



Genomic Testing for Lung Cancer

PATIENT SELECTION

- All patients with lung cancer should get genomic testing.
- Patients with adenocarcinoma of the lung, age younger than 65, or mixed histology have the highest rates of genomic alterations.

WAITING TIME

- Results for liquid biopsies usually come back in **5-7 business days**.
- Results from tissue biopsies can range from **1 to 4 weeks** depending of the platform utilized and whether sequential testing was ordered.

COMMUNICATION

Communication between medical oncologists and interventionalists (eg, radiology, pulmonary) is essential to ensure sufficient tissue.

CLINICAL TRIALS

Genomic testing increases patients' treatment options, such as enrollment in clinical trials.



TYPE OF BIOPSY

- Primary tumors and metastatic lesions are equally suitable for genomic testing.
- Bone biopsies are potentially suboptimal due to decalcification and degradation of DNA.

MISSING THE TARGET

- Testing rates for *EGFR* and *ALK* improved over time to 87% and 70%, respectively, in 2018.
- Rates for *ROS1* testing remained low in 2018, at only 15%-28%.

LACK OF RESPONSE TO IMMUNOTHERAPY

Lung cancer with *EGFR* mutations or *ALK* rearrangements have close to zero response to immunotherapy and benefit the most from targeted therapy.

LIQUID BIOPSY

- Liquid biopsy evaluates cell-free DNA from multiple sources, including DNA shed from tumor in peripheral blood.
- Sensitivity is 70%-80%, and specificity is near 100%.

TESTING

- Multigene testing like next gene sequencing (NGS) is encouraged to detect a wide range of mutations, using least amount of tissue.
- Multigene testing is generally less costly than sequential gene testing but may have preauthorization requirements.

TREATMENT DECISIONS

Clinicians should wait for genomic testing results before initiating immunotherapy or checkpoint inhibitors to avoid toxicities like pneumonitis.

To learn more go to foundation.chestnet.org/lung-cancer