SHAPING MEDICINE FOR THE FUTURE
A TERTIARY REFERRAL HOSPITAL WITH AN ACADEMIC MEDICINE MISSION
Equipped with state-of-the-art facilities and experienced staff, NUH is a major referral centre that provides advanced medical care for a comprehensive range of medical, surgical and dental conditions. These include Cardiology, Gastroenterology & Hepatology, Obstetrics & Gynaecology, Ophthalmology, Oncology, Paediatrics, Orthopaedic Surgery, and Hand and Reconstructive Microsurgery.

The Hospital also offers organ transplant programmes for adults (kidney, liver and pancreas) and is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme.

A key member of the National University Health System, Singapore’s first Academic Health System, NUH hosts some of the best and brightest clinical and scientific brains. Our clinicians and scientists work hand-in-glove to achieve major advances in patient care, in areas ranging from cancer to heart diseases, to neurological illnesses and infectious diseases. Thriving research findings translate to new drugs, devices and treatments benefiting our patients.

Working closely with the National University of Singapore Yong Loo Lin School of Medicine, Faculty of Dentistry, the Alice Lee Centre for Nursing Studies and the Saw Swee Hock School of Public Health, NUH plays a pivotal role in nurturing future healthcare professionals and leaders.

In the fast changing healthcare landscape, the Hospital continues to challenge boundaries and chart new territories, bringing hope to patients and enhancing Singapore’s reputation for medical excellence.

More than a million patients pass through the doors of the National University Hospital each year. The countless patient success stories and triumphs over illness continue to motivate our staff to strive to provide the best possible standards in treatment and care.

**FAST FACTS**

NUH opened its doors on 24 June 1985 as Singapore’s first restructured hospital.

NUH is the only public hospital in Singapore to offer adult, paediatric and obstetrics & gynaecology services under one roof.
OUR PATIENTS
OUR FOCUS
At NUH, our patients are the reason for our existence. They inspire us to continue our quest to break new medical boundaries and be at the forefront of quality care and service. Competent staff, advanced systems and considered processes amalgamate to meet the growing needs of our patients.

**Providing better, more efficient care**

As patients today are increasingly seen with multiple co-morbidities, well-coordinated and integrated care is needed and will ensure they are treated in the most appropriate environment.

At the National University Cancer Institute, Singapore (NCIS) and the National University Heart Centre Singapore (NUHCS) – both conveniently housed within the NUH premises – dedicated cancer and heart care are provided to better support the growing complexities of public healthcare needs in Singapore.

Initiatives to transfer selected inpatient treatments and surgeries to the outpatient setting have also benefited patients by reducing hospitalisation costs and treatment time for them. For example, the Outpatient Procedure Centre and OPAT* facility allow patients with specific conditions and infections to be treated via intravenous infusions, without having to be hospitalised. Similarly, the Dengue Outpatient Management (DOM) Clinic helps assess and monitor the conditions of dengue patients who no longer need to be admitted into the hospital.

*Outpatient Parenteral Antibiotic Therapy

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**FAST FACTS**

In 2006, NUH pioneered the publication of clinical outcome data on its website, providing greater transparency and benchmarking against international outcomes.

In 2007, NUH improved patient safety practices by leveraging technology – critical laboratory results are automatically sent to alert the doctors so that intervention can take place promptly.
Hope for patients with Type 1 diabetes
Led by the National University Centre for Organ Transplantation team, the nation’s first simultaneous pancreas-kidney (SPK) transplant was successfully carried out in 2012. The landmark surgery spells new hope for patients who suffer from diabetes and kidney failure. A successful SPK transplant increases the five-year survival rate to more than 90% (35% if without a transplant). More importantly, patients enjoy better quality of life, free from dialysis.

Nabbing diabetic kidney disease early
The Nephrology Evaluation, Management and Optimisation (NEMO) programme was set up in 2011 by NUH and the National Healthcare Group Polyclinics (NHGP) to help patients with early-stage diabetic kidney disease (DKD) reduce their risk of progressing to more advanced stages of the disease. Apart from being diagnosed and treated early, patients under the programme are also closely monitored and guided on managing their condition more effectively. Since its inception, Project NEMO has helped more patients reduce their risk of progressive DKD through drug optimisation.

Removing stomach tumours without incisions
In 2011, our gastroenterologist took the technique a step further with the Master and Slave Transluminal Endoscopic Robot (MASTER), where patients with stomach cancer can have their tumours removed via the mouth without a single incision or scar. While it is currently designed for the removal of tumours, developments of interchangeable effectors will allow MASTER to be used in other surgeries.

Improving patient care and safety with technology
In 2014, NUH became the first local hospital to introduce the macerator, a human waste disposal system that uses single-use bedpans, urinals and vomit bowls instead of reusable ones. The new system helps prevent odours and reduces the spread of infections. It also halves the time nurses need for cleaning duties and allows them to focus on patient care.

FAST FACTS
In 2009, NUH was the first in Asia Pacific to implement an intelligent automated inpatient closed loop medication system that ensures the right dose is delivered to the right patient at the right time. In 2014, plans were rolled out to automate the hospital’s outpatient medication system.

In 2011, a multi-disciplinary team of doctors successfully delivered and separated Asia’s first pair of monochorionic and diamniotic conjoint twins.
Collaborating to provide integrated patient aftercare

Our responsibility towards patients does not end when they are discharged. With our ongoing hospital initiatives and network of partners, we ensure our patients are well taken care of within the community, even after leaving the hospital.

For instance, the NUH2Home programme was developed for patients who still need continued medical care after discharge. The scheme helps patients transit smoothly from the hospital to their home. Spread across six aftercare programmes, the NUH2Home team of doctors, nurses and allied health professionals provides continued care to patients in their homes. Patients, family members and caregivers are taught how to care for and manage the patient’s recovery.

Within the first quarter of implementation, one of its programmes tailored to older adults saw its readmission rates drop by more than half and its patients’ average length of stay shortened by over 60%. More programmes are expected to be implemented in the future so that more patients and caregivers can benefit from the service.

Apart from NUH2Home, patients requiring step-down care can also receive priority admission at a partnering community hospital in the western part of Singapore. Similarly, those with stable chronic conditions like diabetes and hypertension, and who require long-term follow-up care are referred to collaborating family medicine practitioners who adopt the same care protocol. This way, our patients continue to receive quality and timely medical care, in the most appropriate healthcare environment.

FAST FACTS

In 2012, the NCIS/NUH hematopoietic stem cell programme was the first in Asia to be recognised by FACT (Foundation for the Accreditation of Cellular Therapy at the University of Nebraska Medical Center, USA), an international gold-standard accreditation for healthcare institutions offering stem cell transplants.

NUH is the first hospital in Asia to own a complete in-house system of 3D computer modelling and printing capabilities, which enables doctors to reconstruct severely-injured faces more precisely, giving patients an improved chance of looking like themselves pre-trauma.
PUSHING RESEARCH BOUNDARIES
With its strong research culture, NUH healthcare professionals are constantly pushing the boundaries of what they know to break new ground – from conducting research to better understand patient conditions, to pioneering treatment therapies and procedures.

**Reversing brittle bone disease in the womb**

A team of experts from the Obstetrics & Gynaecology and Paediatrics departments was part of an international collaboration to treat two babies with Osteogenesis Imperfecta (OI) or brittle bone disease, by infusing bone-forming stem cells through the womb. The NUH team had carried out the first infusion on one of the children, a baby girl from Taiwan, in 2009. She was given a second dose the following year at age one. With both children doing well today, this research finding spells hope for unborn babies with brittle bone disease.

**Less is more for children with cancer**

Thanks to a new chemotherapy treatment protocol, children with acute lymphoblastic leukaemia (ALL) are now spared serious complications such as organ damage. Their cure rate and quality of life are improved. The multi-centre study in Singapore and Malaysia, led by the NUH Department of Paediatrics, found that 86% of the patients can be given a significantly lower dose of chemotherapy without affecting their long-term cure rate, also reducing treatment costs for the patients and their families. Today, our overall survival rate for childhood ALL stands at 91 per cent, which is comparable to the 94 per cent ALL survival rate at the world-renowned St Jude’s Children’s Research Hospital.

**Providing insights into population health**

Preliminary results of a five year international study by the NUHCS have shown that heart failure hits Asian patients at age 60, a decade earlier than their western counterparts. Results evaluated that the study, which started recruiting patients in October 2012, also revealed a very high rate of diabetes and hypertension amongst heart failure patients in Singapore and Malaysia. These rates are also higher than those in the other Asian countries studied.

The researchers hope the study findings will eventually help doctors understand the causes of death among heart failure patients in Asia and whether some of these deaths may be preventable.

**The impact of malnutrition**

A study led by Dr Lim Su Lin, chief dietitian at NUH, showed that malnutrition leads to adverse outcomes apart from the consequences of the disease process. These include substantially longer hospital stays, as well as increased readmission rates, mortality and hospitalisation costs, compared with well-nourished patients of a similar disease profile. The research led to the development of a new screening tool called the 3-Minute Nutrition Screening tool, so that malnourished patients can be identified and treated in a timely manner. Dr Lim’s study won the gold award in the Singapore Allied Health category at the Singapore Health & Biomedical Congress in 2011.

**FAST FACTS**

NUH raised the bar in local patient care and safety standards by achieving the Joint Commission International accreditation in 2004. We have since been re-certified three times, also becoming the first local hospital to be accredited under Academic Medical Centre (AMC) Standards for medical education and human subjects research in 2013.

In 2008, Associate Professor Yeoh Khay Guan from the Department of Gastroenterology & Hepatology led a project to develop a scorecard to help predict Asians’ risk for colorectal cancer, the most common cancer in Singapore.
NURTURING TOMORROW’S HEALTHCARE PROFESSIONALS
NUH upholds the time-honoured tradition of mentoring and training students and plays a leading role in nurturing Singapore’s future healthcare professionals.

**Residency programmes**

In 2010, NUH welcomed the pioneer batch of medical and nursing residents in Singapore, followed by its first batch of pharmacy residents in 2012.

The NUHS Residency Program* provides postgraduate medical training. It offers a rich educational experience as our doctors are trained in evidence-based medicine and have the opportunity to handle a diverse casemix of medical conditions. It also provides a solid foundation for doctors keen on a career in academic medicine. The programme is undergirded by organisational values of teamwork, respect, integrity, compassion and excellence to help groom compassionate and caring healthcare leaders. Medical residents are strongly encouraged to engage in community health services and humanitarian work.

Our year-long nursing residency programme also offers an evidence-based curriculum that supports our new graduate nurses in their transition to become competent and confident professionals. Designed with the aim of developing effective clinical nursing leaders for the future, trainees undergo interactive learning on clinical scenarios relating to core topics such as leadership, patient outcomes and professional roles. Results from other centres have shown that such programmes have enhanced job satisfaction, clinical leadership and retention.

The pharmacy residency programme is the latest addition to the various post-graduate training initiatives at NUH to help meet the growing demand for higher quality care. As part of their training, residents go through clinical rotations covering different specialties, also learning essential principles of clinical pharmacy such as medication safety and practice leadership. They are also given the opportunity to expand their scope of practice skills by participating in research projects. These will help equip aspiring clinical pharmacists to better care for patients in an acute care setting and as members of a multidisciplinary care team.

**Collaborative training**

To help build up a strong culture of effective team-based patient care, we also run inter-professional training programmes for our staff. An example is TeamSTEPPs**, an in-house, evidence-based course that focuses on patient safety and sentinel event risk prevention. Using an array of interactive teaching strategies such as clinical scenario simulation and role plays, foundational concepts such as teamwork, leadership, situation monitoring, mutual support and communication are taught so that doctors, nurses and allied health professionals all develop a common understanding of the importance of delivering safe patient care outcomes efficiently.

NUH is also home to two of Asia’s first purpose-built training facilities of their kind, adding to the optimal learning experience we seek to provide healthcare professionals.

At the Centre for Reproductive Education and Specialist Training (CREST), enrolled clinicians, nurses and embryologists can develop their skills and expertise in Assisted Reproductive Technology. With a fully-equipped simulated fertility laboratory and ‘live’ feed facilities, CREST provides a conducive environment for hands-on learning and proper training to meet the growing demands for fertility treatments in Asia.

Likewise, the Critical Care Nursing Simulation Laboratory is used to train post-graduate nurses and doctors specialising in this area of care. The laboratory houses exact replicas of a typical High Dependency and Intensive Care Unit, complete with a high-fidelity mannequin that can simulate most critical medical conditions and ‘respond’ to the treatment rendered. It is also able to receive real-time video feeds to facilitate practical training.

*Accredited by the Accreditation Council for Graduate Medical Education International, a USA-based board responsible for the accreditation of postgraduate medical education training.

** Team Strategies and Tools to Enhance Performance and Patient Safety

**FAST FACTS**

As part of the National University Health System, NUH is the principal teaching hospital for the National University of Singapore’s Yong Loo Lin School of Medicine (YLL SoM) and Faculty of Dentistry (FoD).

NUH led the way in evidence-based nursing care in Singapore in 2009. This includes the introduction of allocation of nursing resources based on patient acuity and the collaboration with Joanna-Briggs Institute, Australia.
Vision
Shaping Medicine for the Future

Mission
Advancing Health by Integrating Excellent Clinical Care, Research and Education

Values
Teamwork • Respect • Integrity • Compassion • Excellence