

# Nurturing Minds, Touching Lives

Post graduate studies in the Department of Medicine



## Better healthcare solutions for gastric cancer patients

Gastric cancer is the second leading cause of cancer death worldwide. Although gastric cancer is curable when diagnosed early, the disease is often diagnosed at a late stage, when treatment is difficult and often unsuccessful.

“Gastric cancer is particularly common in East Asia. In Singapore, gastric cancer claims some 330 lives every year. Unfortunately, gastric cancer does not get as much attention as other cancers, due to its lower incidence in the West. There is a crucial unmet medical need and the Singapore Gastric Cancer Consortium aims to fill this gap,” explained A/Prof Yeoh Khay Guan, from the NUS Department of Medicine, who is leading the SGCC research programme.

The Singapore Gastric Cancer Consortium (SGCC) was set up to improve early detection and treatment of gastric cancer. The team was awarded S\$25 million in 2007 from the National Medical Research Council, as the first Translational Clinical Research Flagship Programme.

### **Early diagnosis of gastric cancer**

There are a number of SGCC research projects being conducted at the Department of Medicine. One such project is the Gastric Cancer Epidemiology, Clinical and Genetics Programme (GCEP), which aims to improve the early diagnosis of gastric cancer. This cohort study follows a group of high risk subjects for five years, collecting clinical data and samples. The information will help to identify risk factors of gastric cancer. It will also be used to identify novel markers that can be measured in the blood and used to predict gastric cancer. To date, over 2,800 subjects have been recruited and screened. This study has already benefited individuals in the cohort, as ten people were detected to have early stages of gastric cancer and have had these resected. Currently A/Prof Yeoh is supervising two PhD students involved in this project. The first is responsible for analysing risk factors in the screening project, and the second is evaluating the cost-effectiveness of the gastric cancer surveillance programme (For more information on health economics, please [click here](#) for a link on another health economics story).

“The GCEP study provides a proof-of-concept that it is possible to detect early gastric cancer in a cost-effective manner, by screening high-risk groups in Singapore,” said A/Prof Yeoh. “The benefits to the patients include being diagnosed and treated for early gastric cancer, and in treatment of risk factors such as *Helicobacter pylori*, to reduce their risk of developing gastric cancer. We are using the information gathered from this study to design an algorithm, which can assist in targeted screening of gastric cancer in high risk groups.”

Another Department of Medicine research project is being conducted by Prof Ho Khok Yu, to evaluate the use of a microscopic camera to improve the detection rate of early gastric lesions. Over 100 subjects have been screened and pre-cancerous abnormalities were predicted with high accuracy. The third SGCC research project being conducted at the Department of Medicine in collaboration with the Department of Bioengineering is the development of a new imaging system, using near infrared Raman and autofluorescence techniques. This system aims to detect early gastric cancer and identify pre-cancerous tissues.

### **Bringing together the right expertise**

In addition to work done at NUS, there are two external research studies that are also a part of the SGCC. The clinical trials study at the National University Hospital aims to promote optimal use of anti-cancer drugs, through the application of pharmacogenetic and molecular biomarkers. Gastric cancer patients will have access to new anti-cancer drugs. In another study, one of the Principal Investigator in the group is focusing on the genetic analysis of gastric cancer. Here, researchers will develop genetic strategies for delivering optimised and personalised treatment plans for patients with gastric cancer. They will also identify novel molecular targets for designing new gastric cancer therapies.

The SGCC is a prime example of scientists working together with clinicians to transform research from the laboratory into benefits for patients. The collaboration combines the clinical strengths of Singapore's four largest public teaching hospitals - the National University Hospital, Changi General Hospital, Singapore General Hospital and Tan Tock Seng Hospital – with the scientific expertise at the NUS Department of Medicine, NCCS, Nanyang Technological University, BioInformatics Institute, Genome Institute of Singapore and Institute of Molecular and Cell Biology. The group is also working with the International Cancer Biomarker Consortium at the Fred Hutchinson Cancer Centre and is a member of the Asia Pacific Research Group on Gastric Cancer.

“There are a number of different projects happening under the SGCC. The two research goals that would have the most positive impact in improving outcomes for patients are; firstly, the discovery and validation of blood-based markers to aid early diagnosis of gastric cancer; and secondly, the development of a gene-based profile to guide the selection of chemotherapy agents for individual patients. At the end of the day, the ultimate aim of our research is to benefit patient care and make a difference to people's lives,” said A/Prof Yeoh.

To know more about the graduate programme, click [Here](#)