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A quarterly publication of the NUHS

EVIDENCE⁺



A GIFT OF HOPE

FEATURE

BRINGING CANCER
CARE HOME

DISCOVERY

NEW HEART VALVE
DEVELOPED

GRAND ROUNDS

PALM OIL AND
HEART PROBLEMS

FEATURE



BRINGING CANCER CARE HOME

Patients suffering from a particular form of cancer called multiple myeloma now have the option of being treated at home under the VELCADE@Home initiative, which is part of the NUHS Transitional Care Programme.

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Read about it on page 02

Dear Reader,

Happy New Year! We hope that you've had a great start to 2016, and are ready to take on the new year.

While 2015 has been an eventful year for us, this year promises to be even more exciting, and *Evidence+* will bring you all the updates.

In this kick-off issue for 2016, we report on how cancer and heart patients – specifically people suffering from multiple myeloma and mitral regurgitation – can experience a better quality of life respectively through the VELCADE@Home programme (page 2) and the development of a prosthetic heart valve called VeloX (page 8).

We'd also like to share that the Clinical Imaging Research Centre, officially opened last November (page 1), is home to more than 50 research projects that focus on diseases pertinent to Singapore and Asia. Our Saw Swee Hock School of Public Health colleagues continue to conduct impactful research, such as a systematic review of how palm oil affects cholesterol response in humans (page 13).

Beyond providing care in a hospital setting, we are also committed to reaching out to the community. Our Public Health Service, which is into its 10th edition, has expanded its services to promote better overall health management (page 12). We continue to help needy patients and the disadvantaged. Our recent Giving Tree event (page 6) was especially significant as it brought together both donors and staff contributors. Staff can now opt to make monthly contributions through GIRO deductions. Besides monetary contribution, our staff also give of their time and effort. Read about the experience of staff and students who manned the medical teams of the 28th SEA Games and the 8th ASEAN Paralympic Games (page 10).

As we crank up our engines to face the new year, we'd like to wish our Chinese readers *Gong Xi Fa Cai, Shen Ti Jian Kang* (Happy, Prosperous and Healthy New Year).

The Editorial Committee



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Please address comments to evidence@nuhs.edu.sg.

The National University Health System (NUHS) is an integrated academic health system that delivers value-driven, innovative and sustainable healthcare through its capabilities in patient care, health science education and biomedical research.

It also works closely with health and social care partners in the public, private and people sectors to develop and implement programmes that contribute to a healthy and engaged population in its Regional Health System.

For more information on the NUHS, visit www.nuhs.edu.sg

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**National University
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**National University
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MCI (P) 130/03/2015



FYI



Mr Heng Swee Keat addressing the audience at the official opening of CIRC



EYE OPENER

The Clinical Imaging Research Centre provides scientists and clinicians with high-tech “eyes” that can help them better examine and understand the human body’s anatomical and functional details

The Hubble telescope was a game changer in astronomy in 1991. Fast forward to today and the new Clinical Imaging Research Centre (CIRC), with its powerful clinical imaging research capabilities and resources, is similarly paving the way for researchers to look with acute clarity into the deepest molecular recesses of the human body, and to understand how diseases and medical interventions affect its working. The Centre was officially opened on 11 November 2015 by Mr Heng Swee Keat, the Minister for Finance and the Deputy Chairman of the National Research Foundation.

A joint venture between the National University of Singapore (NUS) and the Agency for Science, Technology and Research (A*STAR), CIRC has been set up to help basic scientists and clinicians to work on translational research relevant to issues facing the Singapore population.

The 20,000ft² Centre is filled with state-of-the-art equipment for clinical imaging as well as the production of radiolabelled compounds.

To view the body in amazing new ways, the Centre has two 3T (tesla) magnetic resonance imaging (MRI) scanners, a positron emission tomography (PET) /

MRI scanner, and a PET / computerised axial tomography (CT) scanner. The latter two combination scanners give researchers a greater understanding of the workings of the human body, as they offer anatomical, functional and metabolic information.

The Centre also has a PETTrace 860 Cyclotron, a 16.5MeV particle accelerator that can generate short-lived radionuclides for the production of PET radiopharmaceuticals. With this equipment, the Centre can generate a range of radiopharmaceuticals needed for the PET-imaging of human subjects.

In addition to providing different imaging technologies, CIRC supports clinicians and researchers by giving them access to the Centre’s clinical support (to care for volunteers and patients during imaging sessions), scientific support (to enhance and facilitate research with imaging), and analysis support (hardware and expertise to optimise their research and analyse their data).

With an eye on diseases relevant to Singapore and Asia, CIRC aims to develop technologies and biomarkers for monitoring the progress of diseases, enhance drug discoveries and the

improvement of diagnosis and patient management capabilities for diseases that are pertinent in this region, such as tuberculosis, dementia and diabetes. The Centre is already hosting more than 50 research projects with investigators from industry as well as from 13 Singapore-based institutions.

One example of a research project is CIRC’s collaboration with the NUS tuberculosis (TB) research programme (SPRINT-TB) that studies the discovery and development of TB imaging biomarkers so as to more efficiently identify, monitor and treat the disease. Using a wide range of imaging methods including structural, functional and metabolic imaging, CIRC investigators are also able to study how factors such as brain morphology, white matter structure, functional connectivity, cerebral perfusion, and specific metabolites play a role in causing this illness and the progression of dementia.

Professor David Townsend, Director of CIRC, said, “It is really important to understand in detail what is going on inside the body, and the only real way to do that non-invasively is through the imaging technologies that have been implemented in the Centre.” +



FEATURE

National University
Cancer Institute, Singapore



BRINGING CANCER CARE HOME

VELCADE@Home extends medical care for multiple myeloma patients beyond the hospital setting, and augurs well for the development of future home care therapies



Below: Part of what a VELCADE@Home nurse packs during a home visit



A GROWING CANCER

Setting up this programme is significant, as countries in Asia — including Singapore — are experiencing a rise in incidences of multiple myeloma. In this cancer, normal blood plasma cells in the bone marrow turn malignant and produce abnormal proteins. These proteins in the blood can lead to anaemia, kidney problems and bone fractures. Prof Chng suggests that this rise may be due to ageing populations in Asia, better diagnostic tools, and higher clinical awareness of the disease and its symptoms. NCIS treats 100 such patients each year, and about 20 to 30 of these patients are newly diagnosed.

VELCADE is one of the most effective treatments against multiple myeloma. An estimated 70 patients are given VELCADE at NCIS every year. The drug is also simple to administer. Injecting it takes only five to 10 minutes — much like insulin injections for diabetes patients — making it “an ideal drug to pilot the programme,” says Prof Chng, who is spearheading the initiative.

Patients receive VELCADE injections once a week, with four weeks making one cycle of treatment. The number of treatment cycles prescribed is dependent on a patient’s response to the drug, and whether they are newly diagnosed or recurrent patients. Under the home programme, patients still have to go to the hospital for the first cycle of treatment as well as for the first injection of each subsequent cycle. This allows doctors to check for possible complications or allergic reactions to the drug.

A house call by a doctor can be costly, which is why most people who are ill would rather visit a clinic. But for patients with multiple myeloma, home treatment may come at no extra cost at the National University Cancer Institute, Singapore (NCIS). Launched in August 2015, VELCADE@Home is the result of a partnership between NCIS and multinational healthcare company Johnson & Johnson that allows patients with this particular cancer to receive VELCADE drug therapy at home. It is also part of the Caring Across Cancer Care Continuum under the NUHS Transitional Care Programme, which was launched in February 2014 to provide quality, person-centric, inter-disciplinary care for patients

transitioning from the hospital back to their homes.

While extending care to the patient’s home is nothing new, VELCADE@Home is the first such cancer treatment programme in a country where home care is considered a fairly new phenomenon, according to Professor Chng Wee Joo, Director of NCIS. “While we have previously extended care to patients at home, it is mainly for transitional care — helping patients to settle in at home after their hospital stay, or teaching caregivers to take care of patients,” Prof Chng, who is also Senior Consultant at the Department of Haematology-Oncology in NCIS, clarifies. “Now we are going a step further by providing anti-cancer treatment to patients at home.”



IMPROVING QUALITY OF LIFE

Such a programme structure saves patients up to three hospital trips per treatment cycle, and provides them a way to seek treatment in the comfort of their own homes. The convenience and comfort that VELCADE@Home brings can increase the quality of life for patients, a key aim of the programme. Prior to this, patients and their caregivers would have to spend time and money travelling to and from the hospital, not to mention waiting while the drug is prepared and administered. This can be disruptive for some patients' schedules, particularly for those who are working.

The programme is also useful for patients with mobility issues, as bone fractures can occur as the disease progresses. This care can be re-directed to the patient's workplace if they prefer. "There are many benefits for all sorts of patients — the young, old, immobile, working," Prof Chng observes.

One appreciative patient of the programme is 37-year-old Mr Low, who was diagnosed with multiple myeloma in

August 2015. "It saves me a lot of time, especially as I have two kids. As I stay in northern Singapore, travelling takes me a long time," he explains. "It makes me feel very comfortable. I can take my time to do some work [at home] and spend more time with my children."

THE VITAL ROLE OF NURSES

A pillar of this home care programme is the nursing staff. On the morning of the scheduled visit, the nurse would ring up and check on the patient's state of health, and to confirm the time of arrival. Should the patient feel poorly, the nurse may change the appointment to another day or notify the doctor to assess a possible course of action, if required.

"The nurses don't just base [their assessment] on what I tell them. They will also check my blood pressure and pulse when they come to my house, and ask if I have swollen legs or any information to share with them," Mr Low says.

If the patient is well enough to receive the VELCADE treatment, the nurse informs the pharmacy to prepare the drug, and goes to the patient's home armed with the necessary equipment to keep the prescription at the right temperature, and dispose of the needles safely. Nurses also engage in patient education after the injection, and advise patients how to cope with possible side effects, such as fever. As such, VELCADE@Home isn't just treatment; it also provides training to enhance the abilities of caregivers, and can empower patients and their minders in the treatment process.

"Many times, patients get readmitted because they were not given all the information or not trained to take care of minor symptoms when they go home. Then they panic when they feel something different, and come back [to the hospital]," Prof Chng explains. Training the patient and caregiver to cope with symptoms and side effects of therapy can help to decrease the likelihood of readmission and sustain early discharge — an integral aim of the Transitional Care Programme. "We want to try as much as possible to have the patient stay home — that will improve the quality of life for the patient," he stresses.

In addition, home visits allow nurses to keep an eye on possible areas of need that do not crop up during consultations. "We can see the real situation at home and identify some of these needs. For example, when patients are stressed or anxious, we can highlight that to their medical counsellor or social worker," says Ms Kelly Lai, Senior Staff Nurse at the Division of Oncology Nursing at NCIS, and one of the nurses in the

"WE WANT TO TRY AS MUCH AS POSSIBLE TO HAVE THE PATIENT STAY HOME — THAT WILL IMPROVE THE QUALITY OF LIFE FOR THE PATIENT"

— PROF CHNG WEE JOO

VELCADE@Home programme. In this way, nurses are liaisons between patients and community healthcare partners. Important health issues — for instance, the patient is suffering from an injury that may require further medical attention — that may otherwise go unnoticed or untold can be picked up by the nurses during home visits and reported to the clinician.

Close communication between doctors and nurses is imperative. “There’s a lot of work in the background; we have to create a workflow that involves patients, doctors, nurses, pharmacists and clinic assistants,” Prof Chng adds.

Thus, in spite of the home visits, clinical care is not compromised. In fact, the feedback from nurses to

clinicians and other parties reinforces the continuum of care rendered to the patient. In this sense, the programme also benefits the nursing staff, increasing the recognition of their role in making this wide spectrum of care possible.

“This programme didn’t change anything in terms of clinical contact time,” Prof Chng stresses. “We get informed more because of this additional dimension of [knowing] what is happening to the patient at home. Previously, this was a black hole.”

The programme is currently staffed by three nurses, who have made 94 home visits to 16 enrolled patients as at 31 December 2015.

EXTENDING TO OTHER DRUGS

“There are three countries in Europe

[with a VELCADE programme]; we’re very proud to be the first country in Asia-Pacific to launch the VELCADE@Home programme,” says Ms Juliana Chin-Koenig, Senior Hospital Cluster Leader at Johnson & Johnson.

NCIS is also looking into other drugs for its home care programme, and is particularly looking at treatments for patients with myelodysplastic syndrome (MDS) or acute myeloid leukaemia (AML). More services may also be added to the portfolio of transitional care in the future, such as home transfusion, which will allow patients to receive intravenous chemotherapy and is less damaging to the veins, according to Prof Chng. +

NUHS TRANSITIONAL CARE PROGRAMME

Recognising that moving from hospital to home can sometimes be traumatic for patients and their caregivers, the NUHS Transitional Care Programme was introduced to enhance patient experience and safety during this period, promote ageing in place, empower caregivers, and provide supportive care for patients who are at the end of life. The programme is spearheaded by a geriatrician and comprises a multi-disciplinary team of nurses, doctors and allied health professionals. It contains five sub-programmes:

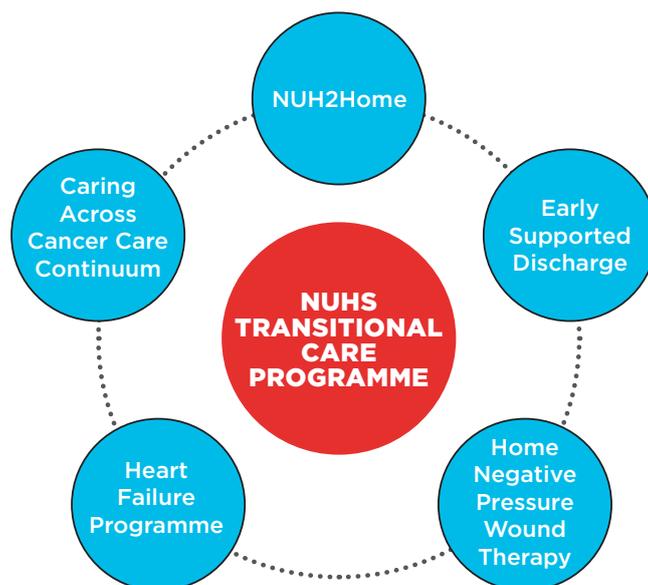
- **NUH2Home**
This sub-programme manages complex patients with multiple health issues as they transition from hospital to home and are provided with medical, nursing and allied health support.
- **Caring Across Cancer Care Continuum**
VELCADE@Home is part of this sub-programme, which helps cancer patients and their caregivers experience a smooth transition to their homes via provision of telephone support and home visits.
- **Heart Failure Programme**
This sub-programme provides

heart failure patients with greater confidence and improved quality of life through continued care and wellbeing management in the comfort of their homes and community.

- **Home Negative Pressure Wound Therapy**
This specialised therapy for acute and chronic wounds can be lengthy for patients, but under this sub-

programme, the therapy can be conducted in the comfort of their homes.

- **Early Supported Discharge**
For stroke patients who can be cared for and managed at home, this sub-programme aims to reintegrate the patients into the community through tailored rehabilitation in their home environment and training of their caregivers.



The NUHS Transitional Care Programme comprises five sub-programmes



Prof John Wong and Prof Lim Pin lighting the Christmas tree

THE GIVING TREE 2015

The sixth year of this annual fundraising event saw the launch of a new initiative, which invites NUHS staff to pledge monthly contributions

NUHS Fund Limited's signature fundraising event, The Giving Tree, came to a successful close at the end of last year. The 2015 edition conveyed the message that giving does not need to be event-centric; it can be a gift that keeps on giving throughout the year.

That message was the focus of last year's campaign, and many staff and members of the public took up the challenge and pledged to give monthly towards supporting financially needy patients. The campaign will continue into the new year, culminating in The Giving Tree 2016.

The Giving Tree 2015, the sixth annual event, contained two key proceedings:

- a staff event held on 13 November
- a corporate event held on 23 November to thank external donors and supporters for their generosity over the past year

STAFF EVENT

This was a collaboration with the NUHS HR Wellness team to mark the finale of the

NUHS Games, which incorporated a fundraising challenge for two charities: ComChest and the NUHS Fund Limited. Team NUHS distinguished themselves by raising a total of \$37,000 for beneficiaries of the two charities! This staff event kicked off The Giving Tree 2015, and marked the official launch of our monthly giving campaign.



Cheque presentation at the staff event



NUHS Games in action

CORPORATE EVENT

The 2015 event was especially significant as it was the first combined donor appreciation event for the NUHS Fund Limited, and included supporters of the Cancer Fund, the Heart Fund and the NUHkids Fund. In his address, Professor John Eu-Li Wong, Chief Executive of the NUHS, thanked all donors, commenting that their generosity was an encouragement for everyone in the NUHS to continue their effort to make tomorrow a better day for financially needy patients and their families. Prof Wong was joined by Professor Lim Pin, University Professor of the NUS Yong Loo Lin School of Medicine, in flipping the switch to turn on the fairy lights on the Christmas tree.

The evening was made even more meaningful as special works of art from Project Dreamcatchers were displayed for guests to enjoy. Project Dreamcatchers is an NUH programme that helps youths with chronic illnesses cope with their conditions through a variety of activities. These include producing expressive art to raise awareness of what being chronically ill is like. The art pieces on show offered a glimpse into the world of patients — a raw yet uplifting experience for the guests.

Throughout the evening, NUHS staff and NUS students regaled those present with musical performances, which had some guests swaying gently to the music, evidence of a truly enthralling evening! +



Cheque presentation at the corporate event



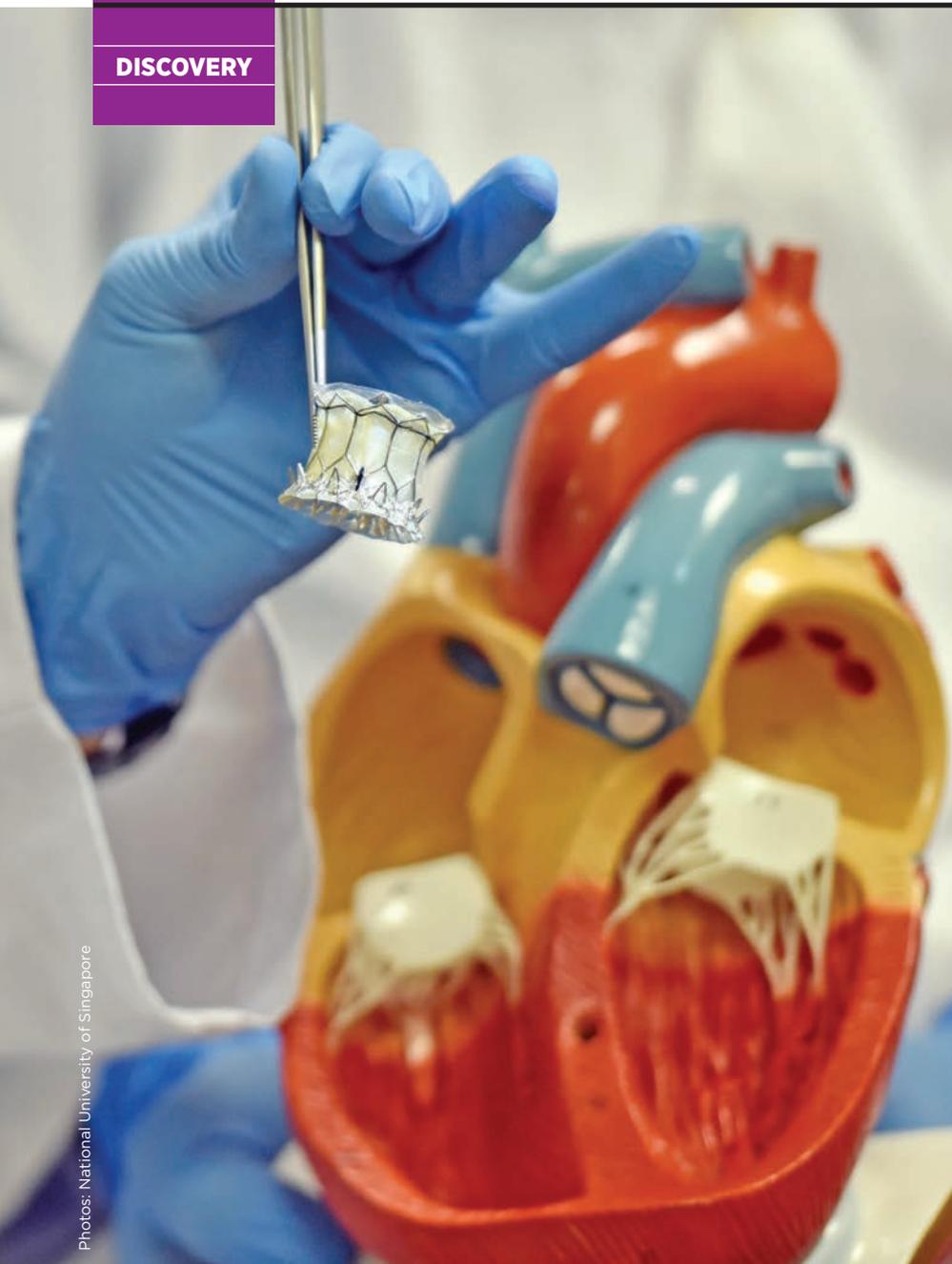
Two Project Dreamcatchers participants with Prof John Wong and Prof Lim Pin

NUHS Fund Limited is a Company Limited by Guarantee (CLG) and a registered charity with IPC status. It was set up in 2012 to promote medical research and development, as well as provide health-related services for the benefit of the Singapore community. A key objective is to address gaps not covered by existing government and community assistance schemes, and assist patients who have been determined to require financial assistance with their medical treatment costs, including the cost of the recovery process.

“There is more joy in giving than receiving,” as the adage goes. To read more about this, please visit our website at <http://www.nuhs.edu.sg/about-us/make-a-gift/support-patients.html>

You can make a difference and support the financially disadvantaged patients through these channels:

- **Via SAM:** all SAM Kiosks islandwide; www.mysam.sg; and the SAM mobile app
- **SG Gives:** www.sggives.org/nuhs
- **Giving.sg:** www.giving.sg/nuhs-fund-limited
- **Via cheque/GIRO:** www.nuhs.edu.sg/about-us/make-a-gift/support-patients



Photos: National University of Singapore

NEW HEART VALVE DEVELOPED

Experts from the National University Heart Centre, Singapore, and the NUS Faculty of Engineering come together to revolutionise the treatment of mitral regurgitation

Patients with a serious heart valve disorder called mitral regurgitation (MR) may not need open-heart surgery in the future, as a novel prosthetic heart valve known as VeloX has been developed. The valve was developed by Dr Jimmy Hon, a Senior Consultant from the National University Heart Centre, Singapore (NUHCS), in collaboration with Associate Professor Leo Hwa Liang, from the Department of Biomedical Engineering in the NUS Faculty of Engineering.

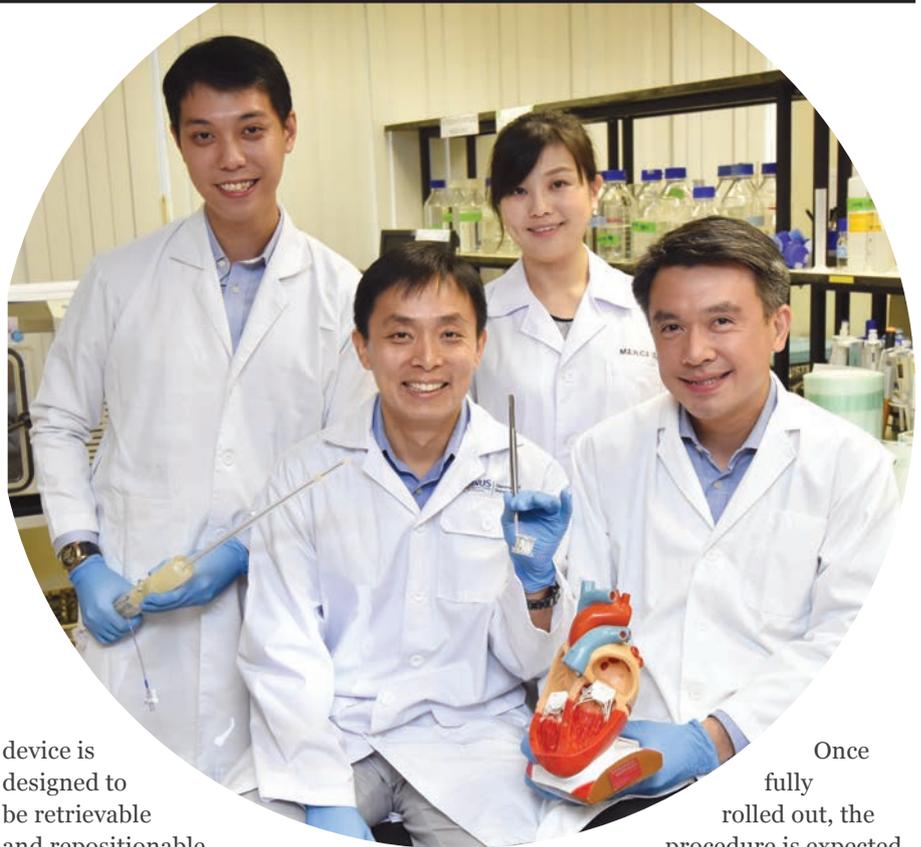
The heart valve tissue is implanted via keyhole surgery, a minimally invasive procedure, which is good news for patients who are unsuitable candidates for existing clinical interventions or who are of high surgical risk.

Heart valves are thin flaps of tissue in the heart that ensure unidirectional flow of blood between the heart's four chambers during the cardiac cycle. The mitral valve is one of four valves in the human heart, and is located between the upper left chamber (atrium) and the lower left chamber (ventricle). MR occurs when this valve fails to close all the way, resulting in a backflow into the left atrium from the left ventricle as the heart contracts. As the amount of forward flowing blood to the rest of the body is reduced, the heart will pump harder, worsening existing heart failure or leading to congestive heart failure.

GAME CHANGER

MR affects about 12 million people globally. About 250,000 cases are diagnosed annually; if left untreated, one-third of these people may die within six years. The standard treatment is open-heart surgery, whereby the heart is stopped, and the diseased valve is either replaced or repaired. In Singapore, up to 300 patients a year replace their mitral valve, while about 100 have theirs repaired.

VeloX pioneers Assoc Prof Leo Hwa Liang (seated left) and Dr Jimmy Hon (seated right), together with other team members Kenneth Chan (standing left) and Dr Elynn Phang (standing right)



Although the clinical outcomes of open-heart surgeries are generally positive, it is a major procedure, thus patients who are elderly or suffering from multiple chronic diseases often have to leave their MR untreated. “There is a big group of patients who do not undergo open-heart surgery because big surgeries scare them, or they are either too old or sick to undergo this sort of big surgery,” says Dr Hon, who is also an Assistant Professor at the Department of Surgery in the NUS Yong Loo Lin School of Medicine.

VeloX thus offers hope to this group of high-surgical-risk patients through a minimally invasive procedure that requires only a small incision. In addition, this device can be implanted without having to stop the heart, unlike in conventional open-heart surgery. The device can be designed to suit different mitral annulus (a saddle-shaped structure that supports the leaflets of the mitral valve) sizes of patients and implanted via keyhole surgery.

TINY DEVICE, BIG DREAMS

The heart valve, measuring 32mm in diameter and 30mm in height, is made of bovine pericardial tissue. It is “stitched” within a self-expanding, polymer nickel-titanium (nitinol) alloy stent frame that is specially designed to prevent leakage once within the heart. “[The stent] will remember the shape that it pre-forms, so that when it is deployed in the body, it will open up to the shape that you want it to take up,” explains Assoc Prof Leo.

During the implantation process, the prosthetic valve is compressed to the thickness of a pencil and loaded into a catheter. The catheter is then inserted into the patient through a small – roughly 5cm – incision at the leg or between the ribs to deliver the device straight into the left side of the heart. The catheter will then be used to send the device to the patient’s diseased mitral valve.

To facilitate accurate placement, the

device is designed to be retrievable and repositionable.

“The mitral annulus has a very complex structure, so it is particularly challenging to deploy and anchor a prosthetic valve into the constricted region. Optimal positioning is crucial as any malpositioning can be detrimental for patients. One of the unique features of VeloX is its ability to be self-centring, hence enabling it to achieve an optimal position after being implanted,” Assoc Prof Leo points out. Dr Hon adds, “VeloX will restore the unidirectional flow of the blood in the left heart and will help alleviate the symptoms associated with mitral regurgitation. This transcatheter valve offers palliative treatment for the patients who were denied surgery, especially those with multiple co-morbidities.”

QUICKER RECOVERY

Spurred on by optimistic results from earlier pre-clinical phases of the project, the team is now fine-tuning VeloX. The team has plans to conduct *in vivo* studies to acquire data on the device’s technical performance, and aims to start clinical trials in about two years. They have also filed for a patent for VeloX, and hope to work with medical technology companies to commercialise their invention to benefit patients soon.

Once fully rolled out, the procedure is expected to halve the length of post-surgery hospital stay to about four days, and the outpatient recovery period to about two weeks, from the two to three months currently, following open-heart surgery.

MARRYING OF MINDS

Such partnerships between faculties in the NUS are not uncommon. In fact, apart from VeloX, Dr Hon and Assoc Prof Leo are currently working together on several other projects, all at different stages of development.

“I’m a physician, and have no idea how to create, for example, the nitinol stent into the shape I need for the valve. This is exactly the value that the strong ties between the NUHS and the NUS can offer. Collaborations like this allow us to marry multi-faculty expertise and specialties to invent something such as VeloX,” says Dr Hon.

Other members of the team include Kenneth Chan, a Biomedical Engineering Masters student under Assoc Prof Leo’s supervision, as well as Dr Elynn Phang, from the Medical Engineering and Research Commercialisation Initiative (MERCICI) – a core facility of the NUS and NUHS – who is managing the commercialisation of the device. +



A sea evacuation drill for sailing events being conducted at the 28th SEA Games

PLAYING AS A TEAM

Associate Professor Suresh Pillai shares his experience as Chief Medical Officer of the 28th SEA Games and the 8th ASEAN Paralympic Games, both of which were held in Singapore last year

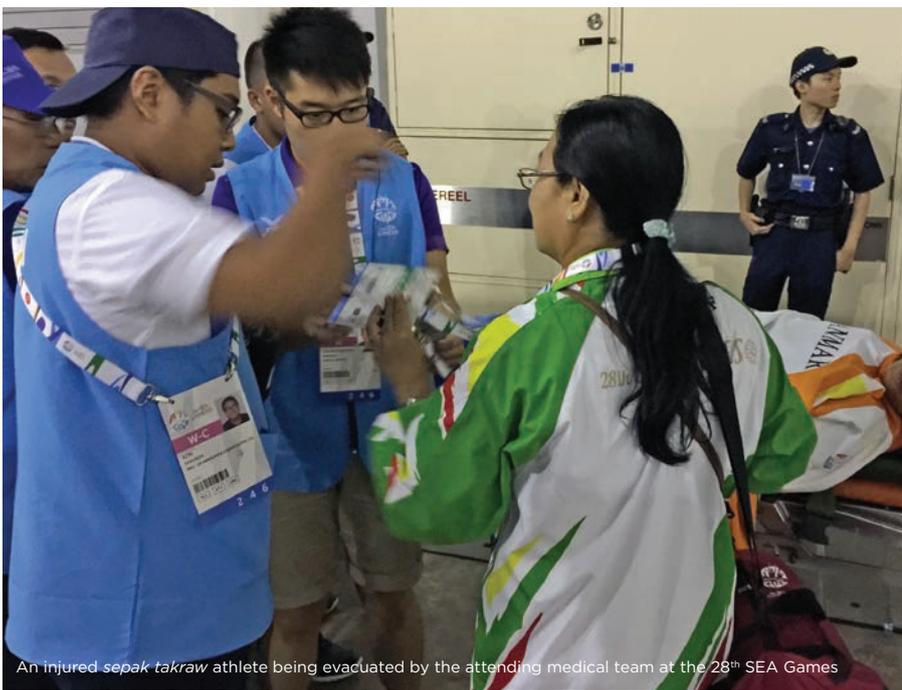
Challenging, yet extremely rewarding. That's how I'd describe being Chief Medical Officer (CMO) of both the Southeast Asian (SEA)

Games and the ASEAN Paralympic Games that were held here last year.

Events of such size and scale require years of complex intergovernmental preparation and coordination — a task much broader than my clinical role as a senior consultant in the National University Hospital's (NUH) Emergency Medicine Department.

The most crucial part of this role was ensuring that medical services provided to the athletes were of high standards. With Singapore's reputation for high medical standards, there was pressure on us to maintain that image.

The medical support teams comprised of personnel from a range of backgrounds — from the public to private sector, and from medical professionals to non-medically trained volunteers — so one of the challenges was ensuring they could work together for a common purpose. Coordination was key to ensuring that there was a smooth flow whenever an athlete was injured or required medical attention.



An injured *sepak takraw* athlete being evacuated by the attending medical team at the 28th SEA Games

To be honest, I didn't have much to worry about.

I knew that all the medical personnel involved were well trained individually, but the level of teamwork and expertise displayed during both Games were outstanding. This was evidenced at one of the SEA Games' diving events, when a diver sustained a serious lung injury as a result of landing awkwardly upon entry into the water. I witnessed first-hand the medical team take prompt and effective action, ensuring that his injuries were tended to, and arranging for him to be rushed to the Emergency Room of a public hospital.

Student volunteers from the NUS Yong Loo Lin School of Medicine filled my heart with pride. The feedback received from the trainers and medical professionals on the ground was extremely positive. Being medically trained, the students understood the medical terms used and were therefore able to react swiftly and appropriately to emergency situations.

Why were these students recruited? Well, when preparing for the SEA Games, there was a need for stretcher-bearers with basic medical training. That was when I thought, "Who better than our very own medical students?" By the time they reach their third year, they would have gone through basic cardiopulmonary resuscitation (CPR) training, making them suitable for the role. Being involved also allowed the students to interact with doctors, nurses, paramedics and physiotherapists from different organisations, giving them a more macro view of the public healthcare system.

What was interesting were the differences in the types of medical support required between the SEA Games and the ASEAN Paralympic Games. At the latter, we had to deal with athletes with disabilities, many of whom had injuries and illnesses to start with. While the level of intensity and hence severity of injuries during the SEA Games was higher than that of the ASEAN Paralympic Games, dealing with the unique features of athletes with disabilities was a whole different challenge.

This experience was just a small way we could give back to our community, and



Assoc Prof Suresh (extreme right) with NUS Medicine student volunteers at a cerebral palsy football match during the 8th ASEAN Paralympic Games

Eye-Opening Experience

Two students reveal what they learnt from their respective volunteer stint at each Games

ALEX LUA

Medical Operations Assistant, 28th SEA Games
Year 5 Medical Student

My experience at the SEA Games gave me a better understanding of how such events are run in terms of the medical services provided. I got a bird's eye perspective on the healthcare system rather than the view from the ground that a doctor would have had.

As a medical student, we learn to care for individual patients, and that would be our only focus at any one time. But being part of the medical team for the SEA Games means having to deal with a situation of a much larger scale. I never realised how much coordination was necessary, and how important the allocation of resources was in the public healthcare system. It's great that I had the opportunity to experience this first-hand.

CAROLYN BALAKRISHNAN

Medical Operations Assistant, 8th ASEAN Paralympic Games
Year 4 Medical Student

I volunteered because I had never seen disabled athletes compete. I usually encounter disabled people simply trying to live their lives as normally as possible, so I thought it would be a good experience to watch them compete and challenge themselves to do more than what the public think they are usually capable of.

The biggest takeaway for me is realising that there are a lot of people around us with disabilities, even if we may not see it. But I saw how even the physically disabled are somehow able to compensate for it, finding the strength and will to train and excel at their chosen sport at such high level, even though it may be much tougher. The disabled are really not all that different from the rest of us.

is especially poignant with 2015 being Singapore's Golden Jubilee. With our involvement in the ASEAN Paralympic Games, both medical professionals and students alike have gained a newfound respect for athletes with disabilities, who can do things many able-bodied people can't! This kind of exposure is in line with the ideals of NUS Medicine, which places a lot of value on compassion and empathy for the disadvantaged.

I feel privileged to have had this

unique experience of being the Chief Medical Officer of both Games, but I am even more glad that we were able to involve our students. Even if such grand events don't come our way in the near future, there are many local events that they can render assistance in future. With the NUS medical students being so highly regarded, giving them this kind of exposure and experience will, without a doubt, be beneficial to them and the community. +

“BEING INVOLVED ALSO ALLOWED THE STUDENTS TO INTERACT WITH DOCTORS, NURSES, PARAMEDICS AND PHYSIOTHERAPISTS FROM DIFFERENT ORGANISATIONS, GIVING THEM A MORE MACRO VIEW OF THE PUBLIC HEALTHCARE SYSTEM”

— ASSOC PROF SURESH PILLAI



PHS EXPANDS ITS SCOPE

The 10th edition of the NUS Public Health Service (PHS) included a slew of new services, such as dental checks

The PHS, a community initiative led by medical students from the National University of Singapore Yong Loo Lin School of Medicine (NUS Medicine), offers free public health screening and encourages participants to take appropriate measures to achieve and maintain good health while managing their chronic conditions.

NUHS PARTNERSHIP

In 2014, the PHS took place in Clementi from 11 to 12 October. That year, the PHS began its partnership with the National University Health System (NUHS), a regional health system, to introduce a more integrated and holistic intervention approach to improve health outcomes.

People with abnormal results were encouraged to see their respective family doctors. Those who did not have family doctors had the option of using one free consultation session with a family physician from Frontier Family Medicine Clinic (Frontier FMC).

Frontier FMC, a Community Health Assist Scheme (CHAS)-registered partner and the primary care partner of the NUHS, is located in City Vibe at Clementi Central. Participants requiring further specialist care can be directly referred to medical institutions under the NUHS umbrella.

Thanks to the partnership, more than 80% of the participants who were referred to Frontier FMC turned up to see a doctor there.

Encouraging 2015 participants to do the same, Dr Amy Khor, Senior Minister of State, Ministry of Health and Ministry of the Environment and Water Resources, said at the launch of the PHS 2015 that “this is very good, as prompt treatment can improve our health outcomes and quality of life.”

ENHANCED SCREENING

2015 marked the 10th anniversary of the PHS. It was held in Clementi over the weekend of 17 and 18 October, and more than a thousand residents attended.

To mark the anniversary, and also because of the community’s encouraging and positive response to outreach efforts, the organisers decided to make this edition of the PHS extra special by rolling out additional services.

Oral health screening services were available to residents, courtesy of 60 dental students from the Faculty of Dentistry at the NUS. Another feature of PHS 2015 was the addition of a convenient, on-site registration for screenings for breast and cervical cancers, the number one and number 10 types of cancer respectively among women in Singapore.

Beyond the two-day screening, PHS 2015 also kick-started a new Young

Health Ambassador Programme, in which a group of secondary school students was coached on ways to encourage good eating and lifestyle habits among their families, friends and the elderly in their community.

As Singaporeans age, the PHS will also evolve to meet the needs of recipients while giving medical students opportunities to engage and interact with the community they are training to serve as eventual healthcare providers. “NUS Medicine graduates must possess more than clinical knowledge. Strong people skills are essential to communicate sensitively and effectively with their patients. Empathy has to be a key trait of a doctor’s demeanour. We want our students to be doctors who understand what a privilege it is to serve, and whose care for their patients is motivated by compassion and respect,” says Associate Professor Yeoh Khay Guan, Dean of NUS Medicine. +



Guest-of-Honour Dr Amy Khor (back row, fourth from right) and NUS Medicine Dean Assoc Prof Yeoh Khay Guan (back row, fifth from right) taking a group photo with some of the student volunteers at PHS 2015



PALM OIL AND HEART PROBLEMS

Palm oil is a very popular type of cooking oil in this part of the world, yet there has never been a systematic review of how it affects cholesterol response in humans — until now

Palm oil was in the news last year.

The thick haze that hung over Singapore from August to October 2015 was blamed on forest clearing in Indonesia. As a portion of the cleared land was for palm oil plantations, there was a call issued to boycott products made with palm oil, especially if the oil originated from these locations.

However, a new study by the National University of Singapore Saw Swee Hock School of Public Health (NUS SSHSPH) has given consumers a medical reason to support the boycott: consuming palm oil leads to higher levels of LDL cholesterol (the bad cholesterol), a factor when it comes to coronary artery disease (CAD).

Using statistical analysis, it was found that intake of palm oil increases LDL cholesterol by 0.24 mmol/L, which may translate to a 6% higher risk of CAD mortality and incidence compared to vegetable oils low in

saturated fats. Palm oil consumption also increased both the total cholesterol (by 0.35 mmol/L) as well as the HDL, or good, cholesterol (by a slight 0.02 mmol/L).

Although palm is a vegetable, palm oil is much higher in saturated fat than many other vegetable oils, such as those extracted from olives and sunflowers.

“Palm oil is widely perceived as neutral and sometimes even promoted as healthy. Even recent scientific reviews have suggested that the evidence for detrimental effects of palm oil on blood lipids is inconsistent,” says Associate Professor Rob M van Dam, from the NUS SSHSPH, who led the study. “This is the first systematic review that clearly shows the effects of palm oil on LDL cholesterol as compared to vegetable oils low in saturated fat.”

When asked what prompted the study, Prof van Dam reveals, “Currently, it [palm oil] is among

the most commonly used cooking oils worldwide. As a result, potential health effects of palm oil would have a large impact on the health of populations.” He adds that some researchers have argued that the saturated fatty acids in palm oil are less detrimental than those from animal sources and that not all clinical trials in humans had shown a detrimental effect of palm oil consumption on LDL cholesterol levels.

The study is important for Singapore as palm oil is widely used here. Many people use blended oil or vegetable oil, both of which are high in palm oil, for home cooking; the same is commonly used in cooked food outlets, such as coffee shops and hawker centres.

Another interesting observation that came out of the study was that consumption of palm oil results in higher HDL cholesterol compared with oils containing trans fats, such as vegetable shortening and partially hydrogenated vegetable oil. Hence, in small amounts, palm oil works well as a replacement for trans fats, while retaining characteristics such as crispness and lightness for foods like doughnuts and crackers.

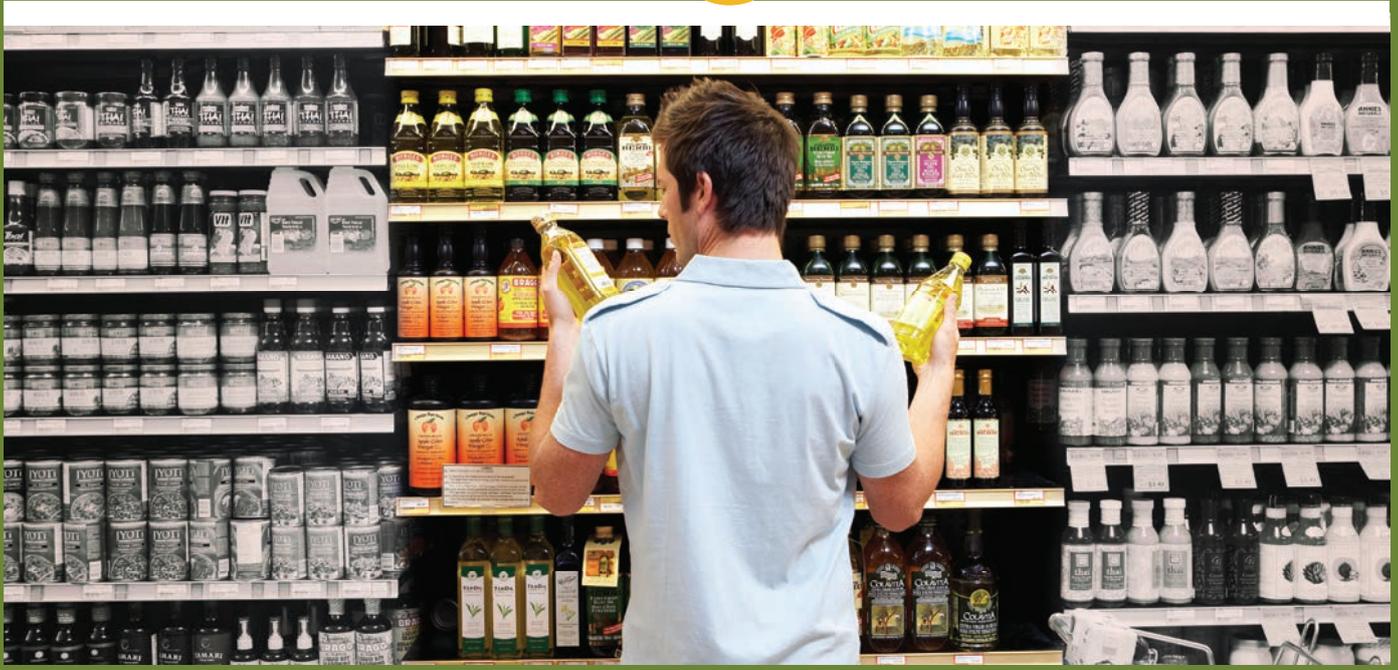
The study, “Palm oil consumption increases LDL cholesterol compared with vegetable oils low in saturated fat in a meta-analysis of clinical trials”, was published in the *Journal of Nutrition* in May 2015, and involved the review of 30 relevant published reports of clinical trials on the effect of palm oil on blood lipids. +

Assoc Prof Rob M van Dam



Vegetable Oil: Read the Label

Vegetable oils are healthy, right? Not necessarily, especially if they contain palm oil. This handy guide will tell you what other key words on the label really mean



1 Vegetable / Blended
When a product is branded as “vegetable oil” or “blended oil”, check the list of ingredients, which appear in decreasing order of amount present. If “palm oil” is first in line, it means that palm oil is the most abundant item in the product, and you should avoid it. Look for healthier alternatives such as canola oil, olive oil, sunflower oil or soybean oil.

2 No cholesterol / Cholesterol free
Using these words is just a marketing gimmick, because vegetable oils do not contain cholesterol; only animal fat has cholesterol. A more useful indication of the healthfulness of the vegetable oil is the amount of saturated fat it contains — the lower, the better.

3 Cold pressed / Refined / Unrefined / Light / Pure oil
“Cold pressed” means the oil was extracted mechanically without the use of heat or chemicals, thus preserving more flavour and phytochemicals. This kind of oil is considered “unrefined”. In contrast, “refined” cooking oils have undergone heat treatment and chemical processing to standardise taste and appearance, and to increase shelf life. Some companies also brand their “refined” oils as “pure” or “light”. However, note that the method of extraction has no substantial impact on the saturated fat content of the oil.

4 Saturated fat / Monounsaturated fat / Polyunsaturated fat
The saturated fat content* of several types of vegetable oils is as follows:

Type of oil	Saturated fat content
Palm	49%
Rice bran	20%
Peanut	17%
Soybean	16%
Olive	14%
Sunflower	10%
Canola	7%

Alternatively, read the nutrition facts label and pick an oil with low saturated fat content.

