

---

# Changes in Treatment Of Advanced-Stage Lung Cancer

## Abstract

People all over the world are diagnosed everyday with lung cancer. This diagnosis can be the beginning of a frightening journey for that person. There is undoubtedly one question that all those afflicted with lung cancer have asked: Have the treatments for lung cancer improved through the years? This question will be explored in various ways throughout this paper. Advanced-Stage lung cancer treatment has positively changed in three main ways over the past 30 years. Specific molecular-targeted therapeutic agents, multiple modalities, and immunotherapy are bringing hope to patients who previously would not have had a chance at life.

## Changes in Treatment of Advanced-Stage Lung Cancer

Across the world, millions of people have cancer; it is perhaps the worst medical condition that people experience regularly. More specifically, lung cancer is the most common type of cancer. Over the years, advanced-stage lung cancer has been one of the most difficult cancers to treat and maintain, without mention of a cure. From the 1990's to present day, technological advancements have played a huge role in the expanse of knowledge available today. These advancements brought change within the medical community allowing researchers and scientists to use the scientific method to test the hypothesis they had about different ways to treat evolving diseases, such as advanced-stage lung cancer. These hypothesis were proven multiple times by different people and now are facts which guide medical professionals when they are treating the patient with the specific advanced-stage lung cancer. Advanced-Stage lung cancer treatment has positively changed in three main ways over the past 30 years. Specific molecular-targeted therapeutic agents, multiple modalities, and immunotherapy are bringing hope to patients who previously would not have had a chance at life.

One change that rocked the scientific and medical community was the introduction of molecular-targeted therapeutic agents as second-line therapies. Previously, if radiation and chemotherapy failed to shrink or obliterate the cancer or tumor, then there were no other options. In the early 2000's, researchers were able to get a better grasp on the anatomy of a cancer cell and as a result realized the epidermal growth factor receptor (EGFR) is a prevalent signal that distinguishes cancer cells from normal, healthy cells. The EGFR serves as a "red flag" on cells which signals an abnormality to pathologists. In response to this link, antitumor inhibitors were formulated to interrupt the intracellular activity and processes of the EGFR in order to stop the cancer from metastasizing to other parts of the body. These inhibitors, more commonly known as gefitinib and erlotinib, are the molecular-targeted therapeutic agents mentioned above. They are specifically designed to target the epidermal growth factor receptor on a molecular level by inhibiting it while producing a therapeutic effect in addition to other treatments given.

Through the rigorous testing that medicines go through before they are released, this class of drugs was "bumped" from a second-line drug in all cases to being a first-line drug to help those who needed the benefits these drugs brought with them. This is far from the miracle drug, but it does bring a significant amount of hope as it was "shown to be effective for relieving symptoms,

---

maintaining stable disease, and improving quality of life without the adverse events that may be associated with cytotoxic cancer therapies". The use of molecular-targeted therapeutic agents in the early 2000's was a significant change in the treatment of advanced-stage lung cancer as it allowed those who were not a candidate for radiation or chemotherapy to have another chance at life.

An advancement brought about in the last 30 years is the practice of using multiple modalities. This means using more than one treatment or therapy at a time to combat the illness in different ways. Bringing comfort and ease to the patient is the utmost priority but being able to fix or help make the problem better has always been and continues to be another large goal. Multiple modalities has allowed the healthcare industry do both. The idea is to use completely different methods to make sure that at least one is able to make a difference for the patient. If both modalities work, it is simply wonderful. Take for instance a 63 year old advanced stage lung cancer patient who has undergone chemotherapy alone and the mass continues to grow in size. An example of multiple modalities is being able to receive chemotherapy while taking a gefitinib pill. These two completely different types of treatments for cancer both work together to efficiently and effectively eliminate suffering for the patient.

When discussing multiple modalities, one might ask if there are any specific treatments used together. Although there are no optimal specific "chemotherapeutic agents" that are used with radiation, there are plenty of combinations used by doctors to treat advanced-stage lung cancer. There are no optimal specific treatments yet because the Food and Drug Administration has not found a combination that has a high success rate in all patients. Each individual oncologist uses different modalities which he deems beneficial to the overall health of the patient. Concerning multiple modalities, "In the USA, cisplatin plus etoposide or carboplatin plus paclitaxel are the most commonly used regimens". Despite the fact that there is not a solid cure for advanced stage lung cancer, there are plenty of therapies that can be combined with others in what is known as multiple modalities to help improve the quality of life for the patient suffering from this illness.

The last main way that advanced-stage lung cancer treatment has changed since the 1990s is the fairly recent use of immunotherapy. This technique is not as effective as some current therapies which is why it is not as common. Nevertheless, it has a place in treatment as it has increased quality of life for some patients and it has the potential for more expansive treatment options in the future. One specific immunotherapy that is used is what is known as TG4010. According to Lancet Oncology, "TG4010 is a targeted immunotherapy based on a poxvirus (modified vaccinia virus Ankara) that codes for MUC1 tumour-associated antigen and interleukin 2".

TG4010 is a targeted immunotherapy based on a poxvirus (modified vaccinia virus Ankara) that codes for MUC1 tumour-associated antigen and interleukin 2