



Unparalleled
**Cancer
Care**





Director's Foreword

Cancer care is complex and costly. The burden on patients and their families can be significant. The sufferings are often both physical and emotional. At the National University Cancer Institute, Singapore (NCIS), we believe that **Every Patient Matters**. Throughout our patients' journey with cancer, regardless of care setting, our multi-disciplinary teams will provide holistic patient-centric coordinated care. At the Yong Siew Yoon Wing in the National University Hospital (NUH) Medical Centre, we have a one-stop facility with all essential services accessible for our patients under one roof. Working with partners in our regional health network, our patients benefit from continuity of care in the community and their homes in an integrated fashion.

The survival of our patients has greatly improved. Through patient education, disease support groups and supportive care programmes offered at our Health Resource Centre, we empower patients and their families to better cope with their disease. Our public outreach programmes raise cancer awareness and enhance cancer screening efforts.

Despite improvements in treatment and clinical outcome, many cancers are still not curable. At the NCIS, we embrace the challenge of finding new cures for cancer through innovative and cutting-edge research. We focus on early access to novel treatments through clinical trials, personalised cancer treatment through genetics, and harnessing the immune system to treat cancer.

To ensure sustainability of our anti-cancer efforts, we are heavily involved in training the next generation of cancer warriors to front the fight against cancer.

The NCIS is one of two National Specialty Centres in Singapore dedicated to the treatment of patients with cancer. As part of the National University Health System (NUHS), the NCIS is focused on excellence in clinical care, research and academic leadership.

These efforts and concepts are encapsulated in our Total Cancer Care Philosophy, which tackles cancer through a multi-pronged approach with the patient at its core. With this fundamental underpinning, the NCIS is built to last through the 21st century and beyond.

Associate Professor Chng Wee Joo
Director
National University Cancer Institute,
Singapore (NCIS)

The National University Cancer Institute, Singapore (NCIS)



Who We Are

The National University Cancer Institute, Singapore (NCIS) is a national specialist centre under the National University Health System (NUHS) and the only public cancer centre in Singapore that treats both paediatric and adult cancers in one facility.

Focused on a patient-centric approach combining sound medical knowledge and cutting-edge technology, the NCIS weaves together the expertise of medical professionals through multi-disciplinary tumour groups. These span across brain, breast, colorectal, gynaecologic, haematologic (adult & paediatric), head and neck, hepatobiliary, musculoskeletal, thoracic, upper gastrointestinal and urologic cancers.

Working together cohesively, our dedicated team of specialist doctors, nurses, allied health and other healthcare professionals is committed to providing a seamless delivery of holistic care for each and every patient in the prevention, treatment and cure of cancer.



What We Do

The goal of the NCIS is to provide comprehensive yet personalised care for each and every patient, from cancer awareness and prevention to diagnosis and treatment, complemented by long-term supportive care, with our patients at the heart of our programmes.

The NCIS aims to be one of the leading comprehensive cancer centres in the world, focusing on four key areas:

- Providing outstanding patient care
- Advancing research discoveries from the laboratory into better treatments
- Training healthcare professionals and scientists
- Educating the public

Besides improving on the quality of care provided to cancer patients, the NCIS is committed to training and nurturing the next generation of healthcare professionals in the field of oncology. The NCIS also works closely with scientists from the Cancer Science Institute (CSI) of Singapore, a national research Centre of Excellence, striving towards the advancement of cancer medicines which can be translated into better treatment outcomes for our patients.

The NCIS Promise

Improving Patient Care – “Every Patient Matters”

The NCIS is fully dedicated to its mission of delivering the best care to each and every patient and their loved ones. The fight against cancer may be inevitable, and the quest to cure all cancers still a stretch away, but we are committed to changing the course of cancer from something deadly to something manageable by paving the way for a brighter future through groundbreaking research initiatives for cancer patients.

Some of the innovative breakthroughs we have achieved to date consist of personalised cancer treatments, adopting best treatment practices via genomic profiling of tumours, immunotherapy, and cellular therapy.

Over the years, we have also developed the ability to perform early phase clinical trials by building on the appropriate infrastructure and clinical trial teams. Currently, we have established a dedicated Phase I clinic as well as an inpatient set-up for patients on clinical trials.

We have also forged useful partnerships and track records with international and regional pharmaceutical companies to expand our portfolio of clinical trials.

Beyond just providing clinical care to our patients, the NCIS recognises the emotional distress cancer patients face, which is the reason behind our holistic approach to treatment methods. One example is the implementation of palliative home-care therapy accompanied by supportive programmes and services provided at our Health Resource Centre (HRC).

Moulding the Future – Education, Training & Community Outreach

With the constant paradigm shift in cancer care and management, the NCIS continues to stay abreast by grooming and honing the next generation of cancer warriors via various educational programmes and training opportunities.

Through regular community outreach programmes, we endeavour to raise public awareness of the disease as well as impart critical cancer knowledge to key segments of the general public.



Advancing Clinical Outcomes through Research

Translating research into knowledge empowerment to advance the level of quality care for our patients is another of our key missions. The NCIS’ research principle aims to establish proof-of-concept and efficient treatment modalities in humans, especially in the Asian phenotype, and to implement health services research. The Department of Haematology-Oncology was thus incepted for the development of novel drugs and clinical trial phases for new drugs and treatment methods.

The Haematology – Oncology Research Group (HORG)

The HORG is the research arm of the NCIS. Comprising of a team of committed haematologists and oncologists, the team strives to provide the best treatment options and care for patients through continuous research of cancers endemic to Asia.

In the area of pharmacogenetics, the HORG is established as one of several global teams studying inter-ethnic variability in anti-cancer drugs. With a strong background in clinical pharmacology and molecular biology fused with technology and clinical expertise, the HORG also focuses on novel clinical trials, particularly in early-phase drug development.

The HORG is part of the Cancer Therapeutics Research Group (CTRG), an Asia-Pacific Medical Oncology co-operative group comprising member institutions in Singapore, Australia, Hong Kong, Korea and Taiwan, providing opportunities to conduct group studies. Through this group, the NCIS is networked with the Mayo Phase 2 Consortium, which provides access to novel compounds offered through the National Cancer Institute – Cancer Therapy Evaluation Program (NCI-CTEP) for proof-of-concept studies, as well as the Breast International Group (BIG) in Belgium. These liaisons help initiate multi-centre studies to test prognostic and predictive assays and novel therapies on a larger scale.



Comprehensive Services

The NCIS offers a broad spectrum of medical services ranging from prevention, screening, diagnosis, treatment, rehabilitation and palliative care to provide our patients with the best possible care.

Department of Haematology-Oncology

Comprising the Division of Medical Oncology and the Division of Clinical Haematology, the Department is dedicated to delivering all-rounded holistic care in all malignancies by practising evidence-based and comprehensive oncology in a collegial atmosphere under the expertise of highly trained specialists and oncology nurses.

The Department offers:

- Access to new therapies on clinical trials, ranging from the testing of novel drugs to participation in international multi-centre trials
- Cancer Risk Assessment and Genetics Clinic
- Haematopoietic Stem Cell Transplant (HSCT)
- Inpatient care
- Outpatient consultations and treatment for adult malignancies
- Palliative care
- Surveillance and long-term care for cancer survivors

Department of Radiation Oncology

The Department of Radiation Oncology offers state-of-the-art radiation therapy techniques in the treatment of cancer. Its capabilities include:

- 3D Conformal Radiation Therapy
- Electron Therapy
- High Dose Rate (HDR) 3D Brachytherapy for gynaecological, breast, rectal and prostate cancer
- Image Guided Radiation Therapy (IGRT)
- Intensity Modulated Radiation Therapy (IMRT) / Volumetric Modulated Arc Therapy (VMAT)
- Stereotactic Radiosurgery (SRS) / Stereotactic Body Radiation
- Radiation Therapy (SRT)

Division of Gynaecologic Oncology

The Division of Gynaecologic Oncology offers comprehensive, state-of-the-art and holistic multi-disciplinary care for women with gynaecological/pelvic cancers and pre-malignancies of the female genital tract.

The Division offers services ranging from cancer care and advanced pelvic surgery to the diagnosis and management of pre-invasive diseases. Their spectrum of care covers:

- Cold coagulation, laser and LLETZ ambulatory treatment for pre-malignancies
- Digital colposcopy
- Gynaecologic Robot-Assisted Cancer and Endoscopic Surgery (GRACES) – the leading gynaecological robotic surgery programme in Southeast Asia
- Radical and reconstructive surgery
- Risk evaluation, screening and prevention
- Totally Empowered, Actively Living (TEAL) Patient Support Group
- Total lymphoedema care

Division of Paediatric Haematology-Oncology

The Division of Paediatric Haematology-Oncology runs the Viva-University Children's Cancer Centre, which provides the following medical services and facilities for young cancer patients:

- Child-friendly one-stop centre for children diagnosed with cancer
- One-stop centre for both inpatient and outpatient care
- Twelve general beds and a five-room marrow transplant suite

Active in research, the Division conducts studies in areas such as sarcomas and haematopoietic stem cell transplants using cord blood stem cells and natural killer cell transplants.

Division of Surgical Oncology

The Division of Surgical Oncology has a comprehensive range of operations for cancer. Procedures include radical surgery for advanced cancer, minimal access and robotic surgery as well as conservative, reconstructive and restorative surgery.

Transoral robotic surgery (TORS) is a new surgical paradigm managing patients with head and neck cancers. Its primary advantage lies in the ability to resect tumours of the oropharynx, larynx or hypopharynx transorally, without the need for open neck or mid-line mandibulotomy approaches. This is accomplished via robotic technology, which allows a 360-degree freedom of movement of the operating instruments. This requirement is necessary when operating in tight cavities such as the oropharynx or larynx. Presently, TORS is offered to a select group of head and neck cancer patients based on the size and location of their tumours.

Division of Oncology Nursing

Our oncology nursing professionals are passionate about delivering quality care to our patients in various ways, including:

- Disease prevention
- Health screening and patient education
- Outpatient consultation clinics operated by Advanced Practice Nurses (APN)
- Palliative care management
- Psychological screening services provided by trained nurse counsellors
- Supportive care programmes e.g. Art therapy, Music therapy, Yoga classes
- Transitional care (From Hospital to Home)

Division of Oncology Pharmacy

The Division of Oncology Pharmacy provides an extensive range of services to haematology-oncology patients as well as patients from the rheumatology and renal services, who require immunosuppressant therapy.

The Division provides:

- Clinical drug trial handling and support
- Drug information service
- Filling and dispensing of oral and parenteral anti-cancer drugs and related supportive therapy
- Specialised and individualised patient counselling on anti-cancer therapies
- Specialised oncology drug compounding and distribution services
- Reviewing and monitoring of oncology drug orders

Provision of Services to other Restructured Hospitals

Fully equipped with its broad range of facilities and all-inclusive expertise, the NCIS also provides a wide-range of cancer services to other restructured and community hospitals.



Research and Clinical Trials

Close research collaborations between staff at the NCIS and scientists are instrumental towards our mission of providing our patients with high standards of cancer care. The partnership offers access to the latest chemotherapy regimens and novel molecular targets for cancer treatment even before they are available in most physicians' offices.

A parallel goal is to ensure effective, efficient and affordable cancer care, thus the strength of our cancer research is founded on the following pillars of established clinical trials infrastructure – Phase I expertise in research studies, a strong research culture and synergistic collaborations with translational and investigational units involved in research.

Research Achievements

Department of Haematology-Oncology – Seeking Breakthroughs, Advancing Treatment Outcomes

The Department's latest breakthroughs include the introduction of two new clinics catered for patients with refractory cancers; screening of Telomerase-targeted drugs, which could potentially lead to better control of chronic inflammation in cancer and eventually lower healthcare expenses; Phase II development of Singapore's first cancer drug SB939, an inhibitor of histone deacetylases (HDAC) that is implemented in tumourigenesis; as well as the discovery of a combination drug set to reduce drug dosage, side effects and costs to patients in the treatment of breast cancer.

The Department is also currently conducting pioneer novel studies helmed by the trained expertise of their clinician scientists. In addition, a programme designed to study the genetics of patients and tailor treatment processes according to molecular aberrations in the tumour is currently underway, under the leadership of Adjunct Associate Professor Goh Boon Cher and supported by his team of six Phase I trained medical oncologists.

Patient recruitment for patients with refractory breast cancer is also ongoing for the NK cell therapy programme, a revolutionary breakthrough that utilises the body's immune system via natural killer cells to fight cancer.

Department of Radiation Oncology – Uncovering Alternatives, Enhancing Patient Experience

In the treatment of early stage breast cancer, Accelerated Partial Breast Irradiation (APBI) is an option for selected patients. APBI can be delivered in five days without compromising treatment outcomes, unlike conventional radiation therapy which requires six weeks. The Department is the first in Singapore to evaluate APBI in a clinical trial and currently offers this as a routine clinical service.

The Department is also an active participating research centre for the NRG Oncology Group, an international collaborative clinical research group for radiation therapy trials.

Division of Gynaecologic Oncology – Pitching for Precision

To date, the Division has conducted a robust screening test based on a protein identification method from ovarian cyst fluid that can distinguish between benign and malignant tumours. The Division is also engaged in research that has developed pre-clinical and translational pipelines of ovarian cancer stem cells, which can be used to evaluate responses to therapeutic agents. Divisional research activity has helped to create a molecular stratification scheme and scoring system for ovarian cancer patients based on gene signatures that have significant clinical potential in therapeutic triage.

The Division undertakes regional and global collaborations in the domains of basic scientific investigation and clinical research to expeditiously bring to bedside, therapeutic options for women living with cancer and seeking care at the NCIS.

Division of Paediatric Haematology-Oncology – Centre of Clinical and Research Excellence

The Division is internationally recognised as a centre of clinical and research excellence. Its recent breakthroughs include a gene identification foretelling the survival likelihood of paediatric leukaemia patients at the onset of diagnosis as well as the development of a personalised cancer treatment protocol to improve the cure rate of

childhood leukaemia. It is a joint study led by specialists from the Division of Paediatric Haematology-Oncology in the NCIS and Malaysia.

The Division has been conducting a leukaemia clinical trial since 2003 with a cure rate exceeding 85 per cent, making it one of the leading centres in the world. As a whole, the Division works closely alongside multi-disciplinary teams in the management of leukaemia and cell-based therapies to provide seamless care for our patients.

Division of Surgical Oncology – Early Detection via Multi-Institutional Approach

Under the leadership of Associate Professor Yeoh Khay Guan, a multi-institutional team embarked on a five-year national project for early detection of stomach cancer by conducting simple tests utilising biomarkers that can reveal the presence of the disease at an early stage and vastly increase the chances of survival. In 2014, the team achieved a breakthrough in the project through the detection of the CD44 variant in gastric cancer cells and is now working on developing a drug that will zoom in on that specific protein variant to combat cancer in conjunction with chemotherapy.

Division of Oncology Nursing – Research-Oriented, Dedicated Cancer Care

The goal of the Division is to provide the best possible care to its patients through the latest scientific and medical evidence as well as cohesive collaborations with physicians to provide all-rounded care from diagnosis to cancer survivorship.

Division of Oncology Pharmacy – Practice-Based Research, Internationally Accredited

Pharmacists from the Division handle and support both investigator-initiated and pharmaceutical industry-driven oncology clinical drug trials conducted in the NCIS.

Clinical pharmacy and pharmacy practice-based research are also conducted and our pharmacists have been internationally accredited for their academic contributions to the field, having presented their research papers in conferences both locally and abroad.



Educational Programmes

Another key mission of the NCIS is the education, training and mentoring of the next generation of healthcare professionals in the field of oncology. The NCIS aspires to be the leading medical hub in the region and does so by inviting promising individuals to be trained and mentored by our specialists in their respective sub-specialties so that they can return home and impart their medical knowledge with their local professionals.



Department of Radiation Oncology

The Department of Radiation Oncology is the only accredited radiation oncology training centre for the Royal Australian and New Zealand College of Radiologists outside of Australia and New Zealand.

It regularly holds comprehensive training programmes to ensure that both local and regional specialists are updated with the latest advancements in the field.

Specialist Training

Beyond medical school and housemanship, doctors at the NCIS keep themselves abreast of general changes in medicine, particularly areas relevant to their practice so as to provide our patients with up-to-date medicine and the best quality care. The NCIS regularly conducts Continuing Medical Education (CME) talks to maintain, develop or increase the knowledge, skills and professional performance of our doctors.

Department of Haematology-Oncology

The Department is accredited by the School of Post Graduate Training, National University of Singapore (NUS) and the Academy of Medicine, for their sub-specialty training of haematology and medical oncology in Singapore. Training offered by the Department covers specialty training in haematology and medical oncology as well as clinical fellowships in haematology and/or medical oncology.

The NCIS is an accredited site for subspecialty training in Palliative Medicine. The Department of Haematology-Oncology also provides Palliative Medicine training and clinical attachments for specialists-in-training from other disciplines (cancer and non-cancer). Such emphasis on palliative care initiates early palliative management of patients' symptoms and overall holistic needs.



Division of Gynaecologic Oncology

The Division is firmly committed to the continuous training and upgrading of its medical professionals at all levels through rigorous training programmes for undergraduates, residents and specialists. Its 12-month Subspecialty Fellowship Programme in Gynaecologic Oncology has a four-year waiting list.

Division of Paediatric Haematology-Oncology

The Division is the centre of excellence for the Viva Foundation for Children with Cancer (www.viva.sg). As part of its training efforts to improve cure rates of childhood cancers in Asia, the Division offers a one-year Fellowship in Paediatric Oncology, a Diploma in Paediatric Cancer Care, as well as a paediatric oncology nursing Diploma for both local and ASEAN nurses under their list of training programmes.





Division of Surgical Oncology

The Division offers a surgical fellowship in upper gastrointestinal surgery to train surgeons in the evaluation and treatment of diseases in the gullet, stomach and small intestine as well as in the surgical treatment of obesity. The six to 12-month programme incorporates both clinical and research components in a multi-disciplinary environment.

Division of Oncology Nursing

Unlike other fields, Oncology Nursing is considered a specialised trade due to the nature of the disease and the continuous care for patients along their journey with cancer.

Oncology nurse clinicians share their knowledge and expertise by acting as adjunct faculties in local institutes of higher learning. They are also speakers at local and international conferences, conducting internationally accredited in-house courses for novices, and mentoring young nurses.

Division of Oncology Pharmacy

The Division conducts certificate courses on aseptic dispensing and safe handling of anti-cancer drugs as well as aseptic dispensing validation tests for both local and foreign pharmacy personnel.



Community Outreach and Public Education

Besides training doctors, the NCIS also educates Singaporeans about cancer so that with increased awareness, more people can adopt and practise preventive measures to detect the disease in its early and most treatable stage. Some initiatives spearheaded by the NCIS include the production of cancer educational materials, and collaborations with Non-Governmental Organisations (NGOs) and groups such as the Singapore Cancer Society (SCS) and Breast Cancer Foundation (BCF) to jointly organise forums, health fairs and talks.

Patient-Centric Facilities

The NCIS has come a long way since its first ambulatory oncology centre at the NUH in September 1988. Today, the NCIS boasts a broad spectrum of substantial capabilities and facilities spanning over three floors of the NUH Medical Centre, providing one-stop holistic and comprehensive care in the management, prevention and cure of cancer for both adult and paediatric oncology patients.

Housed alongside other outpatient medical specialisations at the Medical Centre, the NCIS brings together the expertise of multiple clinical departments to provide multi-disciplinary cancer care via a convenient and accessible one-stop facility, allowing for more efficient consultations and treatment processes to be carried out under one roof.



Breast Care Centre

The Breast Care Centre is a one-stop centre providing dedicated diagnosis and treatment for diseases of the breast with services such as breast imaging, breast surgery, as well as breast preservation and breast reconstruction.

Colorectal Centre

The Colorectal Centre is a one-stop centre that provides holistic care for patients with conditions affecting the colon, rectum and anus. With the availability of the Da Vinci Robotic system, patients have a choice between laparoscopic ("key-hole") or robotic surgery.

Radiation Therapy Centre

The Radiation Therapy Centre (RTC) is an outpatient centre providing radiation therapy treatment and specialist consultation for the management and care of both adult and paediatric cancers.

It currently houses three Linear Accelerator machines and a brachytherapy machine, with additional capacity for future expansion. The RTC is also home to outpatient consultation rooms, teaching hubs, a CT simulation room and treatment planning room.

Cancer Centre

The Cancer Centre is home to specialist outpatient clinics providing expert advice and care for cancer conditions. It has a total of 42 outpatient consult rooms including two VIP consult rooms for VIP and VVIP patients, with a separate area for their entourage or security.

The **Chemotherapy Centre** provides infusion and oral therapy treating adult oncology patients in an outpatient setting and is currently equipped with capacity for up to 44 treatment chairs.

The **Stem Cell Therapy Centre** caters specifically to patients diagnosed with benign and malignant blood cancers and Haematopoietic Stem Cell Transplant needs.



Viva-University Children's Cancer Centre

The Viva-University Children's Cancer Centre (VUCCC) is a one-stop centre housing all paediatric cancer patients. With a team of dedicated and specialised paediatric oncology nurses, the centre is committed to meeting the standard of care required for managing patients undergoing chemotherapy and bone marrow transplant.

Pharmacy @ NCIS

The Pharmacy @ NCIS is equipped with clean room facilities for chemotherapy drug preparation for patients in both the outpatient cancer centre and inpatient wards. Specialised drug compounding and provision and distribution services are also offered at the Pharmacy @ NCIS. In addition, patient counselling of new anti-cancer therapies and management of associated symptoms is also administered.

Oncology Wards @ NUH

The NCIS operates three oncology wards within NUH. They are Wards 56 and 58 located in the Main Building and Wards 8A and 8C (an extension of Ward 8A), located at the Kent Ridge Wing.



Health Resource Centre

The Health Resource Centre (HRC) is an avenue for cancer patients and their caregivers to learn more about their conditions and attend various supportive care programmes to help them cope better with the disease.

The NCIS Concierge

The NCIS Concierge offers assistance to foreign visitors seeking cancer treatment in Singapore. Under the NCIS Concierge, a myriad of services, professional care and prompt support are delivered to all foreign patients and their families.

Care That Goes Beyond

At the NCIS, we seek to embrace and empower our patients through various supportive care programmes and activities so that they can better cope with their battle against cancer.

CancerLine

Operated by trained NCIS oncology nurses, CancerLine is a free and confidential counselling hotline assisting patients, caregivers or members of the public with cancer-related enquiries.

Patient Counselling

Counselling sessions are available for patients at the NCIS to support them through their journey with cancer and ease their coping of the disease and its side effects.

Supportive Care Programmes

The Health Resource Centre (HRC) is part of the NCIS' holistic treatment approach for patients and their caregivers by providing them with an avenue to learn more about how to cope with their condition.

Regular programmes (like cooking demonstrations, yoga and art workshops) help patients and their caregivers cope with the disease better throughout and beyond their journey at the NCIS.



Support Groups

Currently, there are at least six support groups at the NCIS where patients can seek empathy and pillars of strength in sharing sessions and group networking activities.

- Breast Support Group
- Gynaecologic Oncology Patients TEAL Support Group
- Haematopoietic Progenitor Cell Transplantation (HPCT) Support Group
- NPC (Nasopharyngeal Cancer) oneHeart Support Group
- Myelodysplastic Syndrome (MDS) Support Group
- Multiple Myeloma (MM) Support Group

More support groups are currently being formed.

The NCIS Volunteer Group

Volunteers from all walks of life, come together to lend a hand of friendship and emotional support to cancer patients. These volunteers frequent our outpatient clinics and spend time with patients to lift their spirits and offer a listening ear.





Contact Information

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Getting to NCIS

Kent Ridge MRT Station (Circle Line)

Commuters can transit at the Buona Vista MRT Interchange and alight two stops after at the Kent Ridge Station. At the station, take Exit C which leads to the NUH Medical Centre. The NCIS' outpatient facilities are located on Levels 8 to 10 of the NUH Medical Centre, and are accessible via Lift Lobbies B, C and D.