

MEDIA RELEASE

17 September 2022

A NEW HOPE FOR SELECTED PATIENTS WITH STAGE 4 COLORECTAL CANCER

Selected colorectal cancer patients with extensive cancer spread may have the option of liver transplantation at the National University Centre for Organ Transplantation as cure, based on stringent guideline formulated by NUHS clinicians

Singapore — For the first time in two years, Mdm Lim Gek Meng who suffered from terminal colorectal cancer returned home from the hospital cancer-free. This was made possible when clinicians from the National University Health System (NUHS) led a multicentre initiative – across the National University Hospital’s (NUH) National University Centre for Organ Transplantation (NUCOT) and the National University Cancer Institute, Singapore (NCIS) – that changed the management of patients with colorectal liver metastasis, improving the chances of survival for patients such as Mdm Lim.

Associate Professor Glenn Bonney, Consultant in NUH’s Division of Hepatobiliary & Pancreatic Surgery, Department of Surgery, as well as the Adult Liver Transplantation Programme, NUCOT, who led the initiative, was first informed about Mdm Lim’s case at an internal tumour board meeting held within the NUHS cluster. It occurred to him and the team that Mdm Lim, a Stage 4 colorectal cancer patient with extensive spread of the cancer to her liver, could potentially undergo liver transplant surgery to save her life, using a procedure that had never been done in Singapore for this condition. Leading an international consensus document, A/Prof Bonney and his colleagues in the NUHS along with world leading experts in the field formulated a practical patient management algorithm of 44 criteria, which define the specific patient groups and the management of these patients, as well as the specific tests and classifications that are needed to treat them – from anti-cancer treatment to transplant and downstream care after transplantation. The consensus guideline was published in the scientific journal *Lancet Gastroenterology and Hepatology*¹ in September 2021.

Colorectal cancer is the most common cancer in men and second most common cancer in women in Singapore. The liver is the most common site of metastasis and unfortunately, the majority of these patients present with disease that is not amenable to upfront surgery as the large volume of tumour in the liver means that there would be too little remaining liver to sustain life following surgery. Conventionally, these patients would have no further options for cure and the current treatment is with chemotherapy to control and prevent spread of disease. One option that can be offered is liver transplantation.

A/Prof Bonney, who is also a Consultant in the Division of Surgical Oncology, NCIS, said, “Historically, there has been a concern for liver transplantation in such patients as the immune suppression required after transplantation may increase the risk of the cancer relapse. In the

¹ [https://www.thelancet.com/journals/langas/article/PIIS2468-1253\(21\)00219-3/fulltext](https://www.thelancet.com/journals/langas/article/PIIS2468-1253(21)00219-3/fulltext)

last two decades, multiple studies from leading Western centres, have shown that liver transplantation in this setting is possible with careful patient selection.” The consensus guideline by the NUHS team helps the medical and surgical teams identify a selected group of patients with metastatic colorectal cancer who meet the specific criteria and may benefit from liver transplant.

Dr Mark Muthiah, Consultant and Medical Director of the Adult Liver Transplantation Programme at NUCOT, one of the authors of the study, said, “The biggest risk to these patients is the risk of the cancer recurring after the transplant. The clear algorithm determined by the consensus group helps doctors select patients who can avoid this.” Dr Muthiah is also Consultant in the Division of Gastroenterology and Hepatology at NUH.

“The biological behaviour of the cancer to therapy is a crucial factor in the evaluation for eligibility to transplant. The criteria also define the importance of patients being treated by a multidisciplinary team with good communication among the various clinicians. If patients are to undergo treatment, and their cancer responds well, defined with specific criteria, they may be suitable to undergo living donor transplant,” said Dr Raghav Sundar, Consultant, Department of Haematology-Oncology, NCIS.

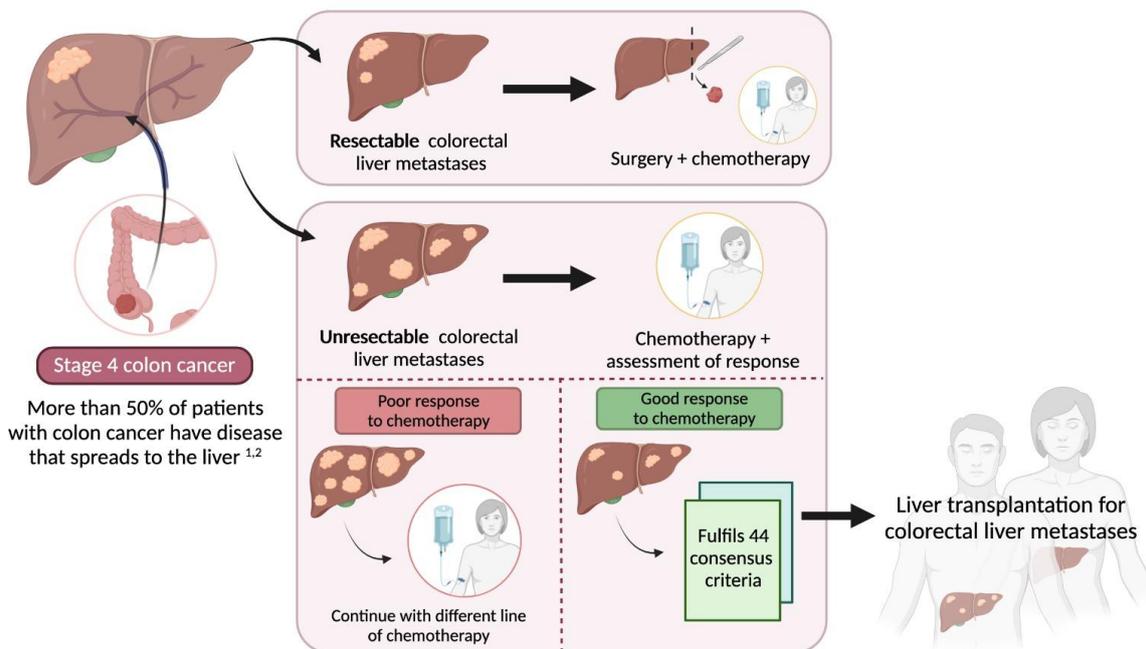
Mdm Lim is a 61-year-old woman who was diagnosed at the Ng Teng Fong General Hospital with Stage 4 colon cancer that had spread extensively to the liver. She received chemotherapy, which was the standard treatment protocol, with the aim of limiting further spread of the disease. As she responded well to the treatment, the NUHS team proposed a change in her treatment strategy from 'disease control' to 'disease cure' with liver transplantation. Mdm Lim subsequently underwent surgery for removal of the colon tumour, followed by chemotherapy to ensure that there was no further progression of the remaining cancer in the liver. Concurrently, her son stepped forward as a potential liver donor and was carefully assessed by the team. After numerous multidisciplinary discussions over a span of two years, Mdm Lim underwent a living donor liver transplantation from her son on 28 July 2022. Both the donor and recipient went home well a week after surgery. This is the first such transplant in Singapore and based on current literature, the first in the region.

“This transplant highlights a new treatment paradigm, where specific patients with Stage 4 colorectal cancer who fulfil the necessary criteria may be candidates for liver transplantation. Liver transplant in this case should be seen as complementing other forms of modern cancer treatments to improve survival in this disease. The key to Mdm Lim’s successful recovery involves a multi-faceted approach by a strong multi-disciplinary team involving pathologists, radiologists, surgeons, hepatologists and oncologists in NUHS,” said Prof Chng Wee Joo, Director of NCIS.

The NUHS team continues to do further research to strengthen the understanding of the disease on a molecular level in collaboration with international experts, and identify more suitable patients who would benefit from this new treatment.

NUH performed Singapore’s first deceased donor liver transplantation in 1990 and the first living donor liver transplantation in 1996. Since then, more than 500 living and deceased donor liver transplants have been performed locally, with NUCOT accounting for the majority of these transplants.

Treatment options for colorectal liver metastasis



1. Bray F, Ferlay J, Soerjomataram I, et al. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394-424.

2. Leporrier J, Maurel J, Chiche L, et al. A population-based study of the incidence, management and prognosis of hepatic metastases from colorectal cancer. Br J Surg. 2006;93:465-74.

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Image credit: National University Health System

Chinese Glossary

National University Health System (NUHS)	国立大学医学组织 (国大医学组织)
National University Hospital (NUH)	新加坡国立大学医院 (国大医院)
Ng Teng Fong General Hospital (NTFGH)	黄廷方综合医院 (黄廷方医院)
National University Cancer Institute, Singapore (NCIS)	新加坡国立大学癌症中心 (国大癌症中心)
Professor Chng Wee Joo Director, NCIS	庄伟裕教授 总主任, 新加坡国立大学癌症中心
Associate Professor Glenn Bonney	Glenn Bonney 副教授
Consultant	顾问医生
Division of Hepatobiliary & Pancreatic Surgery, Department of Surgery, NUH	肝胆胰外科, 国立大学医院

Adult Liver Transplantation Programme National University Centre for Organ Transplantation (NUCOT), NUH	成人肝脏移植计划, 国大医院器官移植 中心
Division of Surgical Oncology, NCIS	肿瘤外科, 新加坡国立大学癌症中心
Dr Mark Muthiah	Mark Muthiah 医生
Medical Director & Consultant, Adult Liver Transplantation Programme, NUCOT, NUH	内科主任兼顾问医生, 成人肝脏移植计 划, 国大医院器官移植中心
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About the National University Health System (NUHS)

The National University Health System (NUHS) aims to transform how illness is prevented and managed by discovering causes of disease, development of more effective treatments through collaborative multidisciplinary research and clinical trials, and creation of better technologies and care delivery systems in partnership with others who share the same values and vision.

Institutions in the NUHS Group include the National University Hospital, Ng Teng Fong General Hospital, Jurong Community Hospital and Alexandra Hospital; three National Specialty Centres - National University Cancer Institute, Singapore (NCIS), National University Heart Centre, Singapore (NUHCS) and National University Centre for Oral Health, Singapore (NUCOHS); the National University Polyclinics (NUP); Jurong Medical Centre; and three NUS health sciences schools – NUS Yong Loo Lin School of Medicine (including the Alice Lee Centre for Nursing Studies), NUS Faculty of Dentistry and NUS Saw Swee Hock School of Public Health.

With member institutions under a common governance structure, NUHS creates synergies for the advancement of health by integrating patient care, health science education and biomedical research.

As a Regional Health System, NUHS works closely with health and social care partners across Singapore to develop and implement programmes that contribute to a healthy and engaged population in the Western part of Singapore.

For more information, please visit <http://www.nuhs.edu.sg>.

About the National University Hospital (NUH)

The National University Hospital is a tertiary hospital and major referral centre with over 50 medical, surgical and dental specialties, offering a comprehensive suite of specialist care for adults, women and children. It is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme, in addition to kidney, liver and pancreas transplantation for adults.

The hospital was opened on 24 June 1985 as Singapore's first restructured hospital. Each year, the Hospital attends to more than one million patients.

As an academic health institution, patient safety and good clinical outcomes are the focus of the Hospital. It plays a key role in the training of doctors, nurses, allied health and other healthcare professionals. Translational research is pivotal in the Hospital's three-pronged focus, and paves the way for new cures and treatment.

A member of the National University Health System, it is the principal teaching hospital of the NUS Yong Loo Lin School of Medicine and the NUS Faculty of Dentistry.

About Ng Teng Fong General Hospital & Jurong Community Hospital

The Ng Teng Fong General Hospital (NTFGH) and Jurong Community Hospital (JCH) are members of the National University Health System (NUHS), a leading academic health system and one of three public healthcare clusters in Singapore.

Known as the JurongHealth Campus, NTFGH and JCH are Singapore's first integrated healthcare development designed and built together from the ground up. Designed around the patients' needs, the twin development enables NTFGH patients who no longer require acute care to be easily transferred to rehabilitate and recuperate in JCH. Both hospitals are also managed by one healthcare team to facilitate integration at all levels to enable better patient care, greater efficiency and convenience. NTFGH is also the first in Singapore and ASEAN to attain HIMSS EMRAM Stage 7, with JCH at HIMSS EMRAM Stage 6 – an achievement which recognises hospitals with the highest level of adoption and utilisation of electronic medical record functions.

As part of an integrated academic health system, NTFGH and JCH, in collaboration with partners in the healthcare continuum, aims to transform healthcare to deliver holistic and seamless patient-centred care.

For more information, please visit www.ntfgh.com.sg | www.jch.com.sg | www.nuhs.edu.sg

Delivering *'Incredible care and health, together!'*



About National University Cancer Institute, Singapore (NCIS)

The National University Cancer Institute, Singapore (NCIS) offers a broad spectrum of cancer care and management covering both paediatric and adult cancers, with expertise in prevention, screening, diagnosis, treatment, rehabilitation and palliative care. The Institute's strength lies in the multi-disciplinary approach taken to develop a comprehensive and personalised plan for each cancer patient and his or her family. Our award-winning clinician-scientists and clinician-investigators conduct translational research and clinical trials, providing patients with access to evidence-based cancer diagnostics, technology and therapies. For more information about NCIS, please visit www.ncis.com.sg.