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Enhancing the Patient Care Experience

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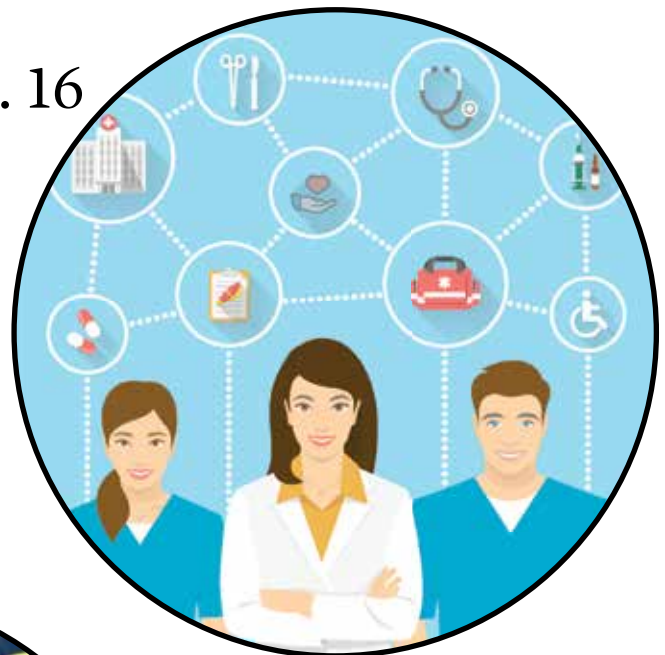
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Innovative Care for Parkinson's Disease



Providing Innovative Care for Patients

Parkinson's Disease (PD) is known to be the second most common neurodegenerative disorder in Singapore, and affects about three in every 1,000 seniors aged 50 years and above. As Singapore's population continues to age, the number of people with movement disorders will rise and there is currently no cure. At present, medication is prescribed to control symptoms and improve daily function. Minimally invasive surgery is available for patients who are in an advanced stage of the disease, and they can be fitted with what is known as a Deep Brain Stimulation (DBS) device.

A Committed Partnership for Better Outcomes

On April 11 this year, the National Neuroscience Institute (NNI) signed a Memorandum of Understanding with global medical device company, Medtronic International Limited, to pave the way for better patient outcomes with innovative DBS devices. By combining the strengths of NNI's enhanced specialist care with Medtronic's technological expertise, the two entities aim to work together to unveil the feasibility of highly programmable and MRI-safe DBS devices – especially for patients who are not receptive to prescribed drugs to suppress the symptoms.

This partnership was recognised on World Parkinson's Day to create a greater awareness of this devastating neurodegenerative disease and highlight the commitment and efforts of NNI to advance in treatments.

Treatment for Future Positive Outcomes

Says Dr Nicolas Kon, Co-Director, NNI Centre of Excellence for DBS; Consultant, Department of Neurosurgery, NNI, "We carefully select patients and counsel them as part of a multidisciplinary team before they undergo the procedure. After the device, which is like a pacemaker, is carefully implanted and turned on, our patients experience an immediate improvement in their movement. This leads to a significant benefit in their overall function and quality of life. The improvement lasts for many years."

Dr Kon adds, "Like any therapy; be it medical or surgical, DBS carries a small risk related to the procedure. NNI has a dedicated team (comprising neurologists, neurosurgeons, Advanced Practice Nurses (APNs), psychologists and therapists), which carefully screens patients prior to the procedure and supports at all stages of the treatment. This helps minimise risks and improve outcomes. We have also put in place processes to ensure that all our patients are cared for in a holistic manner tailored to their individual needs."

As a chronic neurological disease, patients will still need to manage their health on a long term. Says A/Prof Louis Tan, Co-Director, NNI Centre of Excellence for DBS; Senior Consultant, Department of Neurology, NNI, "DBS is an established effective treatment for patients who experience wearing-off symptoms after many years of medication. This means that the symptoms of PD will return before the next dose of medication is due. As time goes on, these symptoms become more distinct, leading to an on-off effect. Hence, DBS treatment should be considered for these patients."

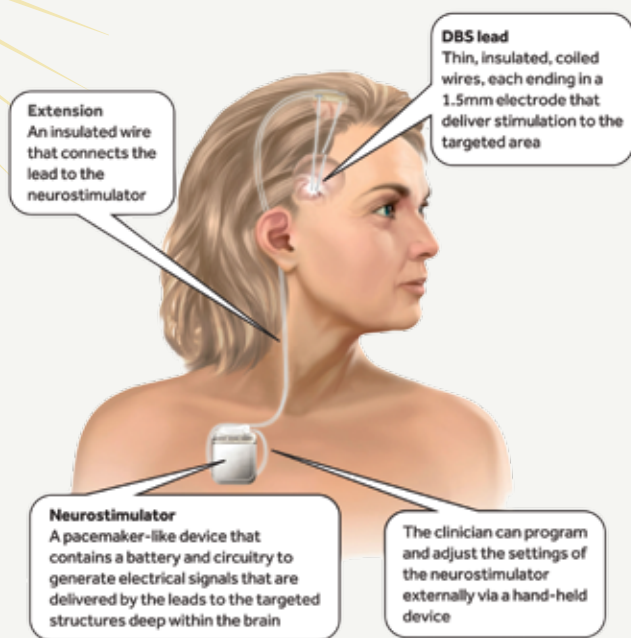


Objectives of the MOU

- Establish a Centre of Excellence for DBS focused on achieving the best outcomes for patients;
- Enhance patient access to DBS therapy through continuous patient education programmes;
- Develop fellowship training for clinicians (from South East Asia and worldwide) who wish to learn about DBS therapy;
- Play a leading role in the adoption of new technologies that enhance patient care; and
- Identify areas to cooperate in clinical research activities pertaining to the field of Brain Modulation.

“This partnership with Medtronic will enable us to establish the NNI Centre of Excellence for DBS, in the forefront of Brain Modulation.”

- A/Prof Ng Wai Hoe
Medical Director, NNI



The Deep Brain Stimulation (DBS) system is used to help control tremors and chronic movement disorders like PD. Tiny electrodes are surgically implanted into specific parts of the brain and are connected via a subcutaneous wire to a neurostimulator, implanted under the skin near the clavicle.

Picture Credit: Medtronic International Ltd.

From a Patient's Perspective

A degenerative disorder of the central nervous system that impairs people's motor skills and speech, PD leads to a progressive loss in quality of life. Mr Tan Tian Seng, 60, is someone whose life took a 180-degree turn when he started experiencing frequent headaches and head heaviness, which came in the way of his job as a taxi driver. He also suffered from memory lapses and was referred to NNI for further examination.

Following some physical assessments, Mr Tan was diagnosed at the age of 49. Ten years later in 2015, he learnt about DBS and went through a review on his health and medication status. As he was found to be a suitable candidate, he underwent the surgery in August 2015. During his post-surgery care, Mr Tan was tended to regularly by a multi-disciplinary team. The device was turned on after a month and a half after full recovery, and his motor symptoms were effectively controlled. Today, he is able to lead a life; close to one that is led by many others.

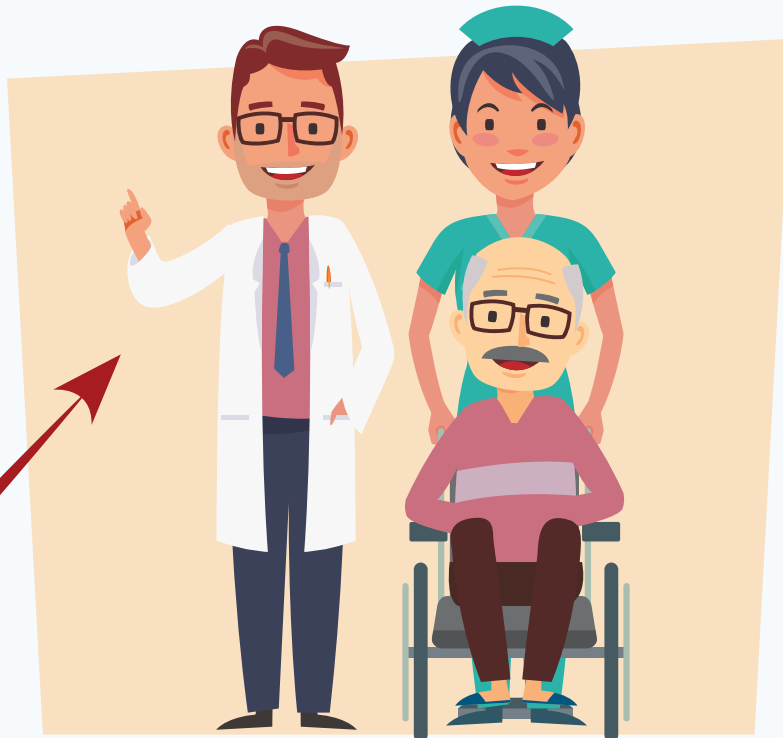


(From Left) A/Prof Seow Wan Tew, Deputy Medical Director (Academic Affairs), NNI, A/Prof Ng Wai Hoe, Medical Director, NNI, Ms Zenobia Walji, Vice President, Southeast Asia, Medtronic International Ltd., and Mr Jacob Paul, Vice President, Restorative Therapies Group, Asia Pacific, Medtronic International Ltd.



Mr Tan Tian Seng (first row, centre) is seen by a multidisciplinary team of PD specialists and nurses from NNI, and therapists from Tan Tock Seng Hospital (TTSH).

In this picture, Mr Tan is joined by:
(First Row, from left) Ms Sarah Ko, Senior Speech Therapist, TTSH, Ms Li Wei, Advanced Practice Nurse, Department of Neurology, NNI
(Second Row, from left) Ms Chng Pey Ling, Dietician, TTSH, Ms Christine Chua, Speech Therapist, TTSH, Dr Nicolas Kon, Consultant, Department of Neurosurgery, NNI, A/Prof Louis Tan, Senior Consultant, Department of Neurology, NNI, and Ms Ng Hwee Lan, Nurse Clinician, Department of Neurology, NNI



Reducing Admission and Improving Efficiency

Taking care of patients and keeping them safe is one of the priorities of NNI, and we enforce measures to minimise and eliminate risks to ensure their safe movements. It is agonising to see patients suffer from their injuries, and doctors and nurses ensure that patients receive utmost care while they are admitted.

Most patients with Parkinson's Disease (PD) suffer from falls and most often end up at the Tan Tock Seng Hospital's (TTSH's) Emergency Department (ED). Every month, TTSH sees the admission of five to six such patients. Although low, it is expected to increase with time.

The Need to Reduce Admissions

While falling is part of the disease progression, some patients do not require hospital admission. Says Dr Tay Kay Yaw, Senior Consultant, NNI, "We realised that many of the falls did not result in complications that require hospitalisation. Yet, they were admitted."

If left in the hospital, their movements will be limited and they will become deconditioned. Eventually, they could possibly face difficulties in walking again. So it was important to reduce the number of those admitted if there were no complications such as bleeding in the brain, complex fractures, or confusion. Fewer

admissions would also mean the availability of more beds for other patients. To carry out this reduction, Dr Tay joined hands with his fellow doctors and nurses from the NNI Parkinson's Disease Programme and the ED at TTSH to bring the admission of patients who suffered from falls without facing complications.

Their Quality Improvement (QI) project, "To reduce admission rate of parkinsonism patients with uncomplicated falls from the Emergency Department by 70% within six months", was recognised by SingHealth's Enhancing Performance Improving Care (EPIC) Framework for the project's focus on patient centeredness, better operational efficiency, collaborations between cross clusters and successful results.

Making the Change, Axing the Falls

With existing education programmes on fall prevention and efforts to discharge PD patients earlier to prevent deconditioning, the NNI team looked at other ways to reduce admissions. Doctors, nurses, personnel from the ED, and Patient Service Assistants (PSAs) were asked to join in, as having an inclusive team was important for this plan to succeed and the changes to take effect. Specifically, it was best to have the admission staff in the team as it would be easier to uncover the root cause of the issue.

Soon after the investigations began, the team discovered that both the ED and the families of patients felt more assured if a patient was admitted after a fall, even if there were no complications. “This is because the next appointment with the consultant can sometimes be months away as we have three consultants, but up to 5,000 consultations a year. So, they felt that it was safer to admit the patient,” explains Dr Tay.

Therefore, the challenges were two-fold: A long wait for a clinic appointment, and a lack of protocol allowing the ED to provide patients with alternatives to hospital admission.

Addressing the Root Causes

The team set out to eradicate these issues, and the first step was to get the ED staff to agree on cases that would not require hospitalisation. “There were no international criteria. So we had to brainstorm and come up with our own. It was useful having representatives from ED, nurses, and consultants, because they are the people on the ground seeing the patients. They had to agree on what was non-complicated,” says Dr Tay.

Next, the team worked on plugging the time gaps between the ED visit and the following consultation. Dr Tay adds, “Thankfully, we managed to create a dedicated clinic slot that our Advanced Practice Nurse (APN) could run. So we created a Parkinsonism Falls Early Slot for these patients using the unutilised space. Instead of being admitted, the patients were given a slot in this clinic within a week or two to return for a review.” This move would give families an assurance as patients could get to see their regular consultant. With these in place, the team created a flow chart to make sure that everyone involved would know what was to be done from then on.

Journey towards Success

When asked if members from the ED, doctors or nurses faced challenges with the new workflow, Dr Tay says there were, surprisingly, none. “We had representatives from different departments on the team. They were the ones who went to the

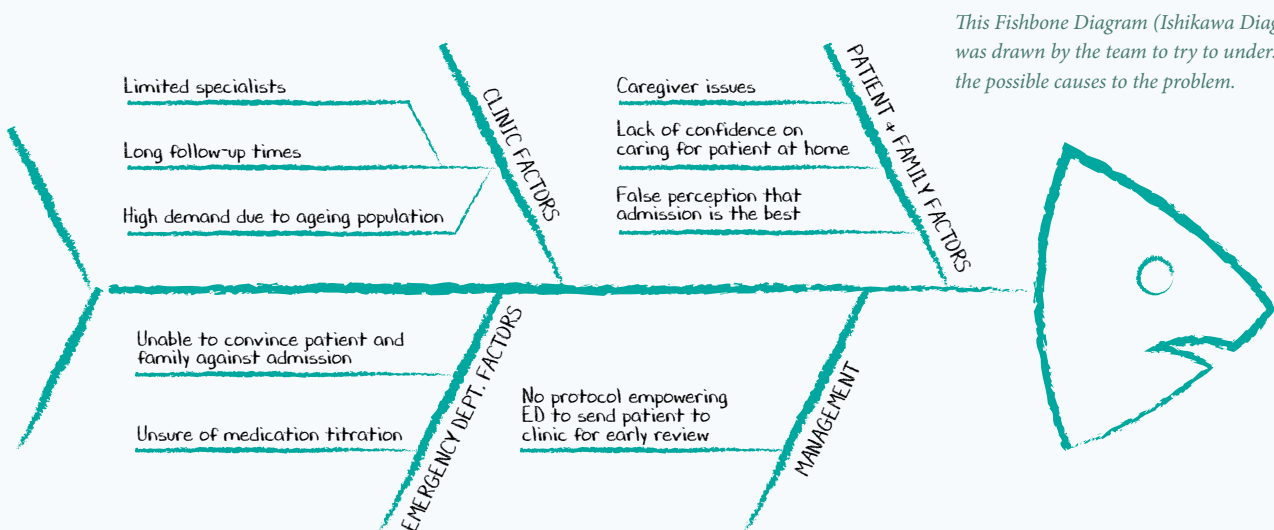


The team from NNI’s Department of Neurology that came up with the inventive project for patients with PD. (From Left) Dr Tay Kay Yaw, Senior Consultant; A/Prof Au Wing Lok, Head of Neurology (NNI-TTSH Campus) and Senior Consultant; A/Prof Louis Tan, Senior Consultant; Ms Li Wei, Advanced Practice Nurse; Ms Yvonne Chew, Senior Staff Nurse; Ms Ng Hwee Lan, Nurse Clinician; and Dr Xu Zheyu, Associate Consultant.

ground to inform and convince their team. Because it came from one of their own, the members found it easier to follow the new protocol,” says Dr Tay.

On his part, Dr Tay worked with fellow team member, Dr Foo Chik Loon, Senior Consultant from TTSH’s ED to get a buy-in from fellow specialists. Eight months after the initiative was undertaken, the new workflow was implemented in January 2015. The difference was almost immediate and apparent. Admissions were reduced by 75%. Patients, caregivers, and NNI staff reported that they were happy with the new system.

Now, NNI is hoping to draw lessons from this project to reduce admissions for headache and dizziness cases. So, what advice would Dr Tay give to those working on this new project? “Everyone wants to improve. For an effective multidisciplinary team management, a friendly and inclusive approach is preferred. A group of friends working together will do much better work than a hierarchical relationship,” he says.



This Fishbone Diagram (Ishikawa Diagram) was drawn by the team to try to understand the possible causes to the problem.

Creating Sensorial and Patient-friendly Spaces



Outpatient facilities in healthcare institutions can be an intimidating experience for patients, especially when they sit in the waiting area, expecting a diagnostic procedure that could shed light on their symptoms. The anxiety is enough to affect the patient's encounter, but did you know that having the right ambience can enhance the delivery of care and the overall patient experience?

In addition to the high standards of care, dedicated healthcare professionals, and advanced medical equipment, a calming

environment is conducive towards a sense of assurance and allays any anxiety in our patients. In addition, it also creates a more efficient workspace for the neuroradiologists.

This is remarkably displayed at the 3T MRI Suite at NNI's Neuroradiology department, where dynamic lighting and projection fills the space to bring comfort to patients. Our neuroimaging facility stands out with a dedicated team of multidisciplinary specialists, along with such innovative approaches towards providing the best care to our patients and staff.

Meeting Expectations with Dedicated Care



The Ministry of Health's (MOH) Patient Satisfaction Survey (PSS) 2015 has shown that more people were satisfied with all public healthcare institutions (national specialty centres, hospitals, and polyclinics) last year.

NNI was assessed in the survey with 300 respondents - 213 patients and 87 caregivers. As a healthcare institution in Singapore for neuroscience care, NNI is very honoured to have received such encouraging results. Thanks to the committed efforts of our staff, we have performed very well with improvements in overall satisfaction, experience, likelihood to recommend and value for money.

Our multidisciplinary clinical teams are dedicated towards the provision of the best medical care as well as customer service to all our patients, and will continue to meet their expectations for the years ahead.

Summary of Survey

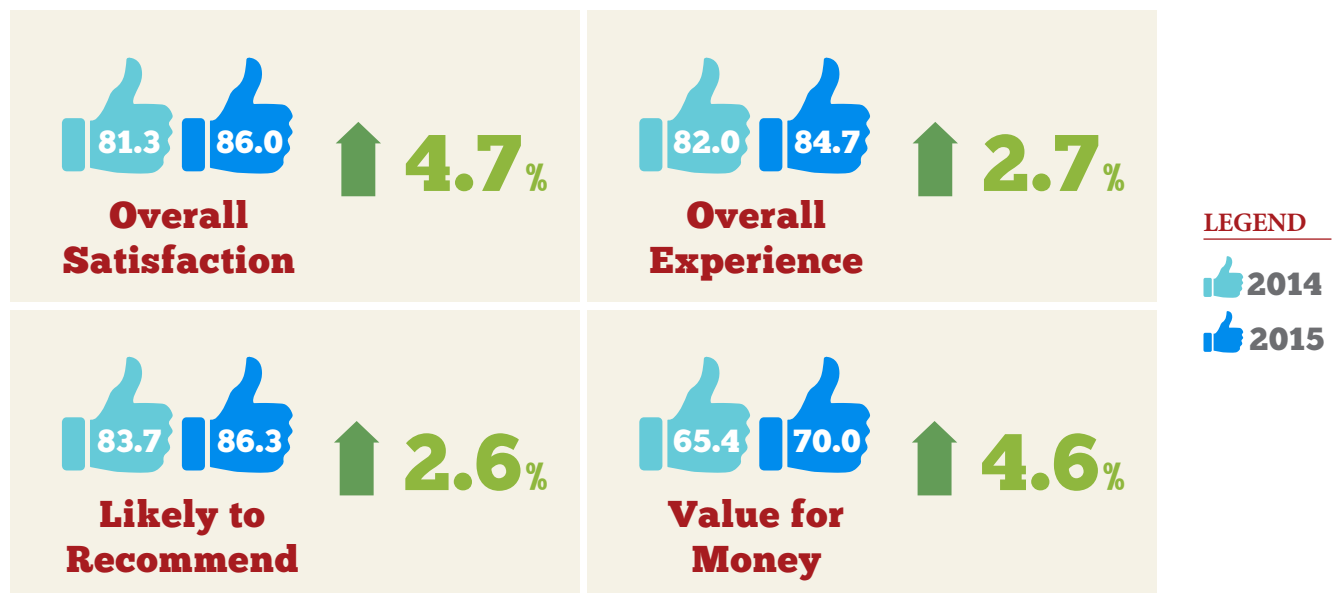
In the MOH PSS survey, a total of 12,469 respondents were polled between November 2015 and February 2016, and about 85.9 per cent of them were satisfied overall, showing a 6.8 percentage point increase from 2014.

The survey also found that 83.8 per cent of respondents rated the institutions as having met or exceeded expectations, 3.2 percentage points higher than in 2014. About 84.9 per cent of them were willing to recommend the institutions to others, an increase of 2.5 percentage points from 2014. As for the affordability of services, 72 per cent of them rated it as "excellent" or "good", 3.3 percentage points higher than in 2014.

The institutions were assessed on attributes related to seven touch points: Doctors, nurses, allied health professionals, care coordination, facilities, waiting time and billing issues.

Respondents rated the importance and their satisfaction level for each attribute. Waiting time, procedures and facilities were named as areas that needed improvement, and healthcare institutions are definitely committed towards reducing issues that affect these areas and enhancing services with quality improvement projects.

Ratings for NNI from 2014-2015



Will Power to Live On

Patients and caregivers demonstrate extraordinary courage, strength and resilience in the face of healthcare challenges. Neuslink is honoured to highlight the voices of the winners from NNI who were recognised at this year's Singapore Health Inspirational Patient & Caregiver Awards.

Inspirational Patients



Fighting Spirit Ms Kwan Yuling

I had leukaemia when I was five and was in and out of the hospital for treatment till I was 16. Lying in the hospital bed, I often wondered why I couldn't be like other kids, who could play and study.

My family broke up when my father left us when I was 12. My brother eventually left the family that same year and I have not seen him since. My mother worked on two jobs to support us, till a stroke placed her in a nursing home for three years. When my mum and I recovered from our respective health conditions, I took on any job I could find — and finally, things started looking up for us. My income was meagre but enough for us to get by.

In 2011, my world came crashing down again. The doctors found a tumour in my brain. At 30, I felt scared about the future for the first time.

After the surgery, I could not walk, talk, move, or swallow; I was tube-fed for months. However, I told myself that I had to recover. I wanted to be normal, like everyone else. So I worked hard at therapy sessions. Eventually, I could walk and talk again, just like how my mum recovered from her semi-paralysis. Even though I use a walking stick, and did not think that I could ever work again, I can now work, pay the bills, take the bus by myself to work, and I'm happy. I know that life is still filled with challenges, but I am not one to back down when the going gets tough.

To those who are facing health challenges, I would like to encourage them not to give up. There is much more you can accomplish if you believe in yourself.



Staying Stoic Mr Lim Siak Teng

I was diagnosed with Motor Neuron Disease (MND) 18 years ago, when I was 50 years old. Because of this incurable, progressive disease, I lost the function of my left arm, and within four years, my right arm too. With no aids for people like me, I was unable to leave the house as I could not lock the door. I used to enjoy working with my hands and made a living with them. Not being able to use my arms anymore was devastating at first, but I have learnt to accept my condition. After a falling incident while alone at home two years ago, my family engaged a maid to help me. But I still try to be independent.

Let me tell you something funny — I was taking the bus once and a stranger held on to me for support — I had to explain that I have no use of my hands and would not be great support if the bus came to an abrupt stop!

I often tell this story to fellow patients at the NNI MND Support Group. Some of them are fearful of going outdoors, or explaining their condition to others — so I hope to encourage them with this story! I do not think of myself as brave, just practical. I have a choice — I can choose to be gloomy about my condition or content with what I have. I prefer to be thankful and move on with life.

For new patients and their families, I would like to encourage them to take the time to get used to the condition. Talk to others, as it usually helps when you share your feelings. I know there is currently no cure for this disease, but I hope that one day, a miracle will happen and a cure can be found.

Inspirational Caregivers



Caring with Love Ms Cynthia Low

I lived with my late mother-in-law after my marriage 27 years ago. After her husband passed away at 36, she raised three children on her own. She developed progressive weakness in her limbs in mid-2012. When she was

diagnosed with MND in 2013, the least we could do was to be filial and take good care of her.

My role as a caregiver was not easy and physical limitations were some of the difficulties I faced. Suffering from right thoracic outlet syndrome as well as carpal tunnel syndrome meant that I had to take my medication and do things slowly. Taking care of my mother-in-law along with household chores was not easy.

Fortunately, I received support and guidance from doctors and support groups at NNI, social services, the church, courses on caregiver's training, as well as article clippings and the guidebook, "Caregiving... the journey starts with you!" by AWWA Centre for Caregivers. My doctor, who understood my situation, allowed me to postpone surgery for my thoracic problem so that I could fully focus on my caregiving duties.

At times, I was unsure of how to cope with her occasional tantrums and demands for attention. But the most important thing was finding ways to resolve them. Occasionally, she would hold and kiss my hand and thank me for taking care of her. These were touching moments that I would always remember, and helped me to continue to care for her despite the challenges.

Support from my son and husband were also vital for my emotional wellbeing. They would let me take a short walk and unwind by working on art and craft projects, which I found very therapeutic. Conflict resolution, like caregiving, can be both challenging and dynamic. You have to be resourceful and always plan and prepare for the unexpected!

The best feeling in the world is to know that your presence means something to someone. The past two years have been challenging yet precious. I learnt a lot about my mother-in-law, what she had done and more importantly, who she was as a person. Together, we built trust and appreciation for each other as we went through different stages — from depression to acceptance. I am glad that we fulfilled her final wishes.

In Sickness and in Health

Mr Ng Swee Hin

I love my wife, Siew Heng very much. We have been together for a blissful 23 years and what I discovered about marriage, was that it is pointless to win an argument if it sours our relationship. So I always let her have her way.



As my wife has arthritis, I hold her arm wherever we go. One evening, after we had just finished our social dance session, she tripped and fell badly. She had to have surgery on her skull, which led to another two operations and hospital stays.

Our lives changed significantly after that. We used to be active in taiji and dancing at the community centre, and travelled at least twice a year. I loved taking photos and videos of her against the lovely scenery. After the fall, she did not want to leave the house, worrying that she may not have enough strength to walk around. She just stayed home and passed time by playing games on her tablet PC. I hired a helper to watch over her, but I have to confess that my heart was not in my work.

I am constantly worried about her. But as her caregiver, I could not be impatient for her to recover. It had to be at her own pace, with some gentle encouragement from me, because any step towards normalcy is good for her.

One day, she cut out an advertisement for the SG50 Jubilee Big Walk. I was so thrilled she showed an interest in it. I quickly signed us up. We took three hours to complete the 5-km walk — it was such a milestone in her recovery that we made it!

I am glad that she has also taken walks to the market for a meal with me, and we sometimes have coffee with our neighbours — something we used to do nearly every day. In February 2016, we made a trip back to Kluang to visit my mother and siblings. It was a meaningful Lunar New Year gathering, considering how far my wife has come. We are indeed for whatever small progress she has made.

(Please turn over for the story on NNI's Inspirational Patient Support Group winner).

Strength in Unity



(From Left) Mr Samuel Seong Koon, with Dr Ang Kexin, Consultant, Department of Neurology, NNI, and members and staff of the NNI Motor Neuron Disease Support Group.

Inspirational Patient Support Group

The NNI Motor Neuron Disease (MND) Support Group is a tightly knit community of patients, caregivers, and healthcare staff, who are united by their common goal: To show how it is possible to live with the disease. As MND is not easily understood, and can strike in various forms and degrees of severity, patients and caregivers tend to feel lost as they try to grapple with the degenerative illness and find ways to adapt to its ever-changing demands.

The group's coordinator is Ms Jasmine Chan, a lawyer whose mother has MND and can communicate only through her eyes. Mr Samuel Seong Koon, a businessman who volunteers at the sessions with his soulful singing, shares how he can see the appreciation in her eyes during his performances. This is enough motivation for him to show up for every gathering with more jokes and music up his sleeve.

When Music Meets Charity

An extraordinary individual who shares his life story through his music, Samuel believes in living life to the fullest. He has walked down a journey of trials and challenges, having been diagnosed with Stage 4 colon cancer in 2013, and receiving multiple rounds of chemotherapy. Nevertheless, his aim to lift up the spirits of his patients with his inspiring songs never wavered. Outside of the group, he puts aside some time to teach English to foreign workers, give encouraging talks and drop friendly visits to patients at their home or the hospital. Although cancer-free for the last two years, Samuel had a relapse and was diagnosed with lung cancer in February this year. It has been most challenging to go through the

stringent treatments all over again, but he is strong enough to push on with his optimism and continue with his volunteer work.

The acclaimed composer-singer's dedication to the NNI MND Support Group led him to write his song, 'Yong Gan Xiang Qian', to encourage others who are facing challenges in their lives. This self-composed song will be available on iTunes in due course, and all proceeds from the song will go to the Support Group. This is a beginning step towards the hope that more will support this meaningful cause.

Finding a Common Bond

With a strong membership of 50 people, the group meets every quarter to offer answers and support to patients and their caregivers, so that no one will feel alone in their battle. New patients find it easy to assimilate into the group. Mr Lim Siak Teng, a patient from the group, says having a larger gathering of people means more tips and contacts can be exchanged, and the mood is lighter too.

Transport to the meetings is provided or reimbursed by the group to encourage participation. The group also manages a website to facilitate communication, and buys certain medical equipment in bulk, to pass savings on to its members. Dr Kexin Ang, Consultant, Department of Neurology, NNI, feels that so much more can be done if the group had more funding and volunteers. If their needs are provided for, the illness no longer manifests as a disability — and the group hopes to champion this mindset change in society.

To learn more about how you can help our patients and caregivers at NNI, please visit:

www.nni.com.sg/giving

Raising Awareness of Neurological Disorders

To raise awareness of neurological conditions, NNI has embarked on a new campaign this year, with support from Starbucks (Singapore) and local bakery franchise, Bengawan Solo. Our campaign posters, “Know NNI”, were displayed in selected outlets, with the aim of educating members of the public, especially young and middle-aged individuals with elderly family members. For starters, the campaign focused on stroke and dementia, which are the current prevalent conditions in Singapore.

According to the World Health Organisation (WHO), there are various types of neurological disorders that affect hundreds of millions of people around the world. More than 6 million people die because of stroke each year; over 80 per cent of these deaths take place in low and middle-income countries. More than 50 million people have epilepsy worldwide. It is estimated that there are globally 47.5 million people with dementia with 7.7 million new cases every year - Alzheimer’s disease is the most common cause of dementia and may contribute to 60–70 per cent of cases. As for migraines, the prevalence is more than 10 per cent worldwide.

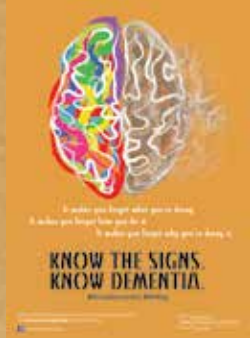
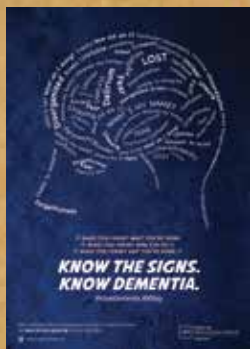
Neurological disorders result from damage to the brain, spinal cord or nerves throughout the body after illness or injury. Prevalent conditions such as ischaemic strokes and dementia are amongst the leading causes of disability and death in the world. They affect all ages and often disrupt daily functions and eventually, the overall lifestyle of those affected.

Save the Date!

From September 2-12 this year, NNI will be hosting its first-ever **“One Mind, One Heart” Neuro-Awareness Exhibition** at the Singapore Changi Airport.

This event will reach out to visitors with information on neurological and ageing conditions that affect our community, and engage their participation in various awareness activities.

So make your way to Terminal 3, Basement 2 (opposite Kopitiam) this September and come visit us!



The Excellent Educator

Recently conferred with the Outstanding Educator Award at this year's SingHealth GCEO Excellence Awards, Prof Kevin Tan is well known for his multiple contributions towards education and passion in advancing teaching through education research. Prof Tan tells us more about his experience in medical education, and his advice to future educators.



“Getting an award validates that I am on the right track, and is a stepping stone to do more good work in future. My definition of success is seeing the next generation of professionals becoming better than me through the training we give.”

- A/Prof Kevin Tan
Senior Consultant, Department of Neurology, NNI



In medicine, there is an unspoken duty for senior clinicians to teach their juniors and medical students. However, some develop a deeper interest in education, and continue to develop and take on greater roles as medical educators. After joining NNI as a Registrar in 2003, A/Prof Kevin Tan went on to specialise in Neuroimmunology and Neuro-infectious diseases, as well as becoming more involved in neurology education in 2006. This was a natural process as in NNI, many doctors balance the roles of being a clinician and an educator.

Says Prof Tan, “In juggling these roles, one should be a reasonably good clinician so that he can teach the right things to junior clinicians, be a good role model and leave an impact through your interactions. Furthermore, a good educator is willing to learn new skills, and be prepared to modify and adapt their teaching methods to the learners and situations.”

A Pro-teaching Culture

At NNI, the pro-teaching culture amongst dedicated clinicians allows the younger staff to grow in the ideal learning environment, and in turn develop into good educators in the future. Recollecting his time as a junior doctor at NNI, Prof Tan benefitted from the excellent teaching that he received from his senior doctors, which shaped his perspectives towards teaching and education.

Over time, Prof Tan learnt that there was more to education than just teaching, “I’ve discovered that a good educator should try to understand some of the scientific basis of teaching and learning, be an effective mentor, and be prepared to take on educational leadership and management responsibilities. An educator who can make decisions with an understanding of the science and art of education will be better able to effectively influence people.”

Delivering the Best Patient Care as a Team

Interprofessional education (IPE) is increasingly recognised as the better way for training different professionals to work effectively as

a team, so that they can deliver the best possible care for patients. Prof Tan’s vision for Neuroscience Education reflects this concept, “We want NNI to be viewed – from an education perspective – as a location to be trained in neuroscience for all healthcare professionals. We definitely want to develop this teaching culture among our clinicians, nurses and AHPs in order to strengthen our clinical care. When different healthcare professionals converge and train together rather than separately in their “professional silos”, they become better and more effective in delivering care as a team; this is what we know as team competence.”

Similarly, Prof Tan also believes that the growth and strength of training and education at NNI cannot happen without the support of the administrative staff members. In a sense, they are an important facet of our Education Team in NNI.

A Sense of Accomplishment

The most satisfaction that Prof Tan gets out of teaching are during the times when his juniors understand what he teaches, and can apply what they have learnt in their clinical work. This sums up the reasons why medical educators teach; so that their juniors can be nurtured into skilled healthcare professionals. Prof Tan says, “Getting an award validates that I am on the right track, and is a stepping stone to do more good work in future. My definition of success is seeing the next generation of professionals becoming better than me through the training we give.”

Prof Tan concludes his interview with a note of encouragement to future educators, “I strongly urge you to keep your curiosity alive – this applies to physicians, nurses, AHPs and scientists. To be an effective and excellent educator, you must have the willingness to learn new things and be challenged to go outside of your comfort zone instead of just sticking to your tried and tested methods.”

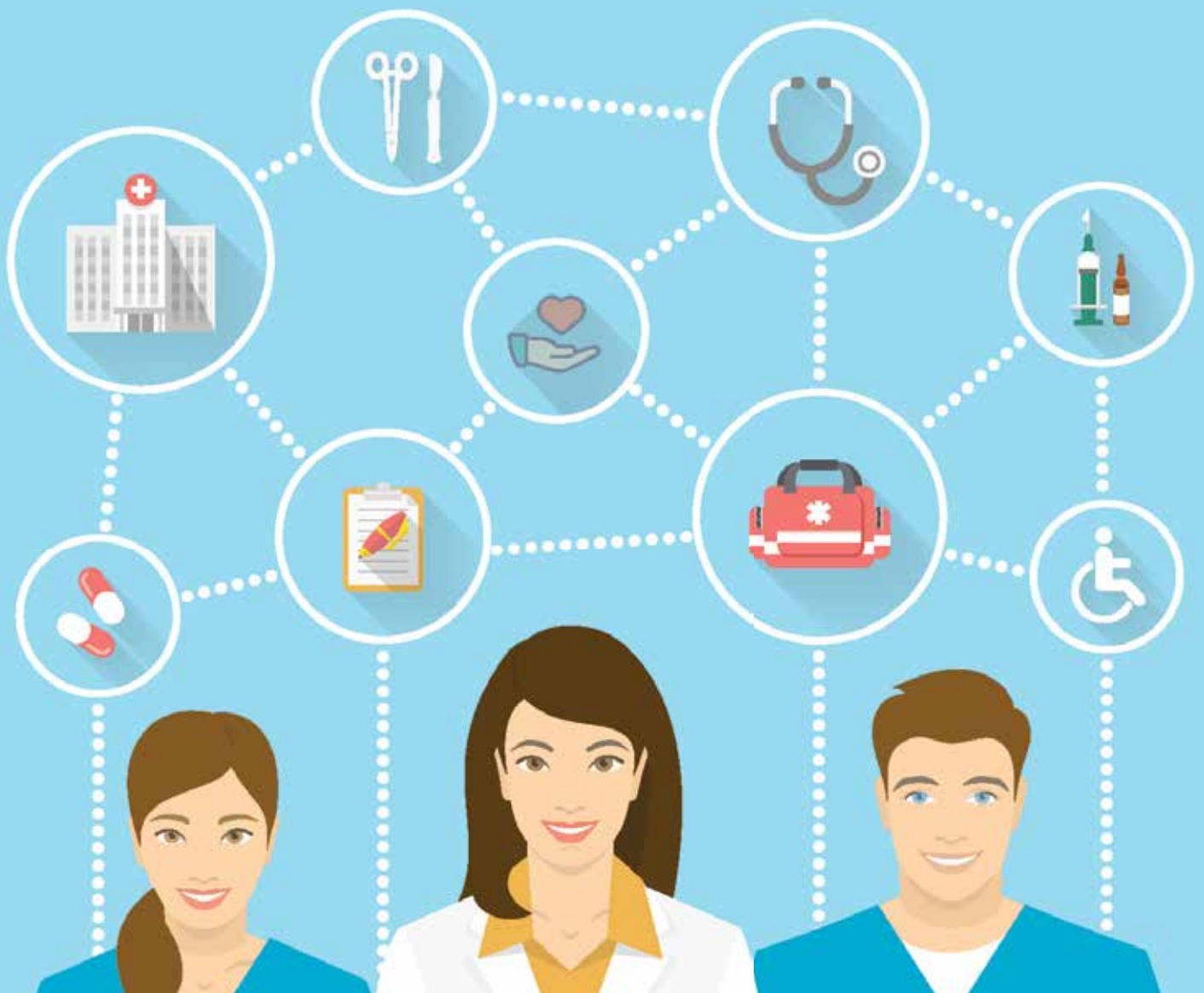


Delving into Education Research


From his teaching experience, Prof Tan developed an interest trying out new and creative teaching and assessment methods. Education Research was a natural progression as it allows him to test out these new methods in systematic ways to assess their effectiveness. Out of the various education projects, Prof Tan takes pride in those that explore Team-based Learning (TBL) and Script Concordance Test (SCT).

Through these studies, his team was able to collect local data on the use and efficacy of these teaching and assessment tools, and implement them in their education practice. Ongoing studies in the areas of clinical reasoning and assessment are currently being conducted to build on this knowledge and to share it with the global medical education community.

Grooming the Next Generation



In the new age of healthcare, young medical students are faced with a variety of specialisations (and sub-specialisations) to venture into, and educators see to it that they keep patient care as their priority while embracing soft skills and adapting to the ever changing standards of care delivery. Dr Sheila Srinivasan tells us more about her experience in training the future neurologists and her thoughts on neuroscience education.



“I joined **neurology because of my fascination in how intricate and yet tidy it was. The **ability to pass this knowledge on to my patients as well as students keeps me going.**”**

- Dr Sheila Srinivasan
Consultant, Department of Neurology, NNI



About Dr Sheila Srinivasan: Interests and Being an Educator.

I'm a consultant neurologist at NNI with an interest in epilepsy, general neurology and medical education. I am involved in teaching medical students, residents, nursing staff as well as each other at NNI. As for my journey with LKCmedicine, I began my teaching with its inaugural batch of students in 2013.

Training future doctors - how is the current scenario of neurology education, and is there anything that needs change? Does postgraduate medical education and training need improvement?

Right now, our senior residents are exposed to a large postgraduate curriculum for various neurology sub-specialities. There is a lot of structure and assessment to fall back on and many avenues to improve their educational skills. Of course, dedicated time for self-directed learning and development would be ideal.

In view of the rising population, is there a concern that there will not be sufficient doctors/neurologists?

Increasing physician numbers is only part of the solution. Other factors that will help are: Using technology to expedite workflows and optimise patient care, reducing complication rates and hospital length of stays, and improving primary healthcare and patient education.

As an educator, how has your experience with the medical school (teaching the students, inspiring them) influenced you?

I am continually learning with and from my students. They have an energy and idealism that is infectious, and it is always refreshing to spend time with them and view their perspectives on medicine.

How do you help students to incorporate Academic Medicine (three pillars - clinical service, research and teaching) into their learning, and help them to appreciate this concept as an important part of their neurology profession?

I get students to research on case-based topics using evidence-based medicine and present their findings to their groups. This is how clinical medicine works and it is a good practice for them.

Why is neuroscience something that aspiring doctors should look into? And as part of Neuroscience Education, how can NNI impact the future of young doctors?

If your calling is holistic medicine, neuroscience is ideal because of its scope of involvement from basic science, diagnostics, therapeutics, functionality of the patient and palliative care.

There is a big leap towards patient-centred care, for example, in areas such as our motor neuron disease multidisciplinary care, dementia clinics and stroke units. Also, the use of technology, in the case of the NNI Tele-stroke Service for thrombolysis brings efficiency and better outcomes for our patients. And as a result, the doctors become more empowered.

What keeps you motivated in spending a proportion of your time in education, and balancing your roles as a clinician and educator? Also, how would you nurture junior doctors who wish to develop a career in education alongside their clinical roles?

I joined neurology because of my fascination in how intricate and yet tidy it was. The ability to pass this knowledge on to my patients as well as students keeps me going.

To junior doctors who wish to teach, my advice is to plunge right into it. The more you teach, the more you will learn. And as an educator, being open minded and accessible to students will help to build their confidence.

Apart from Academic Medicine, how do you teach students about compassionate care?

It is good to show students that a smile or reassuring word is as important as a lengthy explanation when interacting with patients and caregivers. Having patience, the ability to listen and lots of empathy makes a good doctor a great one.



FACES

OF HEALTHCARE



Anecdotes from our Patient Care Advocates



My personal beliefs shape my teaching style, which strongly focuses on a clinical approach hinged on the basic understanding of neuroscience: constructive participation, self-learning and questioning form the core domains. I strongly advocate teaching as a means of engaging the next generation, ensuring continuity and fostering creativity.

*Prof Lo Yew Long
Head and Senior Consultant
Department of Neurology
(NNI-SGH Campus)*



I enjoy meeting patients from all walks of life and having conversations with them. Sometimes, they open up about their life experience, which always gives me something to ponder and reflect on. I hope more passionate, young medical technologists will join our big allied health family, and for advanced and more affordable healthcare services to be made available.

*Ms Michelle Li
Medical Technologist,
Neurodiagnostic Laboratory*



I think caring with a logical rationale should go beyond what is stated in the protocol. We should ask ourselves what the end point and overall goals are for our patients, even after we discharge them back to the community.

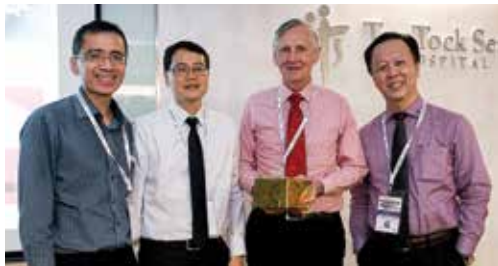
*Ms Emily Ang
Advanced Practice Nurse,
Department of Neurosurgery*



Recently, a young lady walked into the clinic and said 'Hello'. She used to be a patient of mine - she had a life-threatening coma with a haemorrhage and needed emergency surgery, followed by intensive care and rehabilitation. It was wonderful that the different NNI teams had contributed to giving her a second chance at life.

*Dr Nicole Keong
Consultant,
Department of Neurosurgery*

NEUROSCIENCE ACP RESEARCH DAY 2016



(From Left) From NNI, Prof Tan Eng King, Director of Research, A/Prof Ng Wai Hoe, Medical Director, with Guest-of-Honour, Prof James Donovan Best, and A/Prof Lim Kah Leong, Assistant Director of Research, NNI and Chairman of Neuroscience ACP Research Day 2016.

The Neuroscience ACP Research Day took place this year on March 4 at the TTSH Community Hall, with the aim of encouraging collaborations within the institution as well as with external educational and research faculties in order to generate patient care innovations. The event was graced by Prof James Donovan Best (above, second from right) Dean, Lee Kong Chian School of Medicine, Nanyang Technological University, who spoke about the fine line between matters of the mind and the brain. Also, Research Day recognised achievements across the clinical and basic science and translational research departments with the NNI Publish! Awards CY15 and Best Junior Research Awards.

NEURO-ONCOLOGY SYMPOSIUM 2016



The second Neuro-Oncology Symposium took place on March 11 this year at Academia. The event was graced by Guest-of-Honour, Prof Thomas Coffman (above), Dean of Duke-NUS Medical School. Attendees had the opportunity to learn from the discussions on the latest advancements in patient stratification and biological approaches, which lean towards targeted therapies, or precision medicine for brain tumours.

AWARDS AND ACHIEVEMENTS

Prof Tan Eng King (left), Director of Research, NNI, was recognised with the prestigious Yoshikuni Mizuno Award in March 2016 by the International Parkinson and Movement Disorder Society – Asian and Oceanian Section (MDS-AOS). Prof Tan received the lectureship award in recognition for his outstanding scholarship and as an inspiring neuroscientist from the Asian Oceanian region in the field of movement disorders.



Prof Tan Eng King

A/Prof Louis Tan

In May this year, Prof Tan also received a conferment along with A/Prof Louis Tan (right), Senior Consultant, Department of Neurology, NNI, as Distinguished Members of the Japanese Society of Neurology (JSN). This was for their significant contributions towards education and academia in Japan for the past decade.

Both doctors have contributed towards elevating the standing of Neurology, and their educational efforts in Japan have facilitated the standard of care of patients with neurological diseases. In addition, they have played a significant role in fostering and promoting Neuroscience and Neurology interactions between the two countries and in the region.

2ND PARKINSON'S DISEASE GENETICS FORUM 2016



Together with A*Star's Genome Institute of Singapore (GIS), NNI jointly organised the 2nd Parkinson's Disease Genetics Forum on June 9 this year. This meeting was chaired by Prof Tan Eng King, Director, Research, NNI, and Prof Ng Huck Hui (above), Executive Director, Genome Institute of Singapore.

The meeting was held to encourage international collaborations and discuss strategies for innovative research programmes for Parkinson's Disease (PD) and related movement disorders. It was also a platform to urge the sharing of significant findings that would help advance on-going research in PD.

BRINGING AN **EDGE** TO NEUROSCIENCE RESEARCH



Senior Advisor to the President of the National University of Singapore (NUS), Prof Barry Halliwell has recently joined NNI Research as a Distinguished Scientific Advisor.

As a world-leading expert on the role of antioxidants and free radicals in living organisms and their participation in human disease and nutrition, Prof Halliwell speaks to Neuslink about his expertise, providing guidance and joining NNI in a bid towards better treatment and prevention approaches for patients.

I understand that you have been involved in research that focuses on neurological diseases. Can you give us a comprehensive overview on what your research actually looks into?

My research, for more decades than I care to remember, has been focused on the role of free radicals and related “reactive species” in contributing to human diseases by causing oxidative damage to biomolecules, and the therapeutic potential of agents that can decrease such damage.

We are particularly interested in constituents of the diet that are protective against oxidative damage, and should therefore delay or prevent the onset of disease. We have studied atherosclerosis, cancer and iron overload diseases, but we have a special focus on neurodegenerative diseases. In fact, my group contributed significantly to the discovery that levels of oxidative damage are strikingly elevated in the affected brain regions in Parkinson’s Disease (PD) and Alzheimer’s disease, raising the possibility of novel therapeutic antioxidant agents, so long as they can cross the blood-brain barrier and reach the affected brain regions in these diseases.

How do you view NNI as a neuroscience research hub, and how can we work together to enhance its profile?

NNI has enormous clinical expertise, a large patient base, and some excellent researchers who are into mechanisms of stroke, glioma, neurodegeneration and other relevant areas. By combining these

with the much greater critical mass of neurobiology researchers at NUS, we can achieve synergies in understanding stroke, neurodegeneration and other conditions. These will hopefully translate into better treatment and prevention strategies for patients.

What are the areas of research you are keen to look at?

I am very keen to look at dementia, PD and stroke. However, oxidative damage contributes to most, if not all, diseases. So if we can make a contribution to understanding other diseases, we will certainly try to do so.

When it comes to scientific research, what are the challenges in understanding the factors that contribute to diseases, and how do you handle these challenges?

A major challenge is seeing what is going on in the human brain itself. For example, in early dementia, when does oxidative damage begin to increase? We can study post-mortem brain material and CSF samples, but it is hard to get a complete picture. Animal models have rarely been predictive of what happens in human neurodegenerative diseases, but there is hope that useful knowledge can be gained from iPSC and brain on a chip technologies, as well as from improved imaging methods.

Can you tell us about experience as a research trainer and mentor - what do you notice about the current generation of young researchers, and how do you

nurture and encourage them in going forward professionally?

Bright young PhD students, research assistants and post-docs bring a string of new ideas to the lab. My role is to guide them as to what might and might not work, how to approach a problem and what the data might mean. But never interfere with their testing out good new ideas. In the sort of open plan lab layout that I favour, they can learn more from each other than they can from me!

‘Multidisciplinary research collaborations’ is a term that is widely advocated in order for research to progress. Do you see researchers embracing this? What would you say to them on why they should view collaborations as an important catalyst for neuroscience research?

Research must be of high quality, whether it is disciplinary or multidisciplinary. When experts with a deep knowledge of one area learn to speak the language of others and work together to solve a problem, solutions to real-world problems can be achieved.

Can you share some advice for current researchers and those who wish to pursue a career in neuroscience research?

Understanding the brain, and using that understanding to enhance cognition, repair damaged nervous systems (e.g. after stroke or trauma), and halt or prevent neurodegeneration, are major global issues. This is one of the most exciting fields to be in at the moment.

“Barry has played a pivotal role in the NUS-NNI MOU and other initiatives to foster and facilitate closer ties between NUS and NNI. His experience and expertise will also help to improve NNI’s competitiveness and better position us in the world of academic neuroscience.”

- Prof Tan Eng King
Director, Research, NNI

“Besides being a senior leader in academic research, Barry is also a top-cited and internationally acclaimed scientist in the field of free radicals and antioxidants in human diseases, particularly neurological disorders. We are privileged to have him as our Distinguished Scientific Advisor. His expertise and wisdom will undoubtedly benefit our researchers towards achieving scientific excellence and the creation of new knowledge that enhances our understanding (and management) of brain diseases.”

- A/Prof Lim Kah Leong
Assistant Director, Research, NNI

Study Identifies Novel Mechanism that causes Abnormal Brain Development

Recognising a need to better understand the biology behind the symptoms of Autism Spectrum Disorders (ASDs), scientists at Duke-NUS Medical School (Duke-NUS) and NNI have identified a novel mechanism that potentially links abnormal brain development to the cause of ASDs. This new knowledge will help to improve the diagnosis and development of therapeutic interventions for ASDs. This study was published on February 17 this year in the *eLife* journal.

The Effect of Autism Society

ASDs are a group of highly inheritable behavioural disorders that pose major personal and public health concerns. Patients with ASDs have mild to severe communication difficulties, repetitive behaviour and social challenges. Such disorders significantly challenge an individual's ability to conduct daily activities and function normally in society. Currently, there are very few medication options that effectively treat ASDs.

What the Study Shows

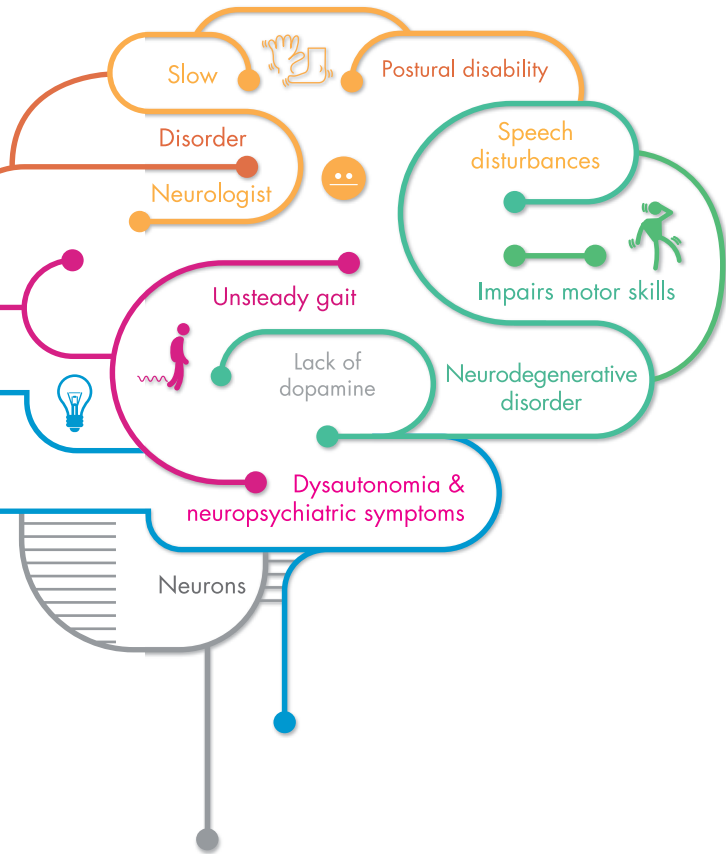
Co-senior authors Assistant Professor Shawn Je from Duke-NUS and Dr Zeng Li, Senior Research Scientist from the Neural Stem Cells Laboratory at NNI, demonstrated how one brain-specific microRNA (miR-128) plays a key role in causing abnormal brain development. MicroRNAs are small molecules that regulate gene expression in the human body to ensure proper cellular functions.

Although it was known that miR-128 is misregulated in some patients with autism, what that meant and how it functioned was not known.

The Duke-NUS and NNI team showed that miR-128 targets a protein called PCM1 that is critical to the cell division of neural precursor cells (NPCs). NPCs during early brain development have two fates - they either stay as NPCs and undergo self-renewal or become neurons through differentiation. The dysfunctional regulation of PCM1 by misregulated miR-128 impairs brain development, which may underlie brain size changes in people with ASDs.

“For the first time, we have managed to show that miR-128 is a mechanism that regulates early neuronal behaviour during brain development,” says Asst Prof Je, from the Neuroscience and Behavioural Disorders (NBD) Programme at Duke-NUS. “Targeting this mechanism may be the answer to diagnose and treat ASDs that are caused by abnormal brain development.”

Dr Li adds, “This important study suggests a link between a key neurological disease gene and regulation of microRNAs in the brain. However, we are just starting to understand how misregulated miR-128 expression can cause our brain activities to go wrong, and much more work needs to be done.”



7th

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- ↳ Asian Perspectives on Stroke
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- ↳ Interactive Q & A Session

Full programme, abstract submission and registration details will be announced soon.

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- ↳ Stroke Thrombolysis Simulation Workshop

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