

Health Equity in Biomarker Testing and Targeted Therapy



Targeted therapy can improve survival and quality of life by connecting patients to the most beneficial treatment for their disease.

Advancements in cancer treatment are saving more lives – leading to a record decline in cancer deaths in recent years.ⁱ This important progress is driven by developments in *targeted therapy* which identifies and attacks certain types of cancer cells with specific *biomarkers* – molecules like proteins or genetic alterations such as mutations, rearrangements, or fusions.

- Treatment with targeted therapy often requires diagnostic testing to identify biomarkers which can inform targeted therapy options for cancer patients.
- The use of biomarker testing and targeted therapy has been progressing rapidly and has become the standard of care for certain cancers. There are now multiple FDA-approved targeted therapies across several cancer types.

Despite evidence demonstrating the effectiveness of biomarker testing and targeted therapy, currently not all individuals benefit equitably from these advances. There are notable racial/ethnic, and socioeconomic disparities in access and utilization of these advancements in care. These disparities in access and use of guideline-indicated biomarker testing and targeted therapy can potentially widen existing disparities in cancer survival.

For example, studies have shown:

- In metastatic non-small cell lung cancer (NSCLC), **eligible Black patients are less likely to receive biomarker testing compared to White patients.**ⁱⁱ
- Patients with advanced NSCLC who were **Black, older, or Medicaid-insured had lower odds of next-generation sequencing biomarker testing compared to patients who were White, younger, or commercially insured,** respectively.ⁱⁱⁱ
- Patients who are **older, Black, uninsured, or Medicaid-insured, are less likely to be tested for certain guideline-indicated biomarkers** for colorectal cancer.^{iv}
- There are **socioeconomic inequalities in biomarker testing and targeted therapy utilization across cancer types.**^v
- There are lower rates of testing in **community oncology settings versus academic medical centers.**^{vi,vii}

Priorities for Advancing Health Equity in Precision Medicine

- **Improving access to biomarker testing is important for advancing health equity.** Special focus should be placed on ensuring that groups facing disparities have equitable access to biomarker testing and targeted therapy which can improve outcomes and quality of life. To prevent differences in outcomes due to inequalities in the utilization biomarker testing and targeted therapy we must dismantle access barriers, including insurance coverage of biomarker testing.
- **Differential use of guideline-indicated biomarker testing and targeted therapy can potentially widen existing disparities in cancer outcomes.** Without action – such as expanding Medicaid coverage of biomarker testing – existing disparities could be exacerbated rather than reduced as the result of the increasing use of biomarker testing and targeted therapy.
- **Ensuring coverage of biomarker testing for all patients – including those insured through Medicaid – can help expand coverage and access to biomarker testing and targeted therapies for groups who are currently not benefitting.**

- ⁱ American Cancer Society. Cancer Facts & Figures 2021. Atlanta: American Cancer Society; 2021. Retrieved from: <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2021/cancer-facts-and-figures-2021.pdf>. Accessed April 4, 2021.
- ⁱⁱ Kehl, K. L., Lathan, C. S., Johnson, B. E., & Schrag, D. (2019). Race, Poverty, and Initial Implementation of Precision Medicine for Lung Cancer. *Journal of the National Cancer Institute*, 111(4), 431–434. <https://doi.org/10.1093/jnci/djy202>.
- ⁱⁱⁱ Presley, C., Soulos, P., Chiang, A., Longtine, J., Adelson, K., Herbst, R., Nussbaum, N., Sorg, R., Abernethy, A., Agarwala, V., & Gross, C. (2017). Disparities in next generation sequencing in a population-based community cohort of patients with advanced non-small cell lung cancer. *Journal of Clinical Oncology*. 35. 6563-6563. [10.1200/JCO.2017.35.15_suppl.6563](https://doi.org/10.1200/JCO.2017.35.15_suppl.6563).
- ^{iv} Lamba, N., & Iorgulescu, B. (2020). Disparities in microsatellite instability/mismatch repair biomarker testing for patients with advanced colorectal cancer. *Cancer Epidemiol Biomarkers Prev* December 1 2020 (29) (12 Supplement) PO-091; DOI: 10.1158/1538-7755.DISP20-PO-091.
- ^v Norris, R. P., Dew, R., Sharp, L., Greystoke, A., Rice, S., Johnell, K., & Todd, A. (2020). Are there socio-economic inequalities in utilization of predictive biomarker tests and biological and precision therapies for cancer? A systematic review and meta-analysis. *BMC medicine*, 18(1), 282. <https://doi.org/10.1186/s12916-020-01753-0>.
- ^{vi} Kim, E. S., Roy, U. B., Ersek, J. L., King, J., Smith, R. A., Martin, N., Martins, R., Moore, A., Silvestri, G. A., & Jett, J. (2019). Updates Regarding Biomarker Testing for Non-Small Cell Lung Cancer: Considerations from the National Lung Cancer Roundtable. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer*, 14(3), 338–342. <https://doi.org/10.1016/j.jtho.2019.01.002>
- ^{vii} F. R., Kerr, K. M., Bunn, P. A., Jr, Kim, E. S., Obasaju, C., Pérol, M., Bonomi, P., Bradley, J. D., Gandara, D., Jett, J. R., Langer, C. J., Natale, R. B., Novello, S., Paz-Ares, L., Ramalingam, S. S., Reck, M., Reynolds, C. H., Smit, E. F., Socinski, M. A., Spigel, D. R., ... Thatcher, N. (2018). Molecular and Immune Biomarker Testing in Squamous-Cell Lung Cancer: Effect of Current and Future Therapies and Technologies. *Clinical lung cancer*, 19(4), 331–339. <https://doi.org/10.1016/j.clc.2018.03.014>