refractive error, and amblyopia.

AI technologies can be broadly divided into eye-centric and systemic disease-centric. Eye care is an early mover in the AI field due to the availability and



accessibility of large amounts of quantitative and imaging data. There has been successful clinical translation for automated analysis of retinal disease screening and cataract surgery intraocular lens biometry. In fact, AI for retinal fundal image analysis was the first United States Food and Drug Administration (FDA)-approved autonomous medical AI system.

The eye is the only organ that allows direct visualisation of small vessels. Many studies are underway to determine whether major systemic issues – such as stroke or heart attack – could be predicted based on eye images, without patients needing to undergo more invasive tests, such as magnetic resonance imaging and diagnostic angiograms.

If proven to be successful, these AI developments have the opportunity to clinically transform the way eye care and healthcare is delivered.

SNEC & SERI'S AI INNOVATIONS

At SNEC and SERI, our venture into AI technologies started in 2014.

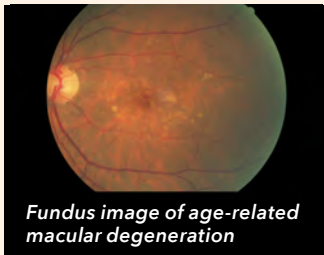
To date, SERI's AI Programme has garnered over \$20 million in cumulative grant funding. The team has also written more than 50 papers on AI that were published in renowned medical journals, including *The New England Journal of Medicine*, *The Journal of the American Medical Association*, *Nature Medicine*, *Nature Biomedical Engineering*, *The Lancet Digital Health*, and more.

Most of the AI technologies developed by SNEC and SERI have undergone robust clinical validation using different well-curated clinical data sets from local and international collaborators.

Next steps

- Real-world clinical adoption and digital integration of mature AI projects to benefit the local and global populations
- Explore different commercial strategies to generate a sustainable return of investment in the AI technologies developed by SNEC and SERI, which can be channelled back to fund and support more AI innovations within SingHealth and Duke-NUS

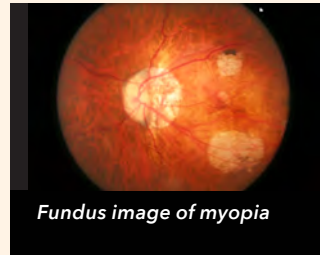
Noteworthy AI Innovations by SNEC and SERI



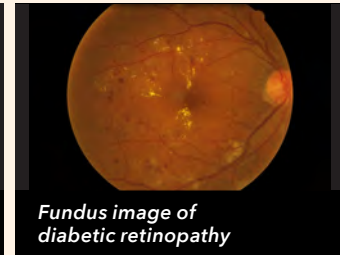
Fundus image of age-related macular degeneration



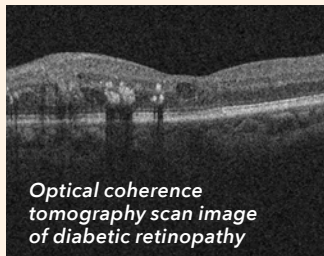
Fundus image of glaucoma



Fundus image of myopia



Fundus image of diabetic retinopathy



Optical coherence tomography scan image of diabetic retinopathy



Image of heart



Image of kidney



Blockchain as a privacy-preserving technology for data

The eye is the only organ that allows direct visualisation of small vessels. AI analysis of the fundus photos may be used to predict the risk of systemic diseases such as in the heart or kidney

SELENA+ (Singapore Eye Lesion Analyser Plus)

This AI system is focused on using retina colour photos and deep learning to detect three major blinding conditions – DR, AMD and glaucoma. In collaboration with NUS School of Computing, SNEC and SERI have jointly developed and tested SELENA+ in over 10 multi-ethnic data sets. With SELENA+, patients can obtain results within minutes rather than at least a day. SELENA+ has received regulatory approvals in six countries and is licensed for use in more than 20 countries via a spin-off company called EyRIS. It is currently integrated into the national DR screening programme, and included as part of the Smart Nation and Digital Government Office's National AI Strategy in healthcare.

SIVA-DLS

SNEC and SERI have also worked with NUS School of Computing to further develop other AI technologies, including the SIVA-DLS (automation of retinal vessels analysis to detect cardiovascular disease) and a system to detect chronic kidney disease.

The models performed comparably to or better than expert graders in associations between measurements of retinal-vessel calibre and cardiovascular disease risk factors. Additionally, we are partnering international collaborators to develop an AI algorithm that is effective in predicting coronary artery calcium score based on fundus images.

Fundus-based algorithms

We are partnering A*STAR on various AI projects, including:

- Using fundus photos to detect patients with papilloedema, a potentially life-threatening condition
- A fundus-based algorithm to detect patients with visual impairment, which could be utilised for population-based screening
- An AI system using colour fundus photos that is clinically effective in detecting patients with high myopia and myopic macular degeneration
- Using blockchain to govern data and the transfer of the fundus-based AI model, and ensure transparency in reporting of the AI diagnostic performance

3 main applications of AI in eye care



Blockchain is a way to share encrypted data in a transparent way with multiple parties simultaneously

1. Segmentation:

AI segmentation analysis can be applied to perform quantitative image measurement for objective clinical assessment, and automatic analysis of disease severity for triaging.

2. Diagnosis: AI has been applied to advanced ocular imaging, achieving robust classification performance in the detection of major eye diseases, such as DR, glaucoma and AMD, to aid in diagnosis.

3. Prediction: Retinal vasculature has been characterised as the 'window' to the body's neurovascular system. AI analysis of fundus photos has been demonstrated to be predictive of the risk of systemic diseases, such as cardiovascular disease and chronic kidney disease.

BENEFITS OF AI ADVANCEMENTS

AI technology can be leveraged to bring about positive changes for both patients and healthcare professionals.

Minimise manpower requirements



AI elevates automation, which in turn reduces manpower constraints.

AI can help reduce the workload of healthcare workers, and even provide medical expertise when

there is shortage of medical practitioners. For example, an AI system can analyse fundal images much faster, at a rate that is unmatched by manual labour. Increasingly, AI will avail human graders from the repetitive task that involves differentiating urgent and stable eye conditions based on clinical data or eye images. It is, however, important to note that the deployment of such AI technology requires careful planning, infrastructure, and specialist support.

Improve efficiency and accessibility



AI enables more efficient diagnosis and remote monitoring, which allows for the shifting of care from the hospital to community. Resources can be more evenly distributed, translating to lower costs for patients, decreased waiting times, and increased accessibility. Reducing the strain on tertiary eye centres will lead to an overall improvement in the quality of care provided to patients.

Improve clinical outcomes and accuracy



AI can be used to improve clinical outcomes (such as greater accuracy in post-cataract surgery refractive outcome), and reduce errors (such as active detection of medication dispensing errors).

Support clinical decision-making



In the future, AI could form the foundation of predictive and personalised eye care. This means that patients at higher risk of disease manifestation or progression can be identified and treated early. Such information would help the ophthalmologist formulate his management plan and support his decision-making, ultimately culminating in better patient care and treatment outcomes, reduced healthcare costs, and higher quality of life for the patient.

ALLAYING CONCERNS

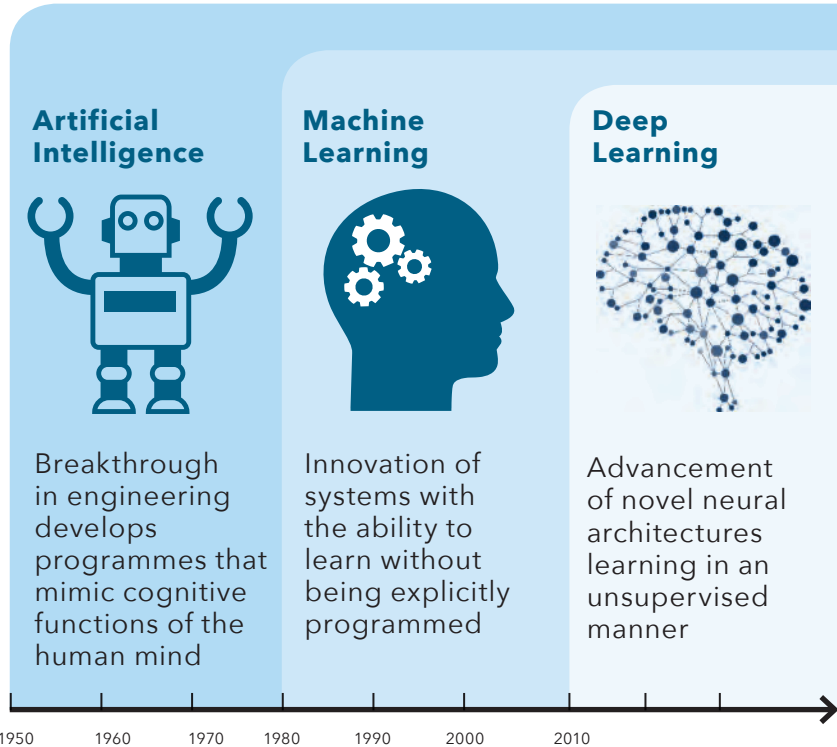
It is understandable that innovations, without traditional human contact, may not be readily acceptable by the older generations, who are accustomed to conventional healthcare models. However, these rapid advancements are supported by scientific evidence – AI platforms undergo vigorous evaluations with external testing data sets to ensure accuracy and safety, and that the robust results are reproducible. In addition, regulatory approvals from health authorities, such as the FDA and Health Sciences Authority (HSA), also attest to the technology’s efficacy.

With the COVID-19 pandemic, the world has undergone significant digital transformation that also impacts the elderly population. In fact, the crisis has catalysed the adoption of digital and AI solutions in our day-to-day lives, resulting in increased acceptance of digital utilisation across all age groups.

THE FUTURE OF AI TECHNOLOGY

It is important to assess the technical methodologies, clinical characteristics, and cost-effectiveness of the AI system when integrated into the real-world setting. Currently, SNEC and SERI are evaluating the clinical adoption, health economic analysis, and service outcomes of the AI algorithms developed over

UNDERSTANDING MACHINE LEARNING AND DEEP LEARNING



AI was first conceptualised in 1956, after a workshop at Dartmouth College in the US. The term ‘machine learning’ (ML), coined by Arthur Samuel in 1959, is defined as “the computer having the ability to learn using various statistical techniques, without being explicitly programmed”. ML algorithms can learn and make predictions based on the data that has been fed into the training phase, using either a supervised or unsupervised approach.

A part of the ML family, deep learning (DL) is based on artificial neural networks with representation learning. The ML algorithms in DL utilise multiple layers to progressively extract higher-level features from the raw input. For example, in image processing, lower layers may identify edges while higher layers may identify the concepts relevant to a human, such as faces. DL is now widely adopted in image recognition, speech recognition, and natural language processing.



Conversational AI chatbots help to answer questions that patients may have

“SNEC and SERI have a diverse team of clinicians and scientists, and predecessors who have put great effort to build and establish the highly valuable clinical programmes and data sets that enable AI projects,” said Assoc Prof Ting.

“Without that, our AI teams would not have progressed as fast. This also highlights that we have to maintain strong collaborations with each other, so we can continue to lead in the AI innovation space in Singapore and globally.”

This article was contributed by Assoc Prof Daniel Ting, Dr Ng Wei Yan and Dr Gilbert Lim.

the past few years. Apart from retina and glaucoma projects, the teams are also venturing into projects in myopia, cornea, refractive, contact lens, cataract, and intraocular lens.

To facilitate cross-border data sharing and collaborations, SNEC and SERI are also exploring various privacy-preserving domains, such as blockchain, federated machine learning, and continual learning approach. At the same time, our AI laboratories are looking into other domains, including natural language processing for conversational AI projects, such as chatbots, to promote health education, improve clinical workflows, and enhance patients’ experience in the healthcare system.



AI platforms undergo vigorous evaluations with external testing data sets to ensure accuracy and safety, and that the robust results are reproducible.



The team of clinicians and scientists from SNEC and SERI are working closely together to develop the AI innovation space in Singapore and globally

Let's GO save sight

SNEC Global Ophthalmology (SNEC-GO) has numerous programmes and initiatives in place to address challenges in eye care delivery for the region and beyond.

There are 2.2 billion people around the world affected by blindness and vision impairment! South Asia and Southeast Asia have the highest rates of avoidable blindness in the world.

SNEC-GO was set up in 2020 with a mission to alleviate preventable blindness, and to address important eye care challenges in the region. SNEC-GO is able to leverage the eye care expertise available in SNEC and SERI, and hopes to empower and build capacity in regional institutes and countries through collaborative research, education, and global advocacy.

Driving this initiative is SNEC-GO's Executive Secretariat, Dr Jayant V Iyer, who is also Head of Clinical & Service Quality, and Senior Consultant in the departments of Glaucoma and Cataract & Comprehensive Ophthalmology at SNEC. "We have a heart for the underserved regions of Asia and beyond when it comes to ensuring provision of quality eye care," said Dr Jayant.

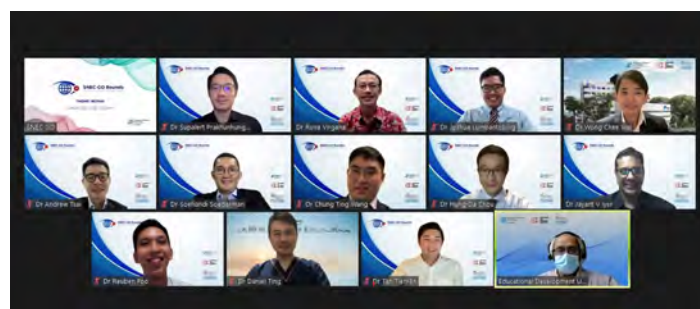
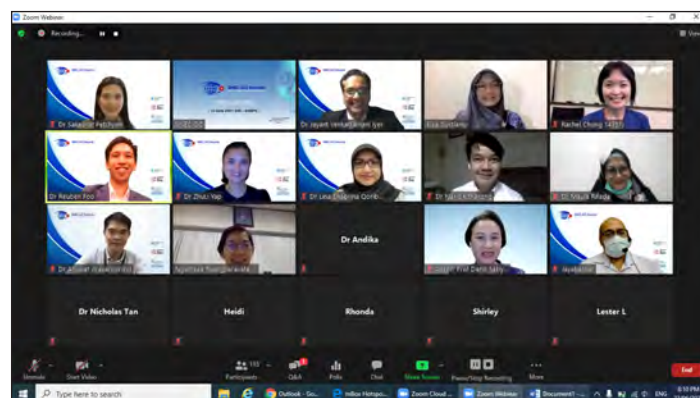
"Meeting this challenge of more equitable availability of eye care to those in need in our region will also entrench SNEC and SERI's position as global leaders in eye care delivery, research, and education."

SNEC-GO: KEY OBJECTIVES

Research To promote and conduct eye care research that creates the evidence base to address prevailing challenges in ocular disease in Southeast Asia and beyond.

Education To train and educate world-class eye care professionals in the region.

Outreach & Advocacy To play a key role in the development of ophthalmic institutes in the region, and to enable delivery of world-class eye care to all, regardless of locale or socioeconomic status.



SNEC-GO, in partnership with regional institutes and international ophthalmologists from the region, recently organised two engaging virtual educational webinars – known as SNEC-GO Rounds – in June and November 2021.



LET'S COLLABORATE!

SNEC-GO has set up numerous initiatives under its three pillars of Research, Education, and Outreach & Advocacy. These programmes have been set up in collaboration with other institutions and humanitarian organisations focused on eye health.

We are always keen to discuss and develop new collaborations. If the sight-saving mission of SNEC-GO interests you, scan the QR code or visit www.snec.com.sg/SNEC-GO for more information.



Broadcasting SNEC's digital capabilities

The SNEC e-Production Studio is equipped with diverse capabilities to deliver exceptional virtual and hybrid event experiences.

Be it live streaming events, e-training and e-learning videos, or virtual meetings, webinars and conferences, the SNEC e-Production Studio is armed with an array of equipment and an experienced crew to ensure a seamless and engaging experience.

This year, events that have been successfully carried out include SNEC Global Ophthalmology Rounds, SNEC-SERI Education Town Hall 2021, Asia-Pacific Academy of Ophthalmology Symposium 2021, and SNEC-SERI Nurses' Day 2021.



Scan to find out more



Capabilities



Webinars



Studio filming for interviews, training and e-learning videos



Pre-recorded video production



Webcasting



Live streaming

KEY FEATURES

- 4K video cameras
- Lighting and audio equipment, teleprompter monitor
- Ideal capacity for hosting panel discussions (including remote speakers) and live streaming of interviews
- Green screen for customisable pre-recorded content
- Post-production video editing services
- Customised graphics developed by in-house designer
- Internet access

For more information, email eproductionstudio@sneec.com.sg to arrange for a consultation.

The Eye Run / Cycle 2021



This is the first virtual fundraiser by SNEC and SERI to raise funds for VisionSave.

A heart for charity is undoubtedly a relentless force as pandemic restrictions did little to put a damper on the participants of the inaugural The Eye Run/Cycle 2021.

Held from 1 October to 30 November, the event saw the participation of 1,023 SNEC and SERI staff, as well as members of the public, raising \$1,012,898 in total.

Proceeds from the fundraiser will go towards uncovering new ways to detect, diagnose, and develop future treatments for eye diseases. It will also support the training of healthcare professionals to meet the ever-evolving needs of patients.

Participants took part in the virtual run or cycle as an individual or as a team of up to 10 members. They were also able to set their own target distance to walk, run or cycle – 10km, 21.1km, 42.2km and beyond for virtual run; 40km, 90km, 181km and beyond for virtual cycle.

The first 1,000 local sign-ups were given a \$50 Rudy Project cash voucher, while all participants received a Finisher T-shirt and an E-certificate of Achievement, with the option to top up for a Finisher Medal.

A weekly prize of a Rudy Project lifestyle eyewear was awarded to the best uploaded selfie for the

week. Participants could upload their selfies each time they were out for their walk, run or cycle.

Special prizes sponsored by Mandarin Opto-Medic Co Pte Ltd were also presented to outstanding participants. The top 20 distances achieved in the Run (Individual and Team) and top 20 distances achieved in the Cycle (Individual and Team) were each awarded a sports eyewear and a sports helmet respectively by Rudy Project.

We look forward to more of such meaningful campaigns by VisionSave and your continued support.

ABOUT VISIONSAVE

VisionSave, launched in July 2016, is an initiative that taps on philanthropic investment to drive and fund innovative eye care research, treatment and delivery in Singapore and the region. It also aims to save sight and ensure optimal outcome for every patient.



Support our cause and join us in paving the way for a brighter future. Make a difference by donating* to www.giving.sg/snec-health-research-endowment-fund or scan the QR code.

**All donations are eligible for a tax deduction of 2.5 times the donation value*

CHAMPIONING OUR CAUSE

Among the participants, 47 groups of individuals and teams championed campaigns to boost the fundraising efforts.



This Christmas, give the **GIFT OF SIGHT**



The year-end is cherished for its festive and celebratory mood, when people are open to caring and sharing the blessings in their lives. During this Season of Giving, why not do something meaningful by donating to VisionSave – you could be saving someone's sight!

Established by SNEC and SERI, VisionSave helps fund programmes that aim to save, restore and protect our patients' eyesight. Your generosity goes towards not only providing financial assistance for needy patients, but also funding research for better treatments and training the next generation of ophthalmologists.

Join us in giving the gift of sight.
Make a donation today!



www.visionsave.sg/donate



(65) 6322 7438



visionsave@sneec.com.sg



www.visionsave.sg

Vision-saving eye injections

Known as intravitreal jabs, these injections offer renewed hope for people suffering from a variety of retinal conditions.

For preventing vision loss due to retinal conditions, an injection is giving better outcomes than other alternatives, such as lasers.

A SNEC study found that injections of anti-VEGF (vascular endothelial growth factor) drugs could arrest vision decline in about 95% of patients with exudative age-related macular degeneration (AMD). Exudative AMD is said to occur when new blood vessels grow from beneath the macula, the central area of the retina, which is the light-sensing nerve tissue at the back of the eye. This irreversible condition is one of the leading causes of blindness in people aged 50 and above. The anti-VEGF drugs block the growth of these abnormal blood vessels. The study was published in the scientific journal *Ophthalmology Retina* in late 2019.

Before anti-VEGF drugs came on the scene, lasers were used to treat exudative AMD, but the results for patients were not great. “With the advent of anti-VEGF injections, we are able to preserve vision and maintain stability of their condition,”

said Dr Shaun Sim, Consultant, Medical Retina Department, SNEC. “Anti-VEGF injections, the most common among intravitreal (IVT) jabs, or a shot of medicine into the eye, are a game-changer in treating exudative AMD.”

Besides exudative AMD, IVT injections of anti-VEGF can also be used to treat other retinal conditions, such as retinal vein occlusion (a blockage of the small veins that carry blood away from the retina) and diabetic retinopathy (an eye disease that affects people with diabetes). These two conditions can also be treated with IVT injections of steroids. This method is also suitable for certain patients with eye infections – just swap the drug to an antibiotic, antifungal or antiviral. About 19,000 IVT injections took place in SNEC in 2020, almost four times more than the approximately 5,000 that were conducted in 2013.

The remarkable thing about IVT injections is how quick and painless they are. The patient experiences minimal pain – thanks to anaesthetic eye drops used to numb the eye – and the entire process lasts approximately five to 10 minutes, Dr Sim assured.

Another plus for IVT injections is the rarity of infections and severe side effects, although Dr Sim advised that some patients may experience dry eyes and discomfort, which may simply be relieved with eye drops; they may even resolve on their own. Other patients may experience a tiny blood clot at the needle entry point, but this will usually heal within one to two weeks.

*Adapted from ‘Eye injections can save vision’, Singapore Health (Nov/Dec 2021).
Photo by Mark Lee, for Singapore Health*



Greater accessibility to low vision aids

The newly launched STAAR (Smart Technology Active Ageing Resource) CORNER at SNEC offers trial of low vision aids for patients.

Set up in collaboration with SPD, the STAAR CORNER, initiated by Clin Prof Anna Tan and the SNEC Low Vision rehabilitation team, provides trial and loan service of various Assistive Technology (AT) devices for patients with low vision. This is the first-of-its-kind service in a local healthcare institution.

In conjunction with Assistive Technology Vision Week 2021, a free webinar was held on 16 October 2021 for patients, caregivers and the public to learn how AT devices and smart technology can help the visually impaired in their daily needs, as well as improve their quality of life.

working on to expand its use to detect other ailments.

"I thank SNEC for your spirit of innovating technology for good in mind. I am sure we will continue to hear more success stories from you," said Mrs Teo, who also featured the webinar on her Facebook page.

AT devices offered at the STAAR CORNER include handheld and desktop video magnifiers, talking scientific calculators, Braille touchscreen tablets, and more. Also available is the OrCam My Eye, a wearable device developed in Israel that can read text, recognise faces, and identify products. It was sponsored by Mandarin Opto-Medic Co Pte Ltd and presented to SNEC by the Embassy of Israel in Singapore. The SNEC Low Vision team will also continually work with various collaborators to bring in state-of-the-art AT devices available in the market to our STAAR CORNER to serve our patients.

Each device can be loaned from STAAR CORNER for up to three weeks. The loan is free as long as the devices are returned in good order before the due date. Through this service, low vision patients will be able to make better-informed decisions on the devices appropriate for their needs.



(Above) Presentation of OrCam My Eye from the Israeli ambassador to Prof Wong Tien Yin

(Below) Clin Assoc Prof Anna Tan hosting the Israeli ambassador at the STAAR CORNER



The virtual event was attended by Guest-of-Honour Mrs Josephine Teo, Minister for Communications and Information, and Minister-in-charge of Smart Nation and Cybersecurity. In her speech, she spoke on the importance of innovation in the midst of rising visual impairment rates globally.

Mrs Teo also discussed the many uses of artificial intelligence (AI), with a special mention of SELENA+, a deep learning system developed by SNEC and SERI [read more on page 8] that the government is



Location: SNEC Level 3 (via Lobby C)

Scan to find out more



Helping patients find their way

SNEC has renamed and colour-coded some of its clinics and room numbers so that patients can more easily get to their destination within the building.

As part of SNEC's continued efforts to enhance wayfinding for patients and visitors, some of our clinics at SGH Campus have been renamed, and colours are now used to differentiate various zones based on the adjacent lift lobbies.

The new naming convention and colour zoning will allow patients and visitors to easily identify their location, as well as better guide them towards the correct lift lobby and level.



MYOPIA EXHIBITION

On the go!



Go on an educational excursion with Amanda the Panda to learn more about myopia prevention and eye care! Our display panels include a 3D eye anatomy structure and interactive installations to engage young ones.

VISIT THE EXHIBITION AT VARIOUS NATIONAL LIBRARIES

Sengkang Public Library

21 Mar to 31 May 2022

📍 Level 4, Compass One
(2nd level of library)

Opening hours:
Mon-Sun, 11am-9pm
Closed on Public Holidays

Cheng San Public Library

1 Jun to 31 Aug 2022

📍 Level 3, Hougang Mall
(in front of Customer Service Counter)

Opening hours:
Mon-Sun, 11am-9pm
Closed on Public Holidays

Clementi Public Library

1 Sep to 31 Oct 2022

📍 Level 5, The Clementi Mall (between Adult Fiction and Magazine sections in the library)

Opening hours:
Mon-Sun, 11am-9pm
Closed on Public Holidays

Ang Mo Kio Public Library

1 Nov to 31 Dec 2022

📍 Level 1, Exhibition Space (foyer)

Opening hours:
Mon-Sun, 10am-9pm
(Closed at 5pm on eves of Christmas and New Year)
Closed on Public Holidays

Check out the library operating hours at www.nlb.gov.sg/visitus.aspx

Public webinars at the 22nd National Eye Care Day



A series of webinars were conducted by SNEC ophthalmologists from 15 to 20 November 2021, as part of the annual event.

Over the years, SNEC has been the rallying force behind the National Eye Care Day, an annual community event participated by many eye departments in Singapore hospitals to promote eye health awareness through eye care talks and free eye screenings for the needy, elderly and children.

Since COVID-19 struck, these talks have gone virtual. Conducted in four languages (English, Mandarin, Malay and Tamil), the webinars were attended by more than 1,500 people.

In his opening remarks on 20 November, Dr Jayant V Iyer, Organising Chair of National Eye Care Day 2021 and Senior Consultant in SNEC's Glaucoma Department, spoke extensively on empowering people with knowledge about the eye and eye care.

The full-day programme covered various topics that catered to different audiences, providing insights into eye care for the COVID-19 situation and beyond. Talks on common eye conditions, such as cataract, diabetic retinopathy and age-related macular degeneration, were tailored to the elderly. For young adults and children, the focus was on negating the effects of working from home as well as raising awareness of paediatric eye problems like myopia and amblyopia.

In addition, video consultations in this digital age and new technology were presented. The sharings are now available on our YouTube channel.

Scan to view
the webinar
recordings



Some of our speakers at the English and Mandarin webinars:



33rd APACRS-SNEC 30th Anniversary Virtual Meeting

SNEC and the APACRS (Asia-Pacific Association of Cataract & Refractive Surgeons) co-hosted the online event on 30 and 31 July 2021.

Originally slated to be held in 2020, the 33rd APACRS and SNEC 30th Anniversary Meeting was postponed and brought online due to the ongoing COVID-19 situation.

Themed 'Beyond 2020: Progress to Perfection', the virtual conference saw the attendance of more than 1,800 delegates from 43 countries. This conference was hosted by APACRS and SNEC, and the live streaming set-up was at Suntec Singapore Convention & Exhibition Centre.

In his Guest-of-Honour address, Dr Vivian Balakrishnan, Minister for Foreign Affairs and a past Medical Director of SNEC, emphasised that in these times of COVID-19, the world is more dependent on the progress of medical science to find the perfect solution for such as well as future novel diseases.

APACRS and SNEC share a similar mission to give patients the best vision possible, said Prof Wong Tien Yin, Medical Director of SNEC, in his welcome speech. He also urged all participants to make use of the presentations to learn new techniques, equipment, and ways of treatment – all while keeping patients at the heart of their intent.



Singapore's Minister for Foreign Affairs, Dr Vivian Balakrishnan, addressed the delegates in his Guest-of-Honour speech



SNEC's Medical Director, Prof Wong Tien Yin, welcomed an international and diverse audience



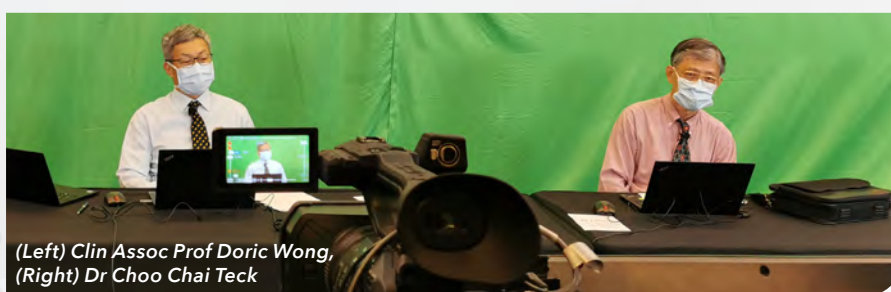
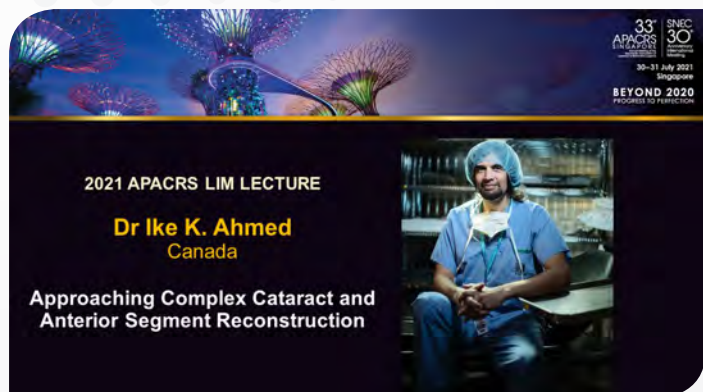
Dr Abhay Vasavada, President of APACRS, gave the opening address during the occasion

EVENT HIGHLIGHTS

APACRS's annual meetings are carefully tailored to the needs of the ophthalmic community in the Asia-Pacific. The two-day event consisted of keynote lectures and symposia on numerous topics, as well as master classes and video sessions, all presented by leading clinicians and researchers from around the world.

The programme highlights included:

- APACRS LIM Lecture
- Master Classes & Instructional Courses
- TOP GUN – Top Cataract Surgery Tips
- APACRS Film Festival
- Subspecialty Symposia
- Cornea Symposium
- 2021 APACRS Gold Medal



SNEC NAMED LECTURES

- **Prof Ian Constable**
Inaugural SNEC VisionSave Lecture
'Advances in Gene Therapy'
- **Prof Timothy Sullivan**
Richard Fan Lectureship in Ophthalmology and Visual Sciences
'Periocular Ocular Trauma'
- **Prof Pearse Keane**
SNEC 30th Anniversary Lecture
'Transforming Healthcare with AI – Lessons from Ophthalmology'
- **Prof Neil Miller**
SNEC Distinguished Lecture
'Research Findings That May Change Your Practice Tomorrow'

COVID-19, screen time and your eyes

The ill effects of the increased exposure to digital screens, and how you can alleviate them.

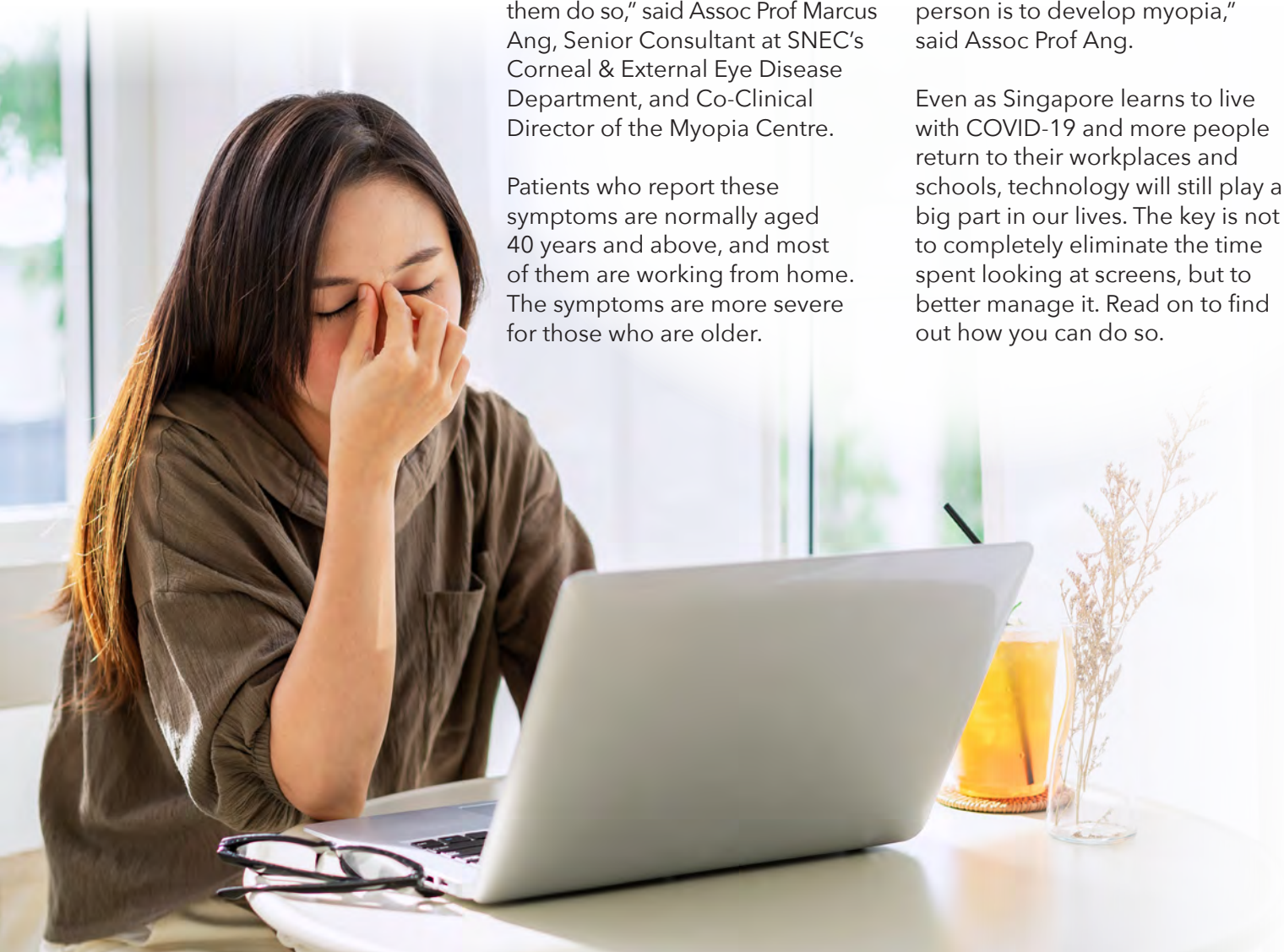
Ever since the COVID-19 pandemic struck, many aspects of our lives have been shifted online. Be it for work, studies, socialising or play, the reliance on digital technology has risen at an unprecedented rate.

This has resulted in a number of problems, with one widely experienced negative effect being eye strain. "Before the pandemic, less than half of my patients see me for symptoms of excessive screen use – eye strain, teary eyes, and dry eyes. But now, a vast majority of them do so," said Assoc Prof Marcus Ang, Senior Consultant at SNEC's Corneal & External Eye Disease Department, and Co-Clinical Director of the Myopia Centre.

Patients who report these symptoms are normally aged 40 years and above, and most of them are working from home. The symptoms are more severe for those who are older.

Another group to be concerned about is the younger patients, among whom myopia has a high prevalence. "While it is debatable that excessive screen time directly causes myopia, it has been proven that the more time spent outdoors, the less likely a person is to develop myopia," said Assoc Prof Ang.

Even as Singapore learns to live with COVID-19 and more people return to their workplaces and schools, technology will still play a big part in our lives. The key is not to completely eliminate the time spent looking at screens, but to better manage it. Read on to find out how you can do so.



Tips to better manage screen time



BUILD A HEALTHY ROUTINE

Start by going for a daily evening walk without your phone, making lunchtime workouts a habit, and creating a screen-time schedule for your child.

PARTICIPATE IN HANDS-ON ACTIVITIES

Pick up a hobby like solving jigsaw puzzles or knitting, or take part in activities, such as board games and sports, to promote family bonding, physical interactions, and develop skills and interests in areas beyond the virtual world.



ENGAGE IN FACE-TO-FACE INTERACTIONS

Online meetings and text messages can never fully replace the comfort and assurance of seeing your colleagues and loved ones in person.



DEVELOP GOOD EYE CARE HABITS

Adopt the 20-20-20 rule (take a 20-second break every 20 minutes to look at something 20 feet away), incorporate outdoor time into your child's daily schedule, and go for regular eye checks from an early age.



A day in the life of an Operating Theatre nurse

Jason Mok plays a major role in keeping patients safe during surgery.

Thirteen years is a long time to stay in any job, particularly a challenging – but fulfilling – one like nursing. For Staff Nurse Jason Mok, his dedication to delivering the best care for patients drives him forward and motivates him to constantly seek improvement.

In the beginning of his career, Jason cared for patients in the inpatient ward at Singapore General Hospital. He subsequently joined SNEC as an Enrolled Nurse and was trained in the Anaesthetic Unit (AU) under the Operating Theatre (OT) Department. Later on, he became a scrub nurse who assisted surgeons to ensure smooth procedures.

Now, the 34-year-old has returned to the AU, with the goal of becoming an Advance Practice Nurse (APN). “Every action of mine can have a big impact on a patient’s comfort and recovery journey. The role of APNs allows for more involvement in the patient’s treatment, and I feel it would give me even greater job satisfaction,” he said.

EXPANDED RESPONSIBILITIES

As an AU nurse, Jason’s main task is to assist the anaesthetist during the surgery. His responsibilities include securing the patient’s breathing tube during general anaesthesia (GA) and ensuring that the patient’s vital signs are monitored throughout the surgery.

Although he had to familiarise himself with new anaesthetic machines, as well as the locations of commonly used AU consumables and equipment in the OT, the transition from being a scrub nurse to an AU nurse was relatively smooth – thanks to his past experience and the help of his colleagues.

“It is essential that I am able to perform basic calibration and troubleshooting of the machine because the breathing of a patient under GA is dependent on it,” Jason explained. “It is also

important to build rapport with the anaesthetists, as we (anaesthetist and the AU nurse) are the only personnel in the anaesthetic team in each OT. Hence, I must be skillful and knowledgeable enough to assist the anaesthetist during surgeries.”

STRIVING FOR EXCELLENCE

Jason is also part of the team, comprising Assistant Director of Nursing (ADN) Foo Lee Lian, ADN Soh Ling Ling, Assistant Nurse Clinician Elizabeth Phua, and Staff Nurse Ong Chu Ting, who won the third prize for SingHealth’s Quality Improvement Project Award in 2021.

The team streamlined pre-operative processes that give nurses more time to focus on other important areas, such as patient assessment and preparation of essential items. For example, they introduced a ‘box system’ so that nurses can collect or prepare these items in a box as early as one day before the surgery. This way, the nurses can take note of any items that may be low in stock and have them delivered in advance, which prevents potential delays.

Jason is not one to rest on his laurels. In fact, he has just completed a Bachelor of Science in Nursing (Honours) programme, and has plans to obtain an Advanced Diploma in Nursing and a Master’s Degree in Nursing.

Currently, the go-getter is also involved in two projects aimed at reducing anxiety for patients undergoing surgery. Based on different types of intervention, one project is targeted at paediatric patients and the other at adult patients.

For those who are considering a career in nursing, Jason said that SNEC’s Nursing-OT department allows one to be highly trained and proficient in assisting all kinds of ophthalmic subspecialty surgeries. “After you have mastered these skills, there are also avenues for you to create change, and improve the standard of care for patients or work processes through *kaizen* (continuous improvement) initiatives,” he added.

A GLIMPSE INTO A DAY OF JASON'S LIFE

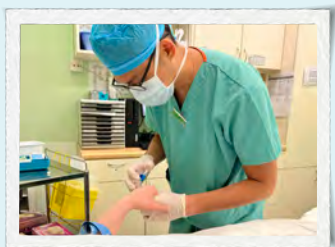


8am-11.30am STARTING THE DAY

A major responsibility for Jason is preparation work.

In the OT:

- stocks up sufficient consumables and drugs
- calibrates the anaesthetic machine by starting it up and performing system checks to ensure it is safe for use. This machine mixes and regulates the flow of medical gases and inhalational anaesthetic agents (such as nitrous oxide and oxygen) to induce and maintain anaesthesia



To prepare a patient for surgery:

- sets an intravenous cannula to administer drugs through the veins to sedate or control abnormal vital signs
- attaches supplemental tubing to provide additional oxygen during surgery

During a surgery:

- monitors the patient's vital signs
- supplements additional instruments and consumables required to the surgical team

On average, Jason is involved in 8 to 10 surgeries a day.

11.30am-12.30pm MAKAN TIME

Jason usually takes a well-deserved break around this time to have his lunch.

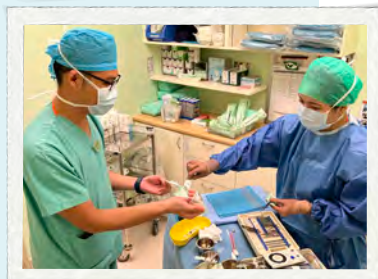
Whatever spare pockets of time Jason has is usually spent on his ongoing *kaizen* projects, which includes data collection and improvement of interventions.

12.30pm-5pm RUNNING LIKE CLOCKWORK

Jason's work after lunch mirrors his duties in the morning, with some additional chores at the end of the day:

- top up consumables sufficiently for the next day
- conduct basic disinfection of areas used during the day

After a long day at work, Jason heads home to spend quality time with his wife and four-year-old son.



What's wrong with my eyes, doc?

My mum suffers from low vision and has difficulties going about daily tasks, such as reading newspapers and seeing bus numbers. What can I do to improve her quality of life?

Low vision can present in many ways and affect everyone differently. The problems that your mother is experiencing are common symptoms of low vision. Here are some ideas on what you and your mum can do to improve these symptoms.

Blurred vision

The simplest way to get around this is to bring the object of interest closer to view. Your mum could also explore visual aids, such as magnifiers and accessibility features on smart devices (e.g., zoom, large fonts). If she has problems seeing the service number of an approaching bus, she can complement the smartphone accessibility features with the mobile app that gives bus arrival times.

Reduced ability to distinguish an object against its background

Ensuring the appropriate lighting conditions for the location and activity can improve her ability to distinguish between an object and its background. Another useful tip is for your mum to use high-contrast colours (e.g., white font on black background) or tactile stickers to label commonly used items at home. If she uses digital gadgets, she can try out screen enhancement accessibility features

on her devices (e.g., bold text, reverse contrast, increased contrast). Wearing sunglasses or glasses with filters could help with indoor or outdoor glare respectively.

Reduced ability to adjust to different lighting conditions

Your mum should get appropriate colour tones for the lenses of her sunglasses. Wrap-around sunglasses or clip-on filters may be useful to help her better adjust to changing lighting conditions in the environment when required.

Loss of central vision (a darker patch in the centre of your vision)

Similar to blurred vision, your mum can bring the object of interest closer to view, or use visual aids and accessibility features on smart devices.

Loss of visual field on the sides (leaving only a small area of central vision)

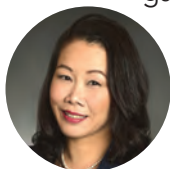
If your mum experiences this, it may be helpful for her to go for orientation and mobility (O&M) training to equip her with skills to travel independently and safely. It would also be useful for you and other caregivers to attend caregiver training (e.g., sighted guide technique) to learn how to guide your mum through her daily activities in a safe and effective



way. As for equipment, she can opt to use a reverse telescope or wear peripheral prism glasses to help in earlier detection of potential obstacles in areas of her visual field loss. Remind her to always use pedestrian crossings (e.g., traffic lights, zebra crossings) when crossing roads as she may require more time to spot oncoming vehicles. When crossing roads, she should turn her head instead of only looking straight to check for oncoming vehicles.

SNEC loans low vision aids to its patients. See which works best for your mum before she purchases it (see page 20 for more information). The SNEC Low Vision Clinic can also refer patients for O&M training, which can equip them with skills and strategies to navigate more safely and confidently. Patients with low vision are encouraged to undergo vision assessment and rehabilitation at SNEC's Low Vision Clinic.

Scan to find out more about Low Vision



Clin Assoc Prof Anna Tan, Clinical Director for Low Vision Service; Senior Consultant, Medical Retina Department, SNEC

It has been about 18 years since my father was diagnosed with diabetes. Recently, his eyesight has been getting worse, and he would often experience blurry vision. What risks does this symptom pose to his vision, and what should he do?

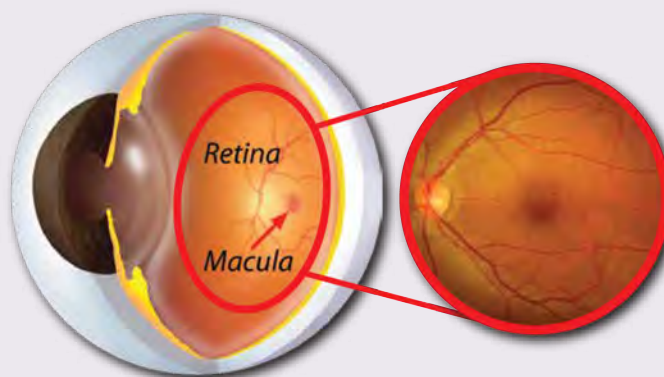
Your father's worsening vision could be due to retinal complications of diabetes, particularly with the long duration of 18 years, and more so if his control had not previously been good. He may have diabetic retinopathy (DR). All diabetic patients, especially long-time sufferers, are at risk of developing DR. DR is a complication of diabetes mellitus that affects the tiny blood vessels inside the retina, the light-sensitive tissue inside the eye. The affected blood vessels can then become blocked and disturb blood and oxygen supply to the retina; or they can become swollen and leak fluid into the retina, causing swelling.

Red flags

DR has no early symptoms, and usually affects both eyes. By the time there are visual symptoms experienced by the patient, there is usually significant eye disease. These symptoms include blurring of vision and floaters. Blurring of vision can occur because of leakage of fluid from the damaged blood vessels, causing swelling of the retina and disrupting its function. Damaged



blood vessels can also leak blood into the



eye, which presents as floaters. In some cases, these abnormal blood vessels may lead to massive bleeding into the centre of the eye (vitreous bleeding) and result in sudden and severe vision loss.

Preventing vision loss

While DR cannot be completely prevented, irreversible vision loss can if the disease is detected and treated early. Patients with diabetes should do an eye examination at least once a year, or immediately if symptoms appear. Your father must keep his blood glucose level in check. The HbA1C (Haemoglobin A1c) is a blood test that indicates a person's average blood glucose levels over a three-month period, and it should ideally be less than 7%. If he has other medical conditions – such as hypertension, high cholesterol and heart disease – he should also keep them under control.

Treatment

In most cases, laser surgery can prevent further damage to the retina and significant vision loss. Newer methods include intravitreal injections of medications to help with swelling (diabetic macula oedema). In advanced cases, a surgical procedure called a vitrectomy may be needed. Your father should see an ophthalmologist early for a formal eye examination, which would then enable him to receive the appropriate treatment quickly. Left untreated, DR can cause permanent blindness, so it is important that he seeks medical attention for his worsening vision.

Scan to learn more about DR



PROMOTIONS



Dr Foo Li Lian
Consultant,
Cataract & Comprehensive
Ophthalmology Department, SNEC



Dr Shaun Sim
Consultant,
Cataract & Comprehensive
Ophthalmology Department, SNEC



Dr Annabel Chew
Senior Consultant,
Glaucoma Department, SNEC



Dr Jayant Venkatramani Iyer
Senior Consultant,
Glaucoma Department, SNEC



Dr Kiew Sieh Yeap
Consultant,
Glaucoma Department, SNEC



Dr Low Jin Rong
Consultant,
Glaucoma Department, SNEC



Dr Ng Si Rui
Consultant,
Glaucoma Department, SNEC



Dr Christine Yau
Consultant,
Neuro-Ophthalmology
Department, SNEC



Dr Grace Wu
Senior Consultant,
Paediatric Ophthalmology & Adult
Strabismus Department, SNEC

NEW APPOINTMENTS

**DEPUTY GROUP CHAIRMAN
MEDICAL BOARD, SINGHEALTH**
(WITH EFFECT FROM 1 NOVEMBER 2021)



Clin Assoc Prof Edmund Wong
Deputy Medical Director (Clinical Services),
SNEC; Academic Vice-Chair (Clinical
Innovation), EYE ACP; Senior Consultant,
Surgical Retina Department, SNEC

**DIRECTOR, NURSING
(NURSING WELLNESS &
ENGAGEMENT), SINGHEALTH**



Dr Loh Huey Peng
Director,
Nursing, SNEC



Dr Chan Hiok Hong
Associate Consultant
Cataract & Comprehensive
Ophthalmology Department, SNEC



Dr Milton Chew
Associate Consultant
Cataract & Comprehensive
Ophthalmology Department, SNEC

OPHTHALMOLOGY & VISUAL SCIENCES ACADEMIC CLINICAL PROGRAMME (EYE ACP)

ASSOCIATE PROFESSOR (TENURE-TRACK)



**Assoc Prof
Donny Hoang**

Senior Consultant, Surgical
Retina Department, SNEC



**Assoc Prof
Danny Cheung**

Consultant, Surgical Retina
Department, SNEC



Assoc Prof Zhou Lei

Principal Investigator,
Proteomics Support Platform, SERI



**Assoc Prof Amutha
Barathi Veluchamy**

Principal Investigator,
Translational
Pre-Clinical Platform, SERI

CLINICAL ASSOCIATE PROFESSOR



**Clin Assoc Prof
Khor Wei Boon**

Head & Senior Consultant,
SNEC Eye Clinic @ SKH;
Senior Consultant, Corneal &
External Eye Disease
Department, SNEC

CLINICAL ASSOCIATE PROFESSOR (WITH EFFECT FROM JANUARY 2022)



**Clin Assoc Prof
Boey Pui Yi**

Head & Senior Consultant,
SNEC Eye Clinic @ Bedok;
Senior Consultant,
Glaucoma Department, SNEC

ADJUNCT ASSOCIATE PROFESSOR



**Adj Assoc Prof
Rick Goh**

Director of Computing &
Intelligence, A*STAR Institute
of High Performance
Computing (IHPC)



**Adj Assoc Prof
Eva Fenwick**

Adjunct Senior Clinical
Research Fellow,
Population Health, SERI



Dr Jane Lim

Associate Consultant,
Cataract & Comprehensive
Ophthalmology Department, SNEC



Dr Sudarshan Seshasai

Associate Consultant,
Cataract & Comprehensive
Ophthalmology Department, SNEC



Dr Bryan Sim

Associate Consultant,
Cataract & Comprehensive
Ophthalmology Department, SNEC



Dr Vong Chai Yen

Clinical Associate, Clinical
Services Department, SNEC

AWARDS

AMERICAN ACADEMY OF
OPHTHALMOLOGY (AAO) 2021

Secretariat Award

Assoc Prof Marcus Ang

EUROPEAN VISION & EYE
RESEARCH (EVER)
VIRTUAL CONGRESS 2021

Rapid Fire Award

Dr Jacqueline Chua

WORLD GLAUCOMA ASSOCIATION

Founders Award 2021

Prof Aung Tin

36TH ASIA-PACIFIC ACADEMY
OF OPHTHALMOLOGY (APAO)
VIRTUAL CONGRESS 2021

Susruta Lecture 2020

Prof Chee Soon Phaik

Distinguished Service Award 2020

Dr Jayant Venkatramani Iyer

**Outstanding Service in Prevention
of Blindness Award 2020**

Prof Louis Tong

Nakajima Award 2021

Assoc Prof Daniel Ting

**Outstanding Service in Prevention
of Blindness Award 2021**

Prof Leopold Schmetterer

Senior Achievement Award 2021

Clin Prof Donald Tan

Achievement Award 2021

Assoc Prof Donny Hoang

Clin Assoc Prof Anna Tan

NATIONAL DAY AWARDS 2021

Public Administration Medal (Bronze)

Clin Assoc Prof Edmund Wong

Commendation Medal

Ms Siow Kalin

Ms Belinda Toh Tze Ing

Efficiency Medal

Ms Low Poh Leng Lucy

Ms Teo Mei Fung Michelle

Long Service Medal

Ms Noraini bte Abdul Hamid

Mr Joseph Ho

Clin Assoc Prof Lee Shu Yen

Dr Loh Huey Peng

Ms Ong Chui Hong

Ms Ooi Teng Lin Linda

Ms Siow Kalin

Ms T Anita d/o D.R. Thambirajah

Ms Yeo Liew Soo

MOH MERIT AWARD 2021

Nurses' Merit Award 2021

Ms Guo Yan

GCEO EXCELLENCE
AWARDS 2021

**Outstanding Administrative &
Ancillary Staff Award**

Dr Thiyagarajan Jayabaskar

AMEI GOLDEN APPLE
AWARDS 2021

Programme Excellence Award

Ms Joanna Chia

Dr Nathalie Chiam

Assoc Prof Vicki Drury

Dr Sonal Farzavandi

Ms Chitra Vallei D/O Govindasamy

Ms Haslina Binte Hamzah

Mr Joseph Ho

Dr Ilyana Ibrahim

Dr Thiyagarajan Jayabaskar

Assoc Prof Rajamani Lakshminarayanan

Ms Eileen Lim

Ms Priscilla Lim

Dr Lim Sing Hui

Ms Cynthia Lin

Ms Eunice Loh

Dr Loo Yunhua

Mr Lakshmanasamudram Mohanram

Dr Ng Wei Yan

Ms Claire Ong

Ms Lisa Ong

Ms N Reena

Dr Bryan Sim

Dr Shaun Sim

Dr Ferrer Janice Silva

Mr Alwin Tan

Ms Heidi Tai

Dr Tan Tien-En

Dr Howard Yu Cajucom-Uy

Prof Ian Yeo

Ms Karen Zhang

SINGHEALTH FAMILY TARGET
ZERO HARM 2021 AWARD

Individual Award

Ms Angeline Sim

SINGHEALTH NURSING
AWARD 2021

**Nursing Practice Excellence
Award - Enrolled Nurse**

Ms Ho Sweet Fong

**Rising Star Award -
Registered Nurse**

Ms Celine Tay

SNEC DIRECTOR OF NURSING
AWARD 2021

Mr Cedric Yeo

RISE (RESIDENCY IN
SINGHEALTH EXCELS)
AWARDS 2021

Outstanding Faculty Award

Prof Chee Soon Phaik

Prof Jodhbir Mehta

Clin Assoc Prof Mohamad Rosman

Dr Wesley Chong

Outstanding Resident Award

Dr Tan Tien-En

Dr Teo Zhen Ling

**Inspiring Resident-Educator
Award**

Dr Stanley Poh

**Partners-in-Education Award
(Non-Physician Faculty)**

Ms Ng Lai Heong

SNEC provides eye treatment for the full spectrum of eye conditions:

- Cataract & Comprehensive Ophthalmology
- Corneal & External Eye Disease
- Glaucoma
- Medical Retina
- Neuro-ophthalmology
- Ocular Inflammation & Immunology
- Oculoplastic
- Ophthalmic Pathology
- Paediatric Ophthalmology & Adult Strabismus
- Refractive Surgery
- Surgical Retina

Consultation by appointment:

 Tel: **6227 7266**

 Email: **appointments@sneec.com.sg**

 Visit us: **www.sneec.com.sg**

Follow us on:    



Where We Are

11 Third Hospital Avenue
Singapore 168751
www.sneec.com.sg



Opening Hours

8:30am to 5:30pm
Mondays to Fridays
No clinic sessions on Saturdays,
Sundays and Public Holidays



Valet Service

- Valet service is available for SNEC patients at \$3.00. Parking charges of \$0.036 per minute (or \$2.16 per hour) applies on top of the valet parking fee.
- Operating hours: 7:00am to 5:30pm Mondays to Fridays

**GP Hotline:
6322 9399**

A dedicated line for GPs attending to patients with eye conditions.



SNEC

Branches and Affiliated Clinics



CENTRAL

- 1** **Singapore National Eye Centre**
11 Third Hospital Ave
Singapore 168751
Tel: 6227 7266
- 2** **SNEC Eye Clinic @ NHCS
National Heart Centre Singapore**
5 Hospital Drive, Level 4, 4C
Singapore 169609
Tel: 6704 8289
- 3** **SNEC Retina Centre
Diabetes & Metabolism Centre
(DMC), Singapore General Hospital**
17 Third Hospital Avenue,
#02-00 Singapore 168752
Tel: 6421 8500
- 4** **KK Eye Centre
KK Women's and Children's Hospital**
100 Bukit Timah Road,
Level 1, Children's Tower
Singapore 229899
Tel: 6394 1930 / 6394 1931

- 5** **SNEC Community Eye Clinic
@ HPB Building**
3 Second Hospital Avenue
#03-04, Health Promotion
Board Building
Singapore 168937
Tel: 6322 4584

EAST

- 6** **SNEC Eye Clinic @ Bedok**
Blk 212 Bedok North Street 1,
#03-147 Singapore 460212
Tel: 6843 5001
- 7** **Myopia Centre**
Blk 212 Bedok North Street 1,
#03-147 Singapore 460212
(Located at SNEC Eye Clinic
@ Bedok)
Tel: 6843 5060
WhatsApp: 9139 1712

- 8** **SNEC Eye Clinic @ CGH
Changi General Hospital**
2 Simei Street 3, Level 1
Singapore 529889
Tel: 6850 1450 / 6850 1470

NORTH EAST

- 9** **SNEC Eye Clinic @ SKH
Sengkang General Hospital**
Medical Centre, Level 8
110 Sengkang East Way
Singapore 544886
Tel: 6930 2802
- 10** **SNEC Community Eye Clinic
@ Punggol Polyclinic**
Blk 681 Punggol Drive,
Oasis Terraces, #04-12
Singapore 820681
Tel: 6718 2590

Consultation by appointment: 6227 7266 GP Hotline: 6322 9399
Email: appointments@sneec.com.sg Visit us: www.sneec.com.sg

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