

# ABOUT NON-SMALL CELL LUNG CANCER (NSCLC)

## WHAT IS NSCLC?

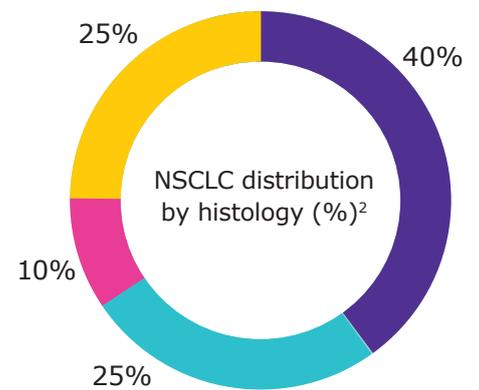
NSCLC is considered the most common type of lung cancer, accounting for 85% of all cases, and is categorized into sub-types:<sup>1</sup>

**Adenocarcinoma:** Occurs in about 40% of patients with NSCLC.<sup>2</sup> Usually found in the outer parts of the lung prior to metastases.<sup>1</sup> While this type is found mainly in current/former smokers, it's the most common lung cancer seen in non-smokers.<sup>1</sup> It is more common in women than in men, and it is more likely to occur in younger people (ages 20-46) than other types of lung cancer.<sup>2,3</sup>

**Squamous cell carcinoma:** Occurs in about 25% of patients with NSCLC.<sup>2</sup> This type starts in squamous cells (flat cells that line the inside of the airways in the lungs) and is commonly linked to a history of smoking. This type tends to be found in the central part of the lungs, near a main airway (bronchus).<sup>1</sup>

**Large cell (undifferentiated) carcinoma:** Occurs in about 10% of patients with NSCLC.<sup>2</sup> This type is harder to treat due to rapid growth and metastases.<sup>1</sup>

**Other subtypes:** Other subtypes of NSCLC, such as adenosquamous carcinoma and sarcomatoid carcinoma, are much less common.<sup>2</sup>



## SYMPTOMS

Depending on the individual, NSCLC symptoms may not appear until the cancer has advanced.

**The most common symptoms may include:**<sup>4,5</sup>

- A persistent, worsening cough or worsening of chronic cough
- Cough producing blood
- Chest pain or painful breathing
- Shortness of breath, wheezing
- Unexplained weight loss
- Hoarseness
- Fatigue
- Loss of appetite
- Lung infections such as bronchitis and pneumonia that won't go away
- Bone pain (advanced stage)
- Headaches or seizures due to brain metastases (advanced stage)
- Lumps in lymph nodes (advanced stage)

## RISK FACTORS FOR NSCLC INCLUDE:<sup>6,7</sup>

- Smoking
- Secondhand smoke
- Radon exposure
- Asbestos exposure
- Arsenic in drinking water
- Radiation therapy for other cancers
- Air pollution
- Genetics

## INCIDENCE

Lung cancer is a leading newly diagnosed cancer worldwide and the second most commonly diagnosed cancer in the U.S. each year.<sup>8,9</sup> Globally and in the U.S., lung cancer is the leading cause of cancer-related mortality.<sup>8,9</sup> NSCLC accounts for about 85% of lung cancers.<sup>1</sup>

Over 2 million people are estimated to be diagnosed with lung cancer annually, with 1.9 million deaths worldwide in 2017.<sup>8</sup> In the U.S., it is estimated that 228,820 new cases of lung cancer will be diagnosed in 2020, and 135,720 people will die of this disease.<sup>9</sup>

## DIAGNOSIS & PROGNOSIS

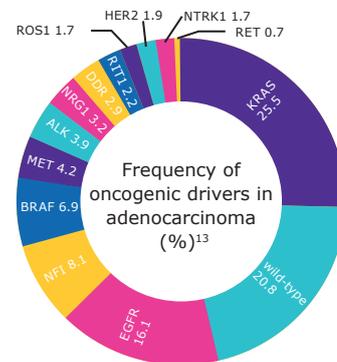
About 57% of U.S. patients with NSCLC are diagnosed when the disease has already spread (metastasized).<sup>14</sup> The 5-year overall survival (OS) rate is about 32% for regionally advanced disease and about 6% for metastatic disease.<sup>14</sup> When the disease is caught earlier and patients are diagnosed with localized disease that has not yet spread, the survival rate is about 60%.<sup>14</sup> Treatments and biomarker testing have become more advanced over time to target even the rarest of NSCLC subtypes.<sup>15</sup>

### References

1. About lung cancer. American Cancer Society website. <https://www.cancer.org/cancer/lung-cancer/about/what-is.html>.
2. Ou SH, Zell JA. *J Thorac Oncol*. 2009;4:1202-1211.
3. Groot P, et al. The epidemiology of lung cancer. *TLCR*. 2018;7(3):220-233.
4. What are the symptoms of lung cancer? Centers for Disease Control and Prevention website. [https://www.cdc.gov/cancer/lung/basic\\_info/symptoms.htm](https://www.cdc.gov/cancer/lung/basic_info/symptoms.htm).
5. Lung cancer – non-small cell: symptoms and signs. Cancer.net website. <https://www.cancer.net/cancer-types/lung-cancer-non-small-cell/symptoms-and-signs>.
6. What are the risk factors for lung cancer? Centers for Disease Control and Prevention website. [https://www.cdc.gov/cancer/lung/basic\\_info/risk\\_factors.htm](https://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm).
7. Lung cancer - non-small cell: risk factors and prevention. Cancer.net website. <https://www.cancer.net/cancer-types/lung-cancer-non-small-cell/risk-factors-and-prevention>.
8. Global Burden of Disease Cancer Collaboration. *JAMA Oncol*. 2019;5:1749-1768.
9. American Cancer Society. *Cancer Facts and Figures 2020*. Atlanta, GA: American Cancer Society; 2020. <https://www.cancer.org/content/dam/cancerorg/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2020/cancer-facts-and-figures-2020.pdf>.
10. Pakkala S, Ramalingam S. *JCI Insight*. 2018;3(15):e120858.
11. Grosse A, et al. *Diagn Pathol*. 2019;14(18):1-14.
12. Zhu QG, et al. *Oncotarget* 2017;8:57680-57692.
13. Rosell R, Karachaliou N. *Lancet*. 2016;387:1354-1356.
14. Cancer stat facts: lung and bronchus cancer. NIH. <https://seer.cancer.gov/statfacts/html/lungb.html>.
15. Saarenheimo J, et al. *Front Oncol*. 2019;9(129):1-11.
16. Treatment choices for non-small cell lung cancer, by stage. American Cancer Society website. <https://www.cancer.org/cancer/lung-cancer/treating-non-small-cell/by-stage.html>.
17. Awad M, et al. *J Clin Oncol*. 2016;34(7):721-730.
18. Drilon A, et al. *J Thoracic Oncol*. 2017;12(1):15-26.

Approximately 50% of patients with NSCLC may harbor a known primary oncogenic driver.<sup>10,11</sup> There are more than a dozen primary oncogenic drivers in NSCLC.<sup>12</sup> These oncogenic driver mutations, which include *KRAS*, *EGFR*, *ALK*, *MET* and *ROS1*, among others, occur in approximately 50% of patients with NSCLC.<sup>10</sup>

These mutations can be found via biomarker testing, which may help determine the best treatment path.<sup>13</sup>



## ADVANCES IN THE TREATMENT OF NSCLC

Treatment of NSCLC involves a range of approaches.<sup>16</sup> In the early stages, NSCLC can be effectively treated by surgical resection.<sup>16</sup> Advanced NSCLC usually has a poor prognosis.<sup>16</sup> In recent years, advances in precision medicine, targeted immunotherapy and biomarker testing (via tissue and liquid biopsies) have significantly improved diagnosis and options for patients with even the rarest of NSCLC subtypes.<sup>15</sup>

Merck KGaA, Darmstadt, Germany is committed to researching additional areas of MET dysregulation. *MET* alterations are rare, as *MET*ex14 skipping and *MET* amplification have been identified as oncogenic drivers in 3% to 4%, and 1% to 5% of patients with NSCLC, respectively.<sup>17,18</sup> According to preclinical and clinical evidence, *MET* activation is a primary oncogenic driver in lung cancer and a secondary driver to acquired resistance to targeted therapy in other lung cancers.<sup>18</sup>

## About Merck KGaA, Darmstadt, Germany

**Merck KGaA, Darmstadt, Germany, a leading science and technology company, operates across healthcare, life science and performance materials. Around 58,000 employees work to make a positive difference to millions of people's lives every day by creating more joyful and sustainable ways to live. From advancing gene editing technologies and discovering unique ways to treat the most challenging diseases to enabling the intelligence of devices – the company is everywhere. In 2019, Merck KGaA, Darmstadt, Germany, generated sales of € 16.2 billion in 66 countries.**

The company holds the global rights to the name and trademark "Merck" internationally. The only exceptions are the United States and Canada, where the business sectors of Merck KGaA, Darmstadt, Germany operate as EMD Serono in healthcare, MilliporeSigma in life science, and EMD Performance Materials. Since its founding 1668, scientific exploration and responsible entrepreneurship have been key to the company's technological and scientific advances. To this day, the founding family remains the majority owner of the publicly listed company.

### For media information on request:

Julissa Viana: [julissa.viana@emdserono.com](mailto:julissa.viana@emdserono.com)

Kristin Mulligan: [kristin.mulligan@emdserono.com](mailto:kristin.mulligan@emdserono.com)

US-TEP-00188 © 2020 Merck KGaA, Darmstadt, Germany. All rights reserved.

Merck KGaA  
Darmstadt, Germany