

# Lung cancer: Progress and challenges in the battle against a silent killer.

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## Introduction

Lung cancer, often referred to as the "silent killer," continues to be a formidable adversary in the world of oncology. It is the leading cause of cancer-related deaths worldwide, claiming more lives than breast, colon, and prostate cancers combined. In this short communication article, we'll explore the current state of lung cancer, highlighting recent advancements, ongoing challenges, and the importance of prevention and early detection.

Lung cancer's devastating impact on individuals and families cannot be overstated. Its high mortality rate is primarily attributed to late-stage diagnoses when treatment options are limited. Smoking remains the leading cause of lung cancer, but non-smoking-related lung cancers, often driven by environmental factors or genetic mutations, are on the rise, making the disease a concern for a broader population. In recent years, significant progress has been made in the diagnosis and treatment of lung cancer, offering hope for patients. These advancements include: Early Detection: Low-dose computed tomography (LDCT) screening has proven effective in identifying lung cancer at earlier, more treatable stages in high-risk individuals, such as current or former smokers. Immunotherapy: Immune checkpoint inhibitors have revolutionized lung cancer treatment by enhancing the body's immune response against cancer cells. They have improved survival rates for some patients with advanced stages of the disease [1].

Targeted Therapies: Molecular profiling allows for the identification of specific genetic mutations that drive lung cancer. Targeted therapies designed to inhibit these mutations have shown promise in improving outcomes. Minimally Invasive Surgery: Advancements in surgical techniques have made lung cancer surgeries less invasive, reducing recovery times and improving the quality of life for patients.

Late Diagnoses: A significant portion of lung cancer cases is diagnosed at advanced stages. Efforts to promote early detection and screening are critical. Stigma and Smoking: Reducing the stigma associated with lung cancer and addressing the root causes, such as smoking, remain essential in prevention and early intervention. Access to Care: Disparities in access to quality healthcare services can impact outcomes for vulnerable populations. Resistance and Relapse: Resistance to treatment and disease relapse are ongoing challenges, emphasizing the need for continued research into novel therapies. Lung

cancer remains a formidable health challenge, but progress in diagnosis and treatment is steadily improving outcomes for patients. Early detection, immunotherapy, targeted therapies, and advances in surgery offer hope in the fight against this disease. [2].

However, addressing lung cancer's challenges requires a multifaceted approach. Public health initiatives to reduce smoking rates, increased awareness, and improved access to care for underserved populations are essential. The continued collaboration of healthcare professionals, researchers, policymakers, and advocacy groups is crucial in our quest to reduce the burden of lung cancer and improve the quality of life for those affected by this relentless disease.

Lung cancer is a formidable and complex disease that has a significant impact on public health worldwide. It is the leading cause of cancer-related deaths, responsible for more fatalities than breast, colon, and prostate cancers combined. This introduction provides an overview of lung cancer, highlighting its types, risk factors, and the pressing need for prevention, early detection, and innovative treatments. Lung cancer is not a single disease but a group of cancers that originate in the lungs. The two primary types of lung cancer are: NSCLC accounts for approximately 85% of all lung cancer cases. It includes three main subtypes: adenocarcinoma, squamous cell carcinoma, and large cell carcinoma. Each subtype has distinct characteristics and treatment approaches. SCLC is less common but tends to grow and spread more rapidly than NSCLC. It is often associated with a history of smoking and is typically treated with chemotherapy. Several risk factors contribute to the development of lung cancer: Smoking cigarettes is the single most significant risk factor for lung cancer. It is estimated that roughly 85% of lung cancer cases are directly linked to smoking. Exposure to secondhand smoke, or passive smoking, also increases the risk of lung cancer, particularly in non-smokers. Radon, a naturally occurring radioactive gas that can seep into homes, is the second leading cause of lung cancer and the leading cause among non-smokers. Certain professions, such as mining, construction, and manufacturing, may involve exposure to carcinogens like asbestos and arsenic, increasing the risk of lung cancer [3].

Prolonged exposure to high levels of air pollution, especially in urban areas, has been associated with a higher risk of lung cancer.

Preventing lung cancer primarily involves risk reduction strategies such as smoking cessation, reducing exposure to

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Received: 28-Aug-2023, Manuscript No. AACCR-23-112248; Editor assigned: 31-Aug-2023, PreQC No. AACCR-23-112248 (PQ); Reviewed: 15-Sep-2023, QC No. AACCR-23-112248;

Revised: 17-Sep-2023, Manuscript No. AACCR-23-112248 (R); Published: 26-Sep-2023, DOI:10.35841/aacpr-6.3.155

environmental carcinogens, and ensuring proper ventilation in homes to mitigate radon exposure. Vaccination against the human papillomavirus (HPV) can also help prevent certain types of lung cancer. Early detection is crucial for improving lung cancer outcomes. Low-dose computed tomography (LDCT) scans are recommended for individuals at high risk, such as current or former smokers, as they can detect lung cancer at earlier, more treatable stages. Treatment for lung cancer depends on its type, stage, and individual patient factors. Common treatment modalities[4].

Surgical removal of the tumor or the affected portion of the lung may be an option for early-stage lung cancer. High-energy rays are used to target and destroy cancer cells. It can be used as a primary treatment or in conjunction with other therapies. Drugs are administered to kill cancer cells or slow their growth. Chemotherapy can be used before or after surgery and in advanced cases. Immunotherapies enhance the body's immune system to recognize and attack cancer cells. They have shown promise in treating certain types of lung

cancer. These drugs are designed to target specific genetic mutations or proteins present in cancer cells. They are often used in non-small cell lung cancer [5].

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