ABOUT LUNG CANCER

Global burden in 2020

2nd MOST COMMON CANCER

2.2M NEW CASES

#1 CAUSE OF CANCER DEATH

1.8M DEATHS

18% of all cancer deaths are caused by lung cancer

21% of patients are alive five years after diagnosis

Types of lung cancer

Non-small cell lung cancer (NSCLC)
NSCLC originates from the larger cells in the lungs, such as epithelial cells lining the lung airways or mucus-producing cells.4

Small cell lung cancer (SCLC)
SCLC is less common, and originates from small, hormone-releasing cells. SCLC is more aggressive and fast-growing compared to NSCLC.5

Stages of disease

Identifying the stage is important for doctors to determine patients’ prognosis and help assess treatment options. NSCLC is staged on a scale of I to IV*, according to the severity of disease.6 In addition to the traditional four stages, SCLC is divided into two groups: limited stage (I-III) and extensive stage (IV).7

Stage I NSCLC
Tumour has not spread beyond the lungs and is less than 5cm wide.6

Five-year survival rate: 68-92%8

Stage II NSCLC
Tumour can be between 5 and 7 cm, and is categorised as Stage IIb once it has reached the lymph nodes.8

Five-year survival rate: 53-60%6

Stage III NSCLC
Stage III lung cancer is often referred to as locally advanced disease. The tumour may have spread outside the lung and can be of any size.9

Divided into 3 sub-categories (IIIA, IIIB and IICC), defined by how much the cancer has spread locally and the possibility of surgery.8

Five-year survival rate: 13-36%10

Stage IV NSCLC
The most advanced form of lung cancer, often referred to as metastatic disease. Tumour has metastasised (spread) beyond the lung throughout the body.6

Five-year survival rate: 0-10%11

Diagnosing and treating patients in earlier stages of disease can maximise the potential for long-term disease remission and the possibility of cure.

*Staging is more complex than the examples shown here

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AstraZeneca
The importance of biomarker testing

Lung cancer is a diverse disease, characterised by a variety of different genetic and molecular characteristics. These characteristics, known as biomarkers, can serve as indicators of various types of cancer and many promote tumour growth. Some biomarkers arise as a result of point mutations (changes within genes), and some reflect altered expression.

Doctors use tumour samples to diagnose NSCLC, and test for biomarker mutation status and levels of biomarker expression. Biomarker testing is critical to learning more about each patient’s tumour type and can be used to help determine treatment options. Based on the test results, patients may be matched with targeted therapies aimed at specific biomarkers present in their genetic profile.

Established biomarkers

**EGFR mutations**
The epidermal growth factor receptor is a protein that helps cells grow. EGFR mutations can cause higher than normal amounts of the protein on cancer cells, allowing them to grow more rapidly. Approximately 10-15% of patients in the US and Europe, and 30-40% of patients in Asia have EGFR mutations.

- 10-40% of patients

**BRAF mutations**
The BRAF gene makes a protein that helps control cell growth. Mutations in the BRAF gene can cause uncontrolled cell growth, leading to cancer.

- 1.5-3.5% of patients

**KRAS mutations**
The kirsten rat sarcoma gene is involved in regulating cell division. KRAS mutations can cause uncontrolled cell growth, division and duplication. KRAS mutations occur in 5-15% of patients in Asia and 25-50% of patients in Western populations.

- 5-50% of patients

**MET gene alterations**
The MET gene is involved in protein creation. The MET gene can drive growth of tumour cells when it mutates, is amplified or if overexpression occurs.

- Exon 14 mutations: 3-4% of patients
- Amplification: 1-6% of patients
- Overexpression: 15-70% of patients

Studies suggest that MET gene alterations are a key mechanism of acquired resistance to EGFR targeted therapies.

- 1-70% of patients

**ALK mutations**
The anaplastic lymphoma kinase gene is involved in cell growth and division. When rearranged, ALK genes can result in tumour growth.

- 4-7% of patients

**PD-L1 expression**
Programmed death-ligand 1 is a protein expressed on the surface of cancer cells that helps them evade the immune system. For patients whose cancer is not associated with a known mutation, abnormal PD-L1 expression may help characterise their disease.

- 19-100% of tumours have abnormal PD-L1 expression

Exploratory targets

**HER2 gene alterations**
Human epidermal growth factor receptor 2 is a protein that regulates cell growth. HER gene alterations, such as mutations or overexpression, can facilitate excessive or uncontrolled growth that may promote the formation of tumours.

**TROP2 overexpression**
Trophoblast cell-surface antigen 2 is a transmembrane glycoprotein involved in cell self-renewal, proliferation, invasion and survival. TROP2 expression has been associated with poor overall and disease-free survival in several types of solid tumors.