Lung cancers are broadly divided into two subtypes: small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). NSCLC makes up the majority of lung cancers, consisting of about 85 per cent of cases. NSCLC cases are predominantly made up of three subtypes: adenocarcinoma (40–50 per cent), squamous (25–30 per cent), and large cell (10–15 per cent).

Similar to worldwide trends, lung cancer in Singapore is the most frequent cause of cancer deaths in males and the second most common in females. The dismal survival figures were largely related to the fact that the majority of these lung cancers were diagnosed in their advanced stages.

There had been several breakthroughs in the treatment of advanced NSCLC in recent years due to the discovery of several molecular subtypes that allow the use of targeted therapies. Additionally, immunotherapies had been shown to be a new treatment option for NSCLC. Somatic sensitising EGFR mutations are found in almost 50 per cent of East Asian non-smoking patients (especially female patients) compared to only 10 per cent of Caucasian patients. These sensitising EGFR mutations predict for sensitivity to targeted therapy using tyrosine kinase inhibitors (TKIs). Multiple studies have investigated the role of EGFR TKI and the results showed they were superior to conventional chemotherapy in terms of efficacy and quality of life, leading to the regulatory approval of TKIs. They are currently routinely used in place of chemotherapy in the first line setting.

For NSCLC patients without activating mutations, another new treatment approach would be using immunotherapy (immune checkpoint inhibitors - ICI). It works by activating the immune system, specifically T lymphocytes, to detect and fight tumour cells. The 2018 Nobel Prize in Medicine was awarded to two scientists who pioneered the research work in cancer immunotherapy. Currently several agents have been approved either being used singly or in combination to improve the survival of advanced NSCLC patients.

With the discovery of the different subsets of advanced NSCLC patients, it is imperative for oncologists to personalise therapies for every individual patient. This not only opens up new treatment approaches, but also improves patients’ survival and at the same time minimising any potential side effects.