

NEUS LINK

CENTRE FOR THE CARE OF THE BRAIN, SPINE, NERVE AND MUSCLE • ISSUE 1 • JANUARY - JUNE 2013

PATIENT CARE

RESEARCH

EDUCATION

MCI (P) 081/06/2013

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A Neu Look for Neuslink!

Neuslink has been published for over ten years, since NNI began its operations. Over the years, we have grown into a vibrant organisation, and developed sub-specialty services to improve our clinical delivery to patients. To reflect this change, we have done a revamp of the existing Neuslink, to reflect the work that NNI is involved in. With the rise of the Neuroscience Academic Clinical Program (ACP), our focus is now, more than ever, on our three pillars of patient care, education and research. As you browse through these pages, you will find the content more suited to the ACP, and focussed on our three pillars. Take a ride through the Neu Neuslink!



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The Launch of the Neuroscience Academic Clinical Program (ACP)

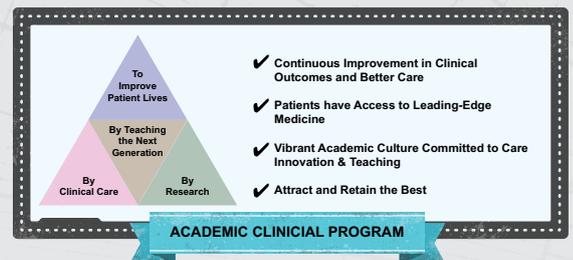
Improving Patient Care, Education and Research in Neuroscience

Since the beginning of National Neuroscience Institute (NNI), patients have been our priority. Our mission and goals have always been built on the three pillars of strength to improve the lives of our patients through Clinical Care, Education and Research. We have constantly been involved in academic activities and hold a high level of interest in research.

The Academic Clinical Program (ACP) is a cluster-wide framework for all clinical specialties to advance in Academic Medicine (AM) with resources and support from SingHealth and Duke-NUS Graduate Medical School. It is designed based on a clinical discipline and brings together all specialists in the discipline across various institutions for greater synergies in Clinical Care, Education and Research.

The Neuroscience ACP was successfully launched in April 2012. Key appointment holders include Professor Lee Wei Ling (Academic Chair), Associate Professors Au Wing Lok and Ng Wai Hoe (Academic Deputy Chairs), Professor Tan Eng King (Academic Vice-Chair, Research), Professor Lim Shih Hui, Associate Professor Nigel Tan (Academic Vice-Chairs, Education) and Associate Professor Francis Hui (Academic Vice-Chair, Clinical).

The introduction of the ACP is a major milestone in NNI's journey of improving patient care and outcomes. With the formation of the Neuroscience ACP, we are now given an opportunity to devote more resources to further achieve our mission of driving innovation in Care, Education and Research. The pursuit of our academic mission is primarily to improve patient care, and to transform the delivery of care not only in Singapore but in the region.



Looking Back: NNI's Academic Medicine Journey

Since April 2012, when the Academic Clinical Program was first introduced at NNI, we have been working towards and progressing with the model of Academic Medicine. Here are the highlights of our first year in Academic Medicine.

PATIENT CARE Telestroke Service

Using advanced technology and telemedicine, NNI partnered with Changi General Hospital and Khoo Teck Puat Hospital to provide patients with immediate 24/7 access to stroke care experts at NNI.

APN Clinic for PD

Establishment of the first Advanced Practice Nurse (APN) for Parkinson disease by the Movement Disorders team. This new service allows patients to be reviewed more comprehensively at each clinic session.

Integrated Community Care Programme (ICCP)

Introduction of the ICCP to help bring Parkinson care into the community so that patients and their families will be cared for in the community, rather than in nursing homes or other long-term care facilities.

Surgery for Pain Disorders

A surgical neuromodulation programme for patients who have exhausted all conventional methods of treatment for pain.

3D Software to Rehabilitate Stoke & Early Dementia Patients

The Dementia and Alzheimer's team, and IHIS developed a virtual reality simulation programme to better test and train the brain function of patients with early dementia and strokes. It is the first of its kind in the Asia Pacific region.

New Ultrasound Machine for Advanced Treatments

A new portable ultrasound machine at Neuroradiology department allows patients to have advanced treatments including thyroid scans at their bedside, which significantly reduces waiting time.

Improved and Age-Friendly Facilities

Facilities were improved to make it age-friendly for our patients, which included the relocation of Neurodiagnostic laboratory, expansion of Neuroscience clinic with more consultation rooms, an automated appointment system and an upgraded queue management system.

EDUCATION

Asia-Pacific Medical Education Conference (APMEC) 2012
 The ONE (Office of Neurological Education) group from Neurology Department received two education research awards in the Best Paper (Platform) category.

NNI Designated as a WFNS International Training Centre

With this designation by the World Federation of Neurosurgical Society, NNI joins the ranks as one of the recognised post graduate fellowship training centres in the world.

RESEARCH

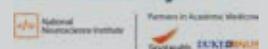
NNI & NUS researchers discover green tea helps in PD

NNI and NUS YLLSoM researchers have identified a component in green tea called EGCG that provides cellular protection against Parkinson disease. The discovery may lead to the potential invention of medication that can reverse the debilitating effects of PD.

Joint study by NNI, NUS & SICS discover role of new tumour suppressor

Researchers from NNI, NUS Yong Loo Lin School of Medicine (YLLSoM), and Singapore Institute for Clinical Sciences (SICS) at A*STAR, have discovered the role of a new tumour suppressor known as Parkin in brain cancer which could shed insights into why certain brain tumours are more aggressive than others.

NEUROSCIENCE
 Academic Clinical Program



Small Talk with the Drivers of Neuroscience ACP

Associate Professor Au Wing Lok

Deputy Chair, Neuroscience ACP

Head, Department of Neurology, NNI (Tan Tock Seng Hospital campus)

What do you hope for us, as we start to build our academic culture here at NNI?

I think the ACP is formalising what NNI has already been doing. The three main pillars of Clinical Care, Education and Research are already part of our academic culture and mission at NNI.

What we need to do now is re-organise ourselves, and help one another to focus on our strengths. Some of us will be good in clinical care; some are drivers in research, and some are experts in education. I see our role here as facilitators, to orchestrate this team to bring out the best in everyone. We also need to identify early potentials, and groom them. We will provide the infrastructure necessary for them to spear ahead in their individual fields, yet work together as a whole within the Neuroscience ACP framework.

Are there any particular values that you think we should further improve and develop?

We have leveraged a lot on education, and that is something that we should continue to move ahead in. We should continue with our faculty training, for the whole of NNI. At the same time, the research culture is something that we can build on. I do not only mean basic science research, but also education research, translational clinical research, and quality healthcare research. I see these fields as something that we should further improve and develop towards academic excellence.

Some plans that you have in the pipeline?

We are looking at faculty development, and to also groom future talents in medical education and research. Working together as one NNI is of utmost importance, in order to make this Neuroscience ACP journey a smooth sailing one for all.

Associate Professor Ng Wai Hoe

Deputy Chair, Neuroscience ACP

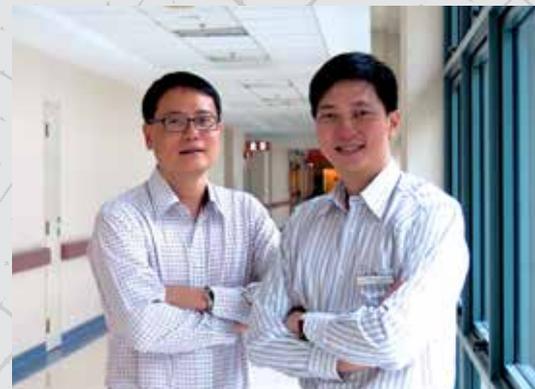
Deputy Director, NNI, and Head, Department of Neurosurgery

How has the reception of the newly established Neuroscience ACP been?

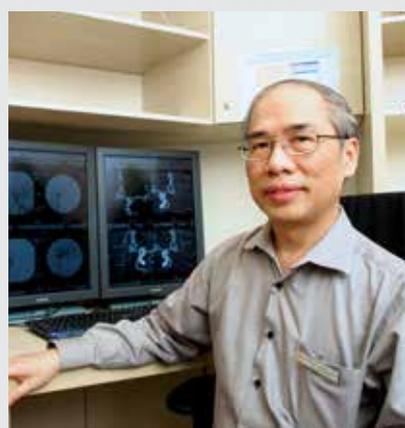
At NNI, we have always been involved in academic activities and have a high level of interest in research. We see the formation of the ACP as an opportunity to have more resources to achieve our academic mission of driving innovation in care and research.

What are your plans for the Neuroscience ACP three years down the road?

The research strategy is to develop three to four concentrated world-class research programmes covering areas such as movement disorders, stroke, neurodegenerative diseases and neurotrauma in various stages of development by that time. In terms of education, we stay ahead of the curve by developing major capabilities in research education across the campuses while maintaining our subspecialty focus. But we have to stay focused on our core mission and our research should ultimately concentrate on clinically relevant diseases that make an impact on patient care. *Extracted from "Tomorrow's Medicine, Issue 03/2012"*



Assoc Prof Ng Wai Hoe (left) and Assoc Prof Au Wing Lok (right)



Assoc Prof Francis Hui

Associate Professor Francis Hui

Vice Chair, Clinical, Neuroscience ACP

Chairman, Medical Board, NNI, and Head, Department of Neuroradiology

What are your views on the academic culture that NNI is moving ahead with?

The foundation of the academic structure in NNI is very strong. We have outstanding researchers and clinicians working closely towards improving our understanding and management of neurological conditions. In addition, our dedicated educators are excellent in imparting medical skills and knowledge to medical students and junior doctors.

It is crucial that neuroscience research or teaching be driven primarily by clinical needs. As our population ages, the resulting paradigm shift requires NNI to provide leadership in spearheading advances into fields of neurosciences closely related to the ageing process.

Moreover, our manpower resources need to be strengthened to allow adequate provision of the academic and clinical needs of the service. Considering that many NNI doctors are also heavily involved in direct patient care, there is a need to attract new staff on board to face the new challenges ahead of us.

Are there particular values that you think we should further improve and develop?

There are three values that I would like to highlight, with the first being teamwork. The burden of academic responsibilities means that we need to make full use of our limited resources. Only when we can work well as a team can we amplify our strength in facing the myriad challenges present in academic medicine.

The second value is teaching by example. Our medical students and junior doctors are inspired by seniors they consider their role models. As senior doctors, it is imperative that we inculcate the correct values in them early on, and one of the best ways to do that is to teach and lead by example, or 'walk the talk', as they say.

The third value, the pursuit of excellence, must be an on-going effort that all of NNI strives to achieve. The moment that we think we need no longer improve, is the moment we start our decline. As a national centre, we hold the responsibility of taking the lead in advancing patient care in our speciality. Embracing a culture of constant self-improvement is the way to always ensure that we move forward.

Our Service Stars /

Singapore Health Quality Service Award Winners

The Singapore Health Quality Service Award (SHQSA) is Singapore's first dedicated nationwide platform to honour healthcare professionals who have demonstrated commitment to delivering quality care and excellent service.

NNI is proud of our winners: One Gold Award recipient and 11 Silver Award recipients. We spoke to some of the winners to find out just what motivates them to go the extra mile to make a difference to their patients.

Rose Sharon



Tay Lian Bee (left) and Chang Chao Li (right)

Tay Lian Bee, Gold Award recipient

Senior Medical Technologist
Neurodiagnostic Laboratory

Congratulations on winning the award! How do you feel?

I definitely feel happy about it! I am grateful to NDL's Assistant Manager, Teo Boon Choon, for nominating me, as well as to my patients. Without them, there would not even be an award for me to receive.

How do you define good service?

It is about being consistent in your good service. It's the little things that patients appreciate and I always try to accommodate to their needs, be it changing an appointment date or shortening a long waiting period.

How do you go the extra mile for patients?

The nerve conduction test cause some discomfort to patients so I try my best to explain the procedures in detail for them. I make an effort to keep them warm and allay any fears or worries that they might have about taking the test.

How do you ensure high service standards at work?

A large part of the patients' experience includes the atmosphere that they tap on to when they enter the lab. They feel better when they sense good vibes coming from the staff. That is why my colleagues and I always ensure that our working environment is friendly and cheerful.

Rose Sharon, Silver Award recipient

Senior Patient Services Assistant
Neuroscience Clinics

Congratulations on winning the award! How do you feel?

I didn't expect to win and feel very happy. This achievement has given me something to reflect on, and it spurs me on to give more to my patients and colleagues.

What is your service philosophy?

Nobody likes being at the hospital, seeing a doctor and taking tests. So I always put myself in my patients' shoes and try to make their visit as comfortable as possible.

Can you recall an example of good service?

There is a female patient in her late 40s who insists on looking for me for all her appointments. She confides in me and gradually, we have become friends.

What are the best parts of your job?

The work environment is most important and I enjoy having good colleagues. The interaction with my patients and being able to serve them well makes me glad to be able to do what I do.

Chang Chao Li, Silver Award recipient

Senior Medical Technologist
Neurodiagnostic Laboratory

Congratulations on winning the award! How do you feel?

A bit surprised! All of us have been doing a good job and I feel lucky to be one of the recipients.

How long have you been in this profession?

I started out in the pharmaceutical factories and came into this line by chance. It has been 22 years since!

How do you define good service?

It's about putting yourself in your patients' shoes; showing respect and making them feel comfortable. Once I know a patient's dislikes, I work towards not doing those things.

What are the best parts of your job?

Working with my colleagues, helping patients to receive appropriate treatment and watching them recover are the best parts of my job.

Jestase Posman, Silver Award recipient

Senior Patient Services Assistant
Neuroradiology Department

Congratulations on winning the award! How do you feel?

I feel that I was just doing my job, so I never expected to win any award, and am very surprised.

How long have you been in this profession?

It's been 18 years, since 1995.

What is your definition of good service?

I treat my patients as people who are just like myself, and how I would like to be treated. I try my best to explain the procedures to them, to lessen their fear. It is important to be kind to patients.

How do you tackle a difficult situation with a patient?

I try to calm them down by showing that I care about their situation and am trying my best to look into it.

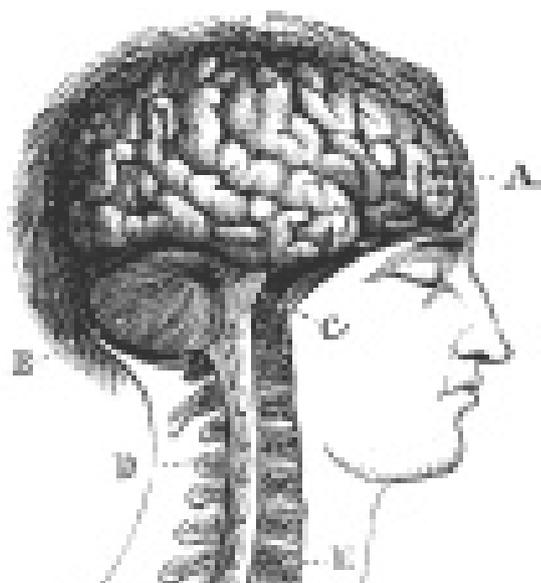
How has your supervisor motivated you to go the extra mile?

Tan Jau Tsair, my Manager, always ensures that problems with patients are solved, no matter what it takes. Once, he was able to diffuse a difficult financial issue with a patient. The patient, who had been quite angry at the time, eventually shook hands with Jau Tsair before he left. Jau Tsair has definitely been an example for me to follow.

The Fight To Control Pain

Patient's Story

NNI's Surgical Neuromodulation Pain Programme offers a light to chronic pain patient Jeslyn Tang.



Six surgeries, 11 injections and countless treatments later, chronic pain sufferer Jeslyn Tang finally found a light at the end of her tunnel with the National Neuroscience Institute's (NNI) Surgical Neuromodulation Pain Programme.

Today, while Jeslyn has not been entirely relieved of her pain, she has found hope in being able to manage and control her pain for the first time.

She shared, "It used to be that the pain was controlling me. Now, I am able to control the pain. It makes a huge difference to my quality of life."

Suffering from neuropathic pain after a failed spine surgery, Jeslyn – now aged 41 – has been enduring various degrees of pain every waking hour for the past ten years. She would experience painful and tingling sensations from her fingers all the way to her arms and upper shoulders. Her forays into acupuncture, massage therapies and other physiotherapies proved unsuccessful. Her pain was not only severely affecting her sleep but her work as well as her social life. Some days, she could barely sit straight and even began to develop a bad habit of chewing her fingernails, just to be able to distract herself from the pain.

Chronic pain like Jeslyn's can range from mild to severe, episodic or constant, merely inconvenient or completely incapacitating. Although the cause is not completely understood, in chronic pain, signals of pain remain active in the nervous system for weeks, months, or even years. This can result in physical and emotional stress on a person.

Remarked Jeslyn: "I have forgotten what it feels like to be without pain."

Jeslyn's debilitating pain led her to seek a myriad of surgical options, each one never quite absolving her of her problem. Over the course of five years and after various surgeries and injections, her search led her to the Singapore General Hospital's Pain Management Centre, where she went through a successful trial of surgical neuromodulation called the Spinal Cord Stimulator with Associate Professor Ng Wai Hoe, Head and Senior Consultant at the Department of Neurosurgery of NNI there.

Armed with a positive attitude and nothing to lose, Jeslyn underwent the operation in late 2011. Among other options such as Deep Brain Stimulation (DBS) and Motor Cortex Stimulation (MCS), the Spinal Cord Stimulator was deemed most suitable for Jeslyn's profile. The Spinal Cord Stimulator procedure involves the placement of a stimulating electrode either percutaneously or via a small opening in the lamina of the spine (laminotomy) in the epidural space of the spinal canal. The electrode is connected to an electrical pulse generator which is implanted in the lower abdominal or gluteal region. Generating a small amount of current, this pacemaker stimulates the spinal cord or brain to alleviate the experience of chronic pain.

Post-operation, Jeslyn has regained some parts of her former life and has the surgery to thank for it. She stated, "The pain does not completely go away. It will never completely go away. But I recommend this treatment all the same as it has allowed me to control whatever pain I have."

"Life is pretty much back to normal," she added, "I can go to the movies and can even turn my neck. It has increased my mobility and also my general happiness. Even if the pain score drops by one point it is of a huge relief to me."

While she has to endure minor setbacks such as setting off detectors at airport customs, none of it compares to the crippling and unmanageable pain that she used to suffer from.

She joked with a bright laugh, "The best way to deal with a situation like mine is to make fun of yourself. I happily refer to myself as bionic woman. And with all the steel parts in my body, killing me is definitely not going to be easy!"

**FUNCTIONAL
NEUROSURGERY**
Restore • Relieve • Regenerate

The National Neuroscience Institute (NNI) has introduced a surgical neuromodulation programme for chronic pain patients who have tried all conventional approaches of treatment such as medication and nerve block injections.

**FUNCTIONAL
NEUROSURGERY**

The Surgical Neuromodulation Pain Programme at NNI is an extension of the interdisciplinary pain service at the Singapore General Hospital (SGH) and Tan Tock Seng Hospital (TTSH).

To find out more about this programme, visit www.nni.com.sg

The Young Onset Cognitive Impairment (YOCI) Programme

Dementia patients below the age of 65 have different support needs compared to those in the elderly group – an issue in focus and now addressed by NNI's latest efforts.



Mr William Lim, second from left, and his wife, Mdm Ng Mui Chuan, fourth from left, at an outing with NNI staff.

Contrary to common belief, dementia is not an inevitable part of ageing. Although the elderly are more susceptible to becoming demented, a proportion of patients within the age group of 50 – 60 years do develop dementia. Dementia occurs because there is a degeneration of the brain's functions, which eventually affects social or occupational activities. The main causes of dementia include Alzheimer's disease and vascular dementia, and the risk factors for both include strokes and other vascular risk factors. Over the last three years from 2010 to 2012, the National Neuroscience Institute (NNI) Dementia Clinic has seen over 1,500 new dementia patients with 39% of new cases less than 65 years of age.

NNI has set up the Young Onset Cognitive Impairment (YOCI) programme for this group of younger patients affected by Alzheimer's and dementia-related conditions.

This focus is necessary because the causes of dementia among patients in this age group are different from those in the elderly. A higher proportion of the younger age group have reversible causes of dementia and also tend to have a greater social and economic burden as they may still be in employment, and have younger families to support. For these patients, there will inevitably be a greater need for education, counselling and social support services. The NNI YOCI programme provides a structured and holistic framework that

aims to improve the quality of life of such patients. The programme includes an initial assessment, diagnostic review visits and a support group of monthly meetings to address specific concerns related to YOCI. Caregivers will also receive counselling and be equipped with the skills to manage the behavioural changes of patients with YOCI.

Elderly caregivers at risk

Mdm Ng Mui Chuan, 61, is a patient with young onset dementia. Her husband and sole caregiver is Mr William Lim, who has been caring for her since she was diagnosed three years ago.

A former customer service officer at the post office, Mdm Ng came to the clinic when her family noticed some changes in her behaviour. Mdm Ng was getting extremely forgetful and had difficulty reading and understanding the newspaper. Now undergoing treatment and counselling, Mdm Ng and her husband also attend the Young Onset Dementia (YOD) Support Group meetings, to meet and bond with others who are in the same situation.

During the interview, Mr Lim shared the struggles that an elderly and lone caregiver such as himself has to go through. Mdm Ng is diagnosed with Fronto-temporal Dementia and with a past medical history of obsessive-compulsive behaviour and depression, is prone to crying at midnight. This is coupled with episodes of hallucinations. She is unable to perform

activities of daily living such as bathing, eating or going to the bathroom. Unable to leave her alone, Mr Lim cannot leave the house to buy groceries, or even to get a meal. He has to have their meals delivered to their home and has recently hired a part-time home caregiver to help take care of Mdm Ng two or three times a week, for three hours at a time.

A conscientious member of the community, Mr Lim has written a few letters to The Straits Times Forum suggesting that more support be provisioned to caregivers as well. Before Mdm Ng fell ill, Mr Lim was an active volunteer at his Community Centre, and has received several commendations for his contributions. Now, he spends his days indoors at home looking out for the needs of Mdm Ng.

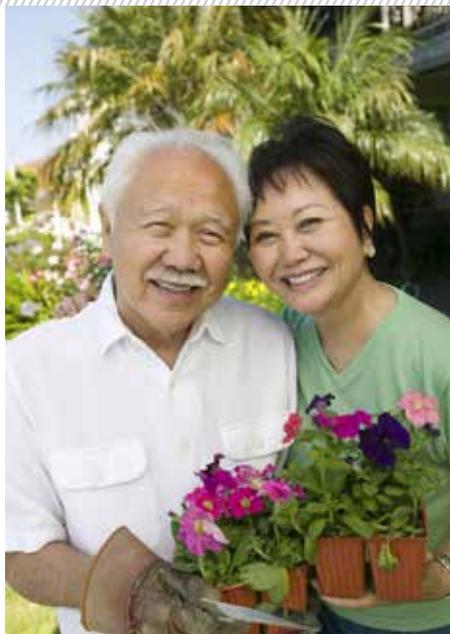
He says with a sigh, "As an ageing caregiver, I need a break too. I was planning for a happy retirement. Now I spend my retirement taking care of my wife. I would find it difficult to leave her anywhere else, though."

“

From 2010 to 2012

1,500 
new dementia patients with
39% 
of new cases less than **65** years of age.

NNI-SHP CARE (Cognitive Assessment and Rehabilitation) Programme Launched



Through greater integration and communication tools, this Ministry of Health-funded programme initiated by the National Neuroscience Institute (NNI) and SingHealth Polyclinics (SHP), aims to provide patients who show signs and symptoms of dementia, with the fastest possible access to specialist care.

5th April 2013 saw the official launch of a new collaborative effort called the NNI-SHP CARE Programme. Leveraging technology such as the telehealth service for enhanced cross communication between institutions and primary care doctors, the programme is in place to ensure that patients will receive early and rapid access to specialist care. The programme also has a special emphasis on Young Onset Dementia, catering to the group of patients below the age of 65, whom currently make up some 40% of dementia patients.

Dr Gilbert Tan, Director, SHP – Geylang stated, “The burden of dementia becomes increasingly felt as our society grows older and people live longer. Our collaboration with NNI is one positive step towards strengthening the integration between primary care and hospital care of patients with chronic debilitating conditions such as dementia.”

Dr Nagaendran Kandiah, Consultant, Department of Neurology, NNI, added that as a higher proportion of this group of patients have reversible causes of dementia, this programme can have a positive impact by providing early diagnosis and intervention.

Recognising the early warning signs of dementia and knowing the preventive and protective factors can help reduce the risk or delay the onset of dementia.

With this in mind, the primary goals of the NNI-SHP CARE programme are as follows:

- Provide an early diagnosis of dementia
- Administer early intervention with appropriate pharmacological and non-pharmacological means
- Support patients with appropriate education and counselling
- Reduce the level of caregiver stress with counselling and support programmes

Communication across the community

NNI-SHP CARE's three components: NNI-Tan Tock Seng Hospital (TTSH) Dementia Clinic, NNI-Singapore General Hospital (SGH) Dementia Clinic and other selected SingHealth Polyclinics will be linked through telehealth services to increase cross communication between dementia specialists and primary care doctors in the community. Tighter collaboration and communication among the different components is expected to bring about more integrated, quality care to patients. In addition, this would be done in a timelier manner.

Closer collaboration and follow through

Within this programme, neurologists from NNI will also visit SingHealth Polyclinics regularly and work closely with physicians in the polyclinics.

Further specialist assessment and other appropriate investigations for the early diagnosis of dementia will take place at NNI.

Patients can also then continue with their routine follow-up with primary care doctors and support from the specialists in tertiary hospitals.

Education and training

In addition to rapid access to specialists, this programme will also include dementia education by dementia trained nurses. Psychologists will provide cognitive evaluation and counselling for patients and caregivers. Allied health professionals such as occupational therapists and speech therapists will also step in to lend their expertise.

Through this multi-pronged, multi-institutional approach, the new NNI-SHP CARE programme hopes to tackle the challenges of early detection and intervention, and ultimately improve the quality of life of patients with dementia.

“

“Our collaboration... is one positive step towards strengthening the integration between primary care and hospital care of patients with chronic debilitating conditions such as dementia.”

Dr Gilbert Tan
Director, SHP-Geylang

Spotlight on Parkinson

Caring for our Parkinson patients



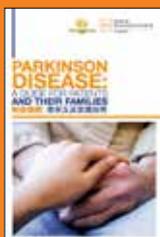
Participants warming-up before the start of the Public Forum on Parkinson Disease.

To promote the importance of staying active for patients with Parkinson Disease, the National Neuroscience Institute (NNI) collaborated with Tan Tock Seng Hospital (TTSH) and the Parkinson's Disease Society (Singapore) (PDSS) to organise a Public Forum entitled 'Movement Matters'. Conducted in both English and Mandarin, the forum was held at the NNI Exhibition Hall on 16 March 2013, and drew over 250 participants.

"It was a wonderful atmosphere with everyone seeming to know each other. There is certainly a rapport being built between the patients, caregivers, nurses, therapists as well as the staff of NNI and PDSS", remarked Associate Professor Louis Tan, Senior Consultant, Department of Neurology.

Topics of the day focused on movement and mobility, discussing features of the disease such as tremors, rigidity, poor balance and akinesia. The lively forum even had participants engaged in simple exercises and activities that could enhance mobility for patients.

The event also commemorated the launch of an education booklet written and compiled by multidisciplinary teams from NNI, Singapore General Hospital (SGH), TTSH and PDSS. The book, titled 'Parkinson Disease: A Guide for Patients and Their Families', aims to be a compact and informative handbook to help Parkinson's patients and their caregivers manage and support the condition.



Patient's Profile

Parkinson patient Mr Oh Keng Seng together with his elder sister and caregiver, Mdm Oh Bee Low.

An ex-delivery man with a teenage son, Mr Oh Keng Seng, 57, was diagnosed with Parkinson Disease (PD) 12 years ago. With the advancement of his disease, he underwent Deep Brain Stimulation (DBS) surgery in 2008 for PD symptom control, which helped to improve his quality of life. Due to his deteriorated swallowing function, he also had a percutaneous endoscopic gastrostomy (PEG) tube inserted in 2012 to optimise his nutritional status.

Mr Oh is cared for by Associate Professor Louis Tan and supported by a multidisciplinary team from the National Neuroscience Institute (NNI) and other institutes, consisting of Parkinson trained nurses, physiotherapists, occupational therapists, speech therapists, medical social workers as well as dieticians. He is now attending a physiotherapy programme organised by the Parkinson's Disease Society (Singapore) (PDSS) at Bishan Centre – an outreach programme from NNI – once every two weeks.

Coming from a family of ten, Mr Oh also found immediate familial support around him, including from his devoted eldest sister Bee Low, who is also now his full-time caregiver.

"I truly cannot ask for more help regarding my brother. Everyone from the frontline to backend has done such a great job. The support has been 100% from the team. With this disease, one must learn to accept it and be contented, and we are sincerely grateful for the help that has been rendered to us," shared Bee Low.

To support his medical management, Mr Oh has also received financial assistance for his expenses from Medifund, NNI endowment fund, and the PDSS welfare fund.

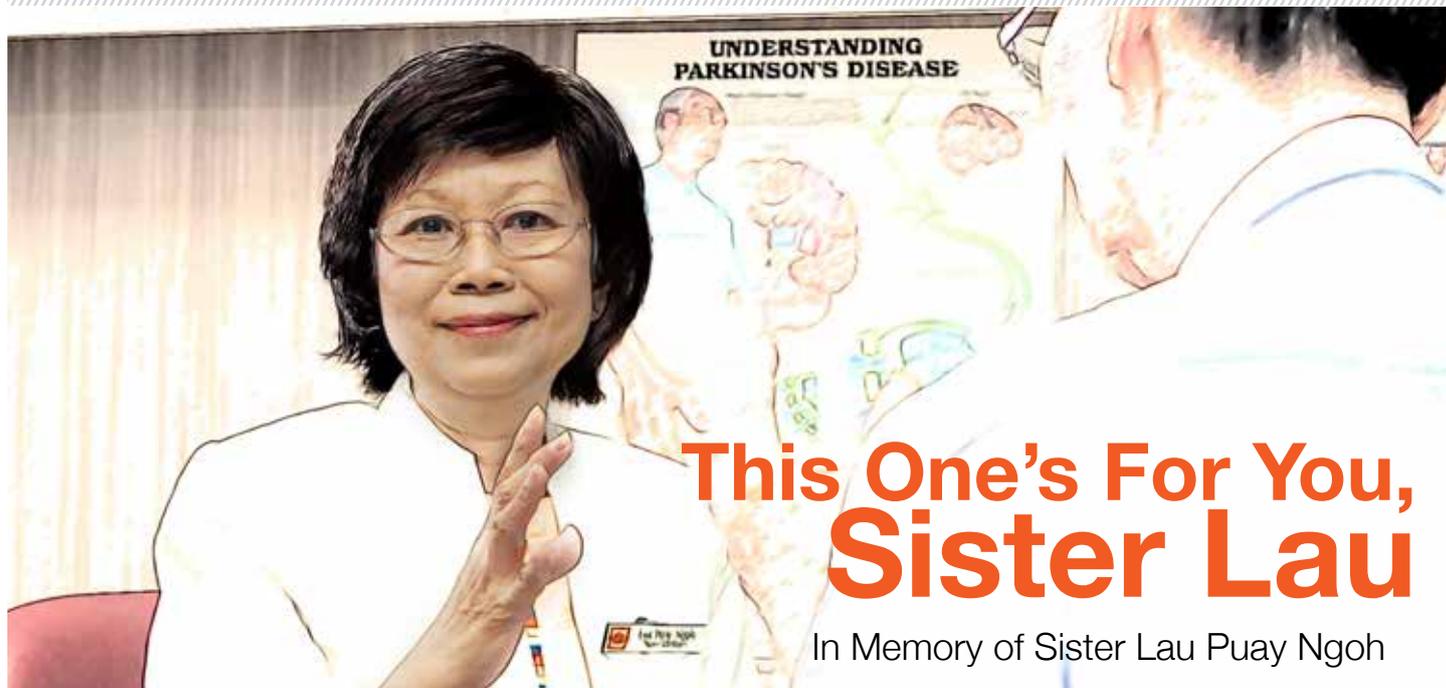
"There are times when you feel restricted and without freedom as a caregiver, but with some scheduling I am able to have at least two to three hours a week on my own. Even then, I don't feel too comfortable leaving him alone," Bee Low added with a chuckle.

Now actively engaged, Mr Oh is learning calligraphy as well as *tai chi* and looks forward to more activities where he and his caregiver can socialise and mingle with others. His bi-weekly physiotherapy sessions have been so beneficial that Bee Low wishes that the frequency of the sessions could be increased.

She said, "Physiotherapy has been an important activity for my brother, I hope to be able to take him there at least once a week, instead of once every two weeks."

Of the support received, Bee Low is particularly grateful to Sister Lau Puay Ngoh, who unfortunately recently passed on. Caring for Mr Oh for over 11 years, Sister Lau's efforts remain deeply ingrained in the patient and his caregiver.

"She was someone who has made a lot of sacrifices for her patients. We hope she is resting in peace and we keep her in our memory," Bee Low shared.



This One's For You, Sister Lau

In Memory of Sister Lau Puay Ngoh

Sister Lau Puay Ngoh, Nurse Clinician with the Neurology Department, was a well valued member of the National Neuroscience Institute (NNI). She was a pioneer in Parkinson Disease (PD), becoming the first dedicated PD nurse in NNI and in Singapore. She was instrumental in organising the PD support group in NNI at TTSH. This has gone on to benefit countless patients who have been touched by her care and kindness. On top of that, she tirelessly provided nursing and patient education as well.

Apart from supporting the Parkinson's Disease Society (Singapore) in its events and outings, she spent her time being active in research. She established the benchmark of PD care, and her legacy has paved the way, laying the foundation for many other nurses specialising in PD.

In 2012, Sister Lau was honoured for her work with the Efficiency Medal; part of the National Day Awards. The Medal is awarded to people who display exceptional efficiency or devotion to their duty, or for work of special significance. Sister Lau was indeed exemplary to us all, in terms of her hard work and perseverance.

Mdm Oh Bee Low, 65, caregiver and sister of Mr Oh Keng Seng, 57, a patient with Parkinson, recalls Sister Lau fondly. "Sister Lau took care of my brother for eleven years. She was someone who has made a lot of sacrifices for her patients. Before we could return the favour, she has left us, and we don't have a chance to thank her for all her good work," said Bee Low with a sad smile.

Professor Tan Eng King, Senior Consultant with the Department of Neurology and Director of Research at NNI, remembers Sister Lau as a person who made significant contributions to the welfare of patients and their caregivers, by devoting her time to many of the organised social and educational activities, such as Patient Support Group meetings, and Christmas and New Year parties. "She was also the only person I know who took her poster presentations at conferences so seriously that she would stand by her poster for the exact hour," reminisces Prof Tan.

"We will remember her dedication, resourcefulness, efficiency, and zest for life. We are grateful for her contributions to NNI, the Department of Neurology and the PD programme," wrote Associate Professor Louis Tan in an email, upon learning of Sister Lau's passing.

Associate Professor Au Wing Lok, Senior Consultant and Head of the Department of Neurology, describes Sister Lau as appearing 'loud-speaking' to some, but iterated that she was never pretentious. "Her patients liked her very much, for she cared and looked after them like her own relatives. She would never fail to return telephone calls to her patients to lend her listening ear, to counsel and to nag them to take their medications."

Her knowledge of PD and its many facets was second almost to none, but she continued attending international meetings to keep herself up to date in patient care and management. She participated actively in research, and was also an invited speaker

at numerous local and regional medical symposiums.

Sister Lau has recently passed on, but there are still many who have been impacted by her work, and would like to thank her. Sister Lau, you have done us proud with your selfless work for your patients and colleagues. We are grateful for your contributions, and you will hold a special place of remembrance in all the hearts that you have touched.

Inspirational
Patient and
Caregiver
Awards 2013

Congratulations!

The Singapore Health Inspirational Patient and Caregiver Awards 2013 honoured 43 inspiring patients and caregivers for their outstanding commitment and tenacity in the face of adversity.

We are happy to share this joy with our patients: Ms Bridget Ang, Mdm Sumathi and caregivers: Ms Angelia Choo and Mdm Mislina Kasman. Their stories displaying courage, strength and resilience despite difficult health challenges are an inspiration to us all. In commemoration, a book has been published featuring the amazing and heartfelt stories of these extraordinary people.

14th Singapore Stroke Conference

The 14th Singapore Stroke Conference was held at the Health Promotion Board Auditorium over one and a half days from 9 – 10 November 2012. Chaired by Associate Professor Chang Hui Meng, Senior Consultant, Department of Neurology, NNI, Singapore General Hospital (SGH) campus, the theme was 'A Multidisciplinary Approach to Stroke'.

Plenary sessions included topics on traditional risk factors, uncommon causes of stroke, stroke rehabilitation, and an interactive session on advances in acute revascularisation and managing intracranial stenosis.

Invited speaker at this year's Conference, Dr Jordi Blasco, an interventional neuroradiologist since 1999, from the Hospital Clinic of Barcelona came to share his expertise on revascularisation options in ischemic stroke. The Cerebrovascular Pathology Unit in the hospital was set up



Assoc Prof Chang Hui Meng, opening the 14th Singapore Stroke Conference.

in 2008 focusing on the interdisciplinary approach of acute ischemic stroke patients. Since then they have been using thrombectomy devices on a daily basis achieving an extensive expertise on the use of such devices. The local faculty consisted of experts from NNI, SGH, Tan Tock Seng Hospital, Raffles Hospital and Mount Elizabeth. They shared with the participants the latest developments in line with the theme, which received encouraging feedback from the participants that the topics were up-to-date, engaging, and relevant, each to their own respective disciplines.

The Conference was well attended with more than 200 participants, a majority of whom were nurses, followed by doctors, allied health professionals and even healthcare administrators who were keen on gaining more insight and understanding to the management, prevention and treatment of stroke.

12th Advanced Neuroradiology Course

Every year, the National Neuroscience Institute (NNI) Advanced Neuroradiology Course is held at the Tan Tock Seng Hospital (TTSH) Theatre, and this year was no different. Held over a course of two days from 18 – 19 October 2012, more than 200 participants, locally and from the region attended the Course.

The Course has certainly grown in scope and relevance to the clinical, scientific and academic community, in terms of innovation to the clinical realm and advances in the practice of neuroradiology.

The Course comprised lectures and discussions on diagnostic and interventional

procedures in neuroradiology, head and neck radiology and surgery, oncology, and other neuroscience disciplines.

Specially invited international faculty included Dr Blaise Baxter from the USA, Associate Professor Elysa Widjaja from Canada, and Professor Srinivasan Mukundan from the USA.

This year, the inaugural pre-course Resident Review Course was introduced. Organised for trainees, the review course was conducted at the TTSH e-learning laboratory the day before the Course commenced. Held over two hours, the course was attended by more than 20 residents who received the opportunity to review several patient cases.

Interactive discussion with speakers of a plenary session.



Lecture in progress.

4th EMG-EEG Autonomic Workshop

Experts from the Medical University of Vienna and Natus Biomedical share their expertise.

Now in its fourth year and still going strong, the biannual EMG-EEG Autonomic Workshop was held at the Tan Tock Seng Hospital Theatre over a course of three days from 1 – 3 March 2013.

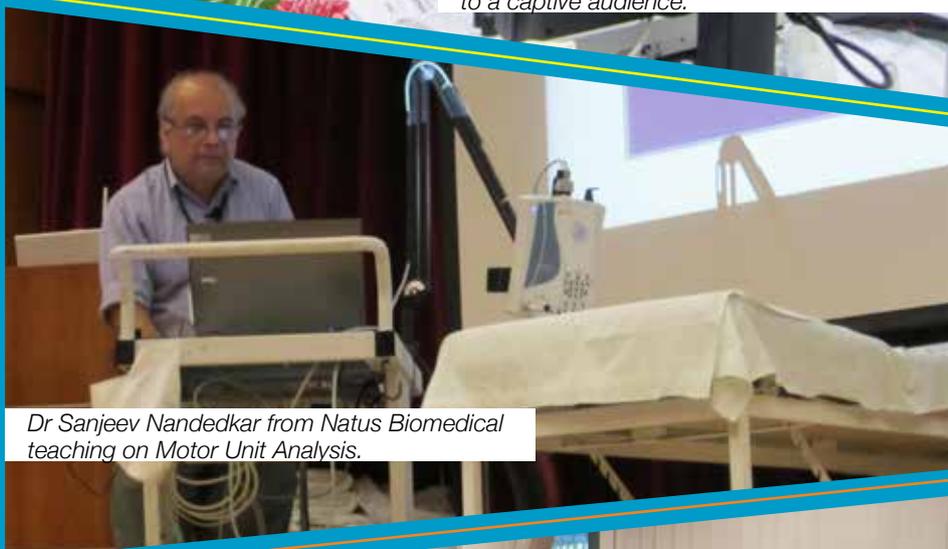
The unique workshop comprises a lively mix of real-time demonstrations and hands-on tutorials in both lecture and workshop formats, and this year, it attracted a healthy attendance of some 200 doctors and technicians from various healthcare facilities who were on site to learn from the prominent speakers.

Led by Associate Professor T. Umapathi, the Course Director, together with Dr Kamal Verma, Dr Josiah Chai and staff from the Neurodiagnostic Laboratory of National Neuroscience Institute (NNI), the workshop covered principles and practice of Electromyography (EMG), Electroencephalography (EEG) and Autonomic Function Tests (AFT). This year, there was a special focus on the imaging modalities of the peripheral nervous system, in particular that of neuromuscular ultrasound.

Also of special note, this year's Workshop featured invited guests, Dr Gregor Kasprian, Chief Resident of the Department of Radiology, Medical University of Vienna, Austria as well as Dr Sanjeev Nandedkar, a Clinician Application Specialist from Natus Biomedical. Providing their expertise to a vibrant group of attendees, they offered new perspectives on the topics of MRI imaging of the peripheral nerve system and Motor Unit Analysis respectively. Local speakers this year included experts from NNI, KK Women's and Children's Hospital, National University Hospital, Mount Elizabeth Hospital and Gleneagles Hospital.



Dr Kamal Verma, demonstrating on a patient to a captive audience.



Dr Sanjeev Nandedkar from Natus Biomedical teaching on Motor Unit Analysis.



Assoc Prof Lo Yew Long at a hands-on session on ultrasound practice.

From left to right: Mr Steven Sobak, Dr Shahul Hameed, Prof Tan Eng King, Assoc Prof Sitoh Yih Yan, Dr Nagaendran Kandiah, Dr Ng Li Ling were part of the committee who welcomed the Guest-of-Honour, Minister Gan Kim Yong.



Assoc Prof Sitoh Yih Yan, Deputy Director, NNI, delivering a speech at the Opening Ceremony of the Symposium.



3rd Singapore International Neurocognitive Symposium

Dementia across the
spectrum of care

The National Neuroscience Institute (NNI) hosted the 3rd Singapore International Neurocognitive Symposium at Hilton Singapore, Grand Ballroom, over the course of two days from 5 – 6 April 2013. With Mr Gan Kim Yong, Minister of Health as guest-of-honour, the event saw more than 250 local and regional neurologists, nurses and allied health professionals come together to receive updates and insights on the latest in the care of Young Onset Dementia and Alzheimer's Disease. The event also saw the launch of the National Neuroscience Institute-SingHealth Polyclinics (NNI-SHP) Cognitive Assessment and Rehabilitation (CARE) programme and a revised Clinical Practice Guidelines (CPG) for Dementia.

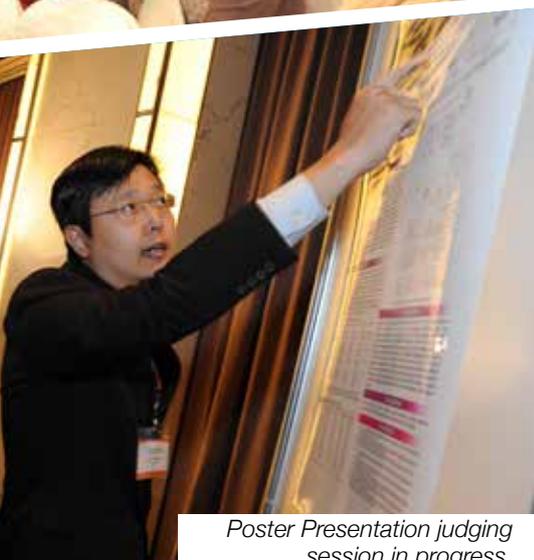
With dementia cases projected to be on a rise from 25,000 today to 55,000 by year 2020, the common elderly disease was in prime focus at the Symposium. A multitude of expert faculty presented and discussed topics ranging from the epidemiology of dementia to recent developments in vascular cognitive impairment and the latest in the management of dementia. The Symposium hopes to improve the care provided to patients with dementia. Through this year's efforts, it hopes to achieve this by

arming and availing healthcare professionals with the latest diagnostic and treatment options.

As early as 7.30 am, attendees began to stream into the Grand Ballroom, to register and mingle with their peers. By the time Chairman of the Symposium, Dr Nagaendran Kandiah, took to the podium for his welcoming address, the room was already bustling with energy and enthusiasm for the day's proceedings.

In his address, Dr Kandiah reinstated the aims and objectives of the five-year-old biennial symposium. Spurred on by previous years' successes, the Symposium is now more committed than ever to put together a comprehensive Symposium representing the entire spectrum of dementia care. He also announced the launch of the new NNI-SHP CARE programme, which has been designed to provide dementia patients with rapid and clear access to their specialists. He punctuated his address with a taped message from a caregiver of a patient with Young Onset Dementia, highlighting the importance of managing this group of patients below the age of 65.

Dr Simeon Marasigan, international faculty member, posing a question after a plenary session lecture.



Poster Presentation judging session in progress.



Recipients of the Letter of Appointment for the NNI-SHP CARE Programme with Minister Gan Kim Yong and Chairman, Organising Committee, Dr Nagaendran Kandiah.

Taking to the podium next was NNI Deputy Director, Associate Professor Sitoh Yih Yian, speaking on behalf of NNI Director, Professor Lee Wei Ling. He spoke on the continued efforts of the NNI to improve the quality of patient care. He cited the numerous training and research initiatives as well as the presence of collaborative programmes such as the NNI-SHP CARE programme as contributing to the high standard of care.

The final welcome address of the opening ceremony was none other than guest-of-honour, Mr Gan Kim Yong, Minister for Health. In his speech, he stressed the importance of providing co-ordinated multidisciplinary care and support to people with dementia. From the hospital to the community and across doctors, nurses, therapists, psychologists and caregivers, there must be communication and collaboration to provide quality care and support to these patients.

He said, "Unfortunately, despite our best efforts at primary prevention, a proportion of our population will continue to develop dementia. Therefore, it is important that we have the various services and a support

network to care for those diagnosed with dementia."

Thanking all healthcare professionals for their dedication and achievements in the field of cognitive disorders and dementia, he declared the Symposium officially open. After the rousing commencement speeches, the Symposium soon began in earnest, with insightful plenary sessions, workshops, lecturers and discussions having participants fully engaged and enriched by the level of expertise presented.

NNI-SHP CARE programme Launched: Bridging Dementia Patients to Specialists

A collaborative effort between NNI and SHP, the CARE programme aims to bring the latest management and rehabilitation techniques to patients by increasing cross communication with primary care doctors, thus improving the standard and effectiveness of care received by dementia patients.

Dr Kandiah, believes that the NNI-SHP CARE programme will bridge the gap between patients and dementia specialists.

He iterated that the programme will allow patients quick access to a dementia specialist, thus leading to faster diagnoses. Referring to the programme, he said, "This is a close collaboration between NNI and SingHealth Polyclinics, and will see a high level of personalised care for our patients with dementia."

Enhanced Clinical Practice Guidelines (CPG) for Dementia

The event also saw the launch of the revised Clinical Practice Guidelines (CPG) for Dementia. Among other improvements, the enhanced guidelines have widened its existing scope, introducing new sections on the pharmacological treatment of the different types of dementia, the diagnostic considerations for mild cognitive impairment as well as the ethical and legal issues related to dementia.

A section on the management aspects of Young Onset Dementia has also been included to provide a more comprehensive and robust guide for health practitioners. The NNI is confident that these revised guidelines will further improve the quality of care for patients with dementia.

1st NNI-CNS Combined Spine Surgery Update

Catering to the rising interest in spine surgery



The Combined Spine Surgery Update was jointly organised by the National Neuroscience Institute (NNI) and the Clinical Neuroscience Society of Singapore (CNS) on 10 November 2012. It was the first time such a spine update event was organised in Singapore, with experienced faculty in spine neurosurgery from NNI and Khoo Teck Puat Hospital. Course organiser, Dr Rajendra Tiruchelvarayan, Senior Consultant from the Department of Neurosurgery of NNI also invited orthopaedic spine surgeons from Tan Tock Seng Hospital to share their knowledge on treatment of spine disorders. Attendees included neurosurgical trainees from different hospitals in Singapore.

The Spine Surgery Update consisted of clinical case discussions to encourage interactive learning. These included degenerative conditions, spine tumours and trauma. The highlight of the event was a hands-on session where trainees performed spinal instrumentation using saw-bone models and posterior spine instrumentation systems.

Overall feedback from the attendees was positive. Said Dr Jai Rao, one of the trainees, "The case discussions were informative and presented challenging clinical scenarios to learn from." Other trainees were keen to know when the next update would be.

Associate Professor Ng Wai Hoe, Senior Consultant and Head of Neurosurgery at NNI explained further about the steady progress of spine surgery at NNI, "Spine surgery is a growing discipline in neurosurgery which is reflected by the high level of interest in the trainees. The NNI will certainly be organising similar training sessions in the future to cater to this rising interest."





NNI-Duke-NUS Neuroanatomy Wet-Lab Session



Students experience neuroanatomy beyond the books

The Department of Neurosurgery conducted the yearly Duke-NUS Neuroanatomy Wet-Laboratory Session on 15 January 2013. The event was held at the SingHealth Laboratory, together with the SingHealth Department of Experimental Medicine staff. The aim of this session was to aid the students in their understanding of neuroanatomy, as part of their 'Brain and Behaviour' module.

Said the session coordinator, Dr Rajendra Tiruchelvarayan, Senior Consultant from the Department of Neurosurgery, "The specially dissected neuroanatomy cadaveric specimens help the medical students to visualise in a three-dimensional space, what they have learnt from the textbooks. It reinforces the concepts in real life for them."

During the session, the class of students was divided into smaller groups for a more effective teacher-student ratio.

Consultants and Registrars from the National Neuroscience Institute (NNI) were also on hand to guide the students on the neuroanatomical structures and educate them on identifying the cranial nerves and cerebral blood vessels.

Senior Consultant and Head of Neurosurgery, Associate Professor Ng Wai Hoe expressed that as "overall feedback from the students was good, NNI looks forward to conducting a similar, enriching session next year".



Dr Tiruchelvarayan (second row, top right), session coordinator, with participants at the Wet-Laboratory Session.

“

"Spine surgery is a growing discipline in neurosurgery which is reflected by the high level of interest in the trainees. The NNI will certainly be organising similar training sessions in the future to cater to this rising interest."

Assoc Prof Ng Wai Hoe
Head Of Neurosurgery

Clinical fellowships now open to young neurosurgeons

The National Neuroscience Institute (NNI) is proud to be designated by the World Federation of Neurosurgical Society (WFNS) as a neurosurgery postgraduate fellowship training centre. With this designation, NNI joins the ranks of other renowned training centres such as the National Hospital for Neurology and Neurosurgery in London, New York University in USA, and Fujita Health University in Japan.

Two six-month clinical fellowships will be offered per year for young neurosurgeons from developing countries. Applications are now open.

For more information, please visit the WFNS website at: http://www.wfns.org/pages/national_neuroscience_institute_singapore_post_graduate_training_center/372.php.

Greener Hope for Parkinson Disease

NNI & NUS researchers discover green tea component that helps protect against Parkinson Disease



A multi-institutional study led by Dr Ng Chee Hoe at the National Neuroscience (NNI) and Associate Professor Lim Kah Leong at the National University of Singapore (NUS) Yong Loo Lin School of Medicine's Department of Physiology has identified a component in green tea that confers potent cellular protection against Parkinson Disease (PD). The finding was recently published in the October 10 issue of the *Journal of Neuroscience*, a leading international neuroscience journal.

Based on a previous study by Associate Professor Louis Tan, Head of the Clinical Trial Research Unit (CTRU) and Senior Consultant at the Department of Neurology, and his colleagues at the NNI, about 3 per 1000 of Singapore's population aged 50 and above suffers from PD. This number is expected to increase more than 2.5 times by 2030 as Singapore is one of the most rapidly ageing populations in Asia. PD causes significant stress within our healthcare system as patients need to return to the hospital to have their medications adjusted regularly.

Evaluating compounds that may be of therapeutic value in fruit flies, Professor Lim and his team identified EGCG, a component of green tea, as a positive hit. The study found that EGCG-treated fruit flies exhibited much better movement ability and showed significant preservation of their brain neurons, compared to

untreated flies. More importantly, the study identified the cellular target that EGCG acts on, which is a protein in the body known as AMP kinase. When activated, this protein helps to regulate energy demand in brain cells to prevent them from dying under conditions of stress.

The discovery may lead to the potential invention of medication that can reverse the debilitating effects of PD, and researchers said that the finding shows promise for more effective drugs. The team hopes to partner with interested pharmaceutical companies to bring the discovery to drug formulation that would ultimately benefit patients.

The team is currently validating the efficacy of AMP kinase activation as a neuroprotective strategy in mammalian models of PD as well as in human dopaminergic neurons generated from the skin cells of PD patients via the new stem cell technology pioneered by Professor Shinya Yamanaka, co-winner of the 2012 Nobel Prize in Physiology or Medicine.

Besides NNI and NUS, other institutions that have participated in this study include Duke-NUS Graduate Medical School and Temasek Life Sciences Laboratories. This study is supported by the Singapore Millennium Foundation, National Medical Research Council and A*STAR Biomedical Research Council.

Green tea component helps protect against Parkinson's: NUS study

SINGAPORE - A new study has identified a component in green tea called EGCG that provides cellular protection against Parkinson's disease, which affects more than an estimated six million people worldwide.

Researchers at the National University of Singapore's Yong Loo Lin School of Medicine engineered several fruit flies which developed Parkinson's disease - a progressive and degenerative neurological disease.

The team found that EGCG-treated flies exhibit much better movement ability and show significant preservation of their brain neurons, compared to untreated flies. More importantly, the study identified the cellular target that EGCG acts on, which is a protein in the body known as AMP kinase. When activated, this protein helps to regulate energy demand in brain

cells to prevent them from dying under conditions of stress.

Researchers said the finding shows promise for more effective drugs for Parkinson's patients. The finding from the study, which was led by Associate Professor Lim Kah Leong at the NUS Yong Loo Lin School of Medicine's Department of Physiology and Dr Ng Chee Hoe at the National Neuroscience Institute (NNI), was published in the *Journal of Neuroscience*.

PARKINSON'S DISEASE AFFECTS MORE THAN AN ESTIMATED

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Bioinformatics and Teamwork: Research Success on Glioma Cell Death

Brain tumours are notoriously resistant to chemotherapies and patient survival remains dismal. Combining bench science with orthotopically relevant animal models, and using powerful bioinformatics approaches to interrogate public patient databases, a multidisciplinary research team was able to establish a model of patient-centric studies that help guide decisions in the lab.



After an arduous five years, a multidisciplinary team of researchers from the National Neuroscience Institute (NNI), National University of Singapore (NUS) and the Singapore Institute for Clinical Sciences (SICS), A*STAR finally reaped the fruits of their labour.

In a paper titled 'A Distinct Reactive Oxygen Species Profile confers Chemoresistance in Glioma-Propagating Cells and Associates with Patient Survival Outcome', the team showed first-ever evidence of a direct correlation between the extent of glioma cell death with reduced superoxide: hydrogen peroxide ratio.

Forming the majority of adult malignant brain tumours, gliomas affect a significant number of individuals globally, including here in Singapore. The NNI sees about 50 new cases of malignant glioma each year.

The study itself was inspired by collaborator Professor Shazib Pervaiz's decade of research, showing that an elevated superoxide: hydrogen peroxide ratio promotes tumour cell survival. By inference, reducing this ratio could sensitise tumour cells to drug-induced cell death, thus presenting a viable redox-based therapeutic approach.

It was over a cup of coffee with Prof Pervaiz that the idea was birthed between him, Dr Carol Tan, Research Scientist, and Associate Professor Ang Beng Ti, Senior

Consultant, Department of Neurosurgery. The challenge for this team was not only to develop a method to predict the ability of cancer cells to die upon drug treatment, but also to map the preferential patterns of animal survival with patient genomic information and makeup.

To this aim, one of the project's breakthroughs and key strengths was its collaboration with bioinformatics partner, Lilly Singapore Centre for Drug Discovery (LSCDD), a subsidiary of Eli Lilly and Company based in Indianapolis, USA. This was when LSCDD's ten years of experience in analysing data with pharmaceutical importance contributed immensely to the project. Leveraging an extensive public global database of patient data from a consortium of 14 USA institutes, the team was able to use the power of bioinformatics as the crucial key in their study: patient relevancy.

Still, the project, with Assoc Prof Ang and Dr Tang leading as Co-Principal Investigators, proved to be technically challenging and required numerous late nights over the course of three to four years by the team's lab associates. Thankfully, talent and perseverance were traits the team had in abundance. Dr Tang shared, "We are very fortunate to have a great laboratory team and who believe in what they do. Even when things were looking bleak, we had the team together and a reason to persevere."

Assoc Prof Ang added, "What is important is integrity; knowing that you can trust someone's data and transparency. Carol and I adopt a straightforward, candid approach. We are very approachable and ensure that everyone keeps together as a team at all times."

Since the paper was published in the May 15 issue of 'Antioxidants & Redox Signaling', a leading international redox biology journal, the project has received considerable interest and very good feedback from various parties. At present, several potential collaborators have approached them, while others have sought to find out more about the team's bioinformatics approach.

Currently, the team has another project in the pipeline, concerning surface carbohydrate chain changes and how they affect tumour cell properties. Similarly, the project will employ bioinformatics to look at the signaling pathways involved.

Dr Tang concluded, "One of the nicest things about the project is the different disciplines that were brought together as a team.

Now we have built great long-term partnerships and a team of research associates and graduate students who want to commit another five years of hard work with you. I think that is a true measure of success."

Events Calendar (June - December 2013)

5 July →

Neuroscience Nursing Seminar:
Learn and Lead!



6 July →

Pain Management Public Forum: Gain Without Pain

13 July →

Neuroscience Seminar for Family Physicians: Neuromuscular Disorder and Neuropathic Pain



27 July →

360° Cervical Advanced Course



16-17 August →

Cranial Endoscopic Neurosurgery Course



31 August →

Neuroscience Seminar for Family Physicians: Stroke

28 September →

Community Care Partners Workshop:
Maintaining Activities of Daily Living in Parkinson Disease



12 October →

Neuroscience Seminar for Family Physicians: Epilepsy and Sleep Disorder

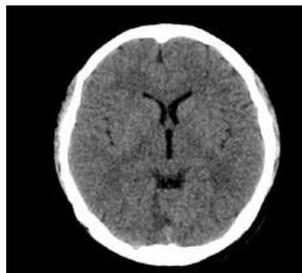


6-10 November →

15th International Conference on Intracranial Pressure (ICP) and Brain Monitoring

18-19 November →

13th Advanced Neuroradiology Course



30 November →

NNI Dementia Awareness Day:
Memory is Time

ENQUIRY AND REGISTRATION



Tel: (65) 6357 7152 / 6357 7163 | Fax: (65) 6256 4755
Email: nni_secretariat@nni.com.sg
Website: www.nni.com.sg

Mark your calendar




15TH INTERNATIONAL CONFERENCE ON INTRACRANIAL PRESSURE & BRAIN MONITORING (ICP)

6 - 10 November 2013
The Academia, Singapore

IMPORTANT DATES

- Start of online registration: 1 November 2012
- End of early bird registration: 31 September 2013
- End of abstract submission: 26 July 2013
- Notification of abstract acceptance: 19 August 2013

TOPICS

- Biophysics of ICP and brain deformation
- Brain pressures and autoregulation in acute brain injury
- Experimental aspects of raised ICP
- Different types of acute brain injury - Experimental studies
- ICP in relation to clinical monitoring - Transcranial Doppler, NIRS, cerebral blood flow, microdialysis, brain oxygenation, and others
- Treatment and outcome in acute brain pathologies
- Changes of ICP in hydrocephalus pathophysiology - Cause or effect?
- Hydrocephalus shunt technology - How to control water in a brain?
- Interstitial and cerebrospinal fluid flow
- Intracranial hypertension in non-injury brain pathology (e.g. pseudotumor cerebri, craniostenosis, metabolic brain oedema)
- Consequences of intracranial hypertension
- PET, MRS/MRS - Intracranial pressure and imaging techniques
- ICP in anaesthesia and neurointensive care

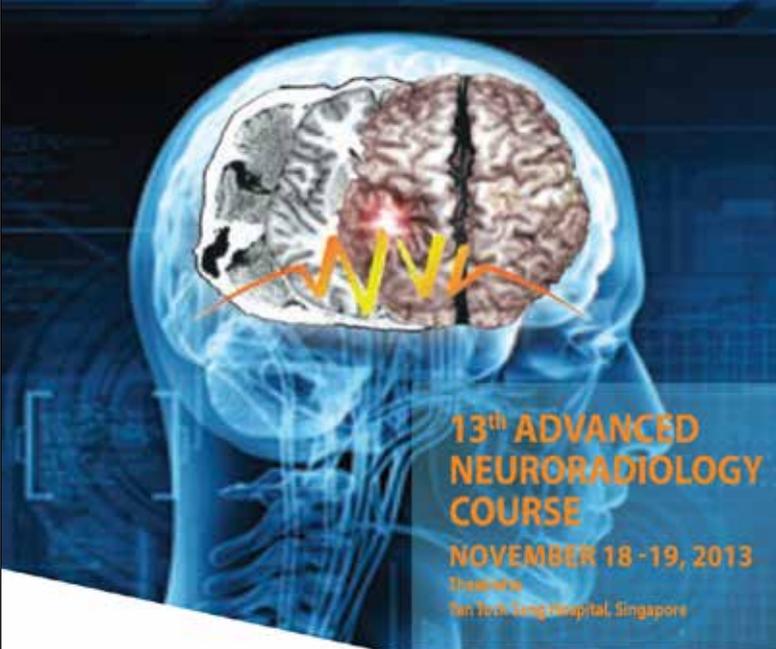
SPECIAL FOCUS

- Neuroimaging
- Neurorestorative Therapies

CONTACT
15th ICP 2013 Secretariat, National Neuroscience Institute (SingHealth) Academy
11 Jalan Tan Tock Seng, Singapore 308425
Tel: (65) 6377 6942 / 6377 7152 | Fax: (65) 6377 4262
Email: icp2013@nha.ni.com.sg | Website: www.icp2013.com.sg

Organised by  National Neuroscience Institute SingHealth

Nominal Sponsors:  Singapore Municipal Society  College of Radiologists Singapore



13TH ADVANCED NEURORADIOLOGY COURSE

NOVEMBER 18 - 19, 2013
Singapore
Tan Tock Seng Hospital, Singapore

Organised By  National Neuroscience Institute SingHealth

Nominal Sponsors:  Singapore Municipal Society  College of Radiologists Singapore

SUPPORT GROUPS

Epilepsy Support Group

Singapore Epilepsy Foundation
149 Rochor Road, #04-07 Fu Lu Shou Complex
Singapore 188425
Tel: (65) 6479 8611
Website: www.epilepsy.com.sg

Multiple Sclerosis Support Group

MS Care
Tel: (65) 6835 9916
Email: info@chcsa.org.sg

Muscular Dystrophy Support Group

Muscular Dystrophy Association (Singapore)
9 Bishan Place #06-01, Junction 8
Singapore 579837
Tel: (65) 6259 6933
Website: www.mdas.org.sg

Neurovascular Befriender Services

National Neuroscience Institute
Department of Neurosurgery
Tel: (65) 6357 7545

Parkinson Disease Support Group NNI at Tan Tock Seng Hospital

National Neuroscience Institute
Neuroscience Clinic, Level 1
Tel: (65) 6357 7605

NNI at Singapore General Hospital

Singapore General Hospital
Rehabilitation Centre, Education Resource Room
Block 1, Level 1
Tel: (65) 8125 3543

Stroke Support Group

Singapore National Stroke Association
26 Dunearn Road, Singapore 309423
Tel: (65) 6358 4138
Website: www.snsa.org.sg

For more information on
Support Groups, visit
our website at
www.nni.com.sg

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