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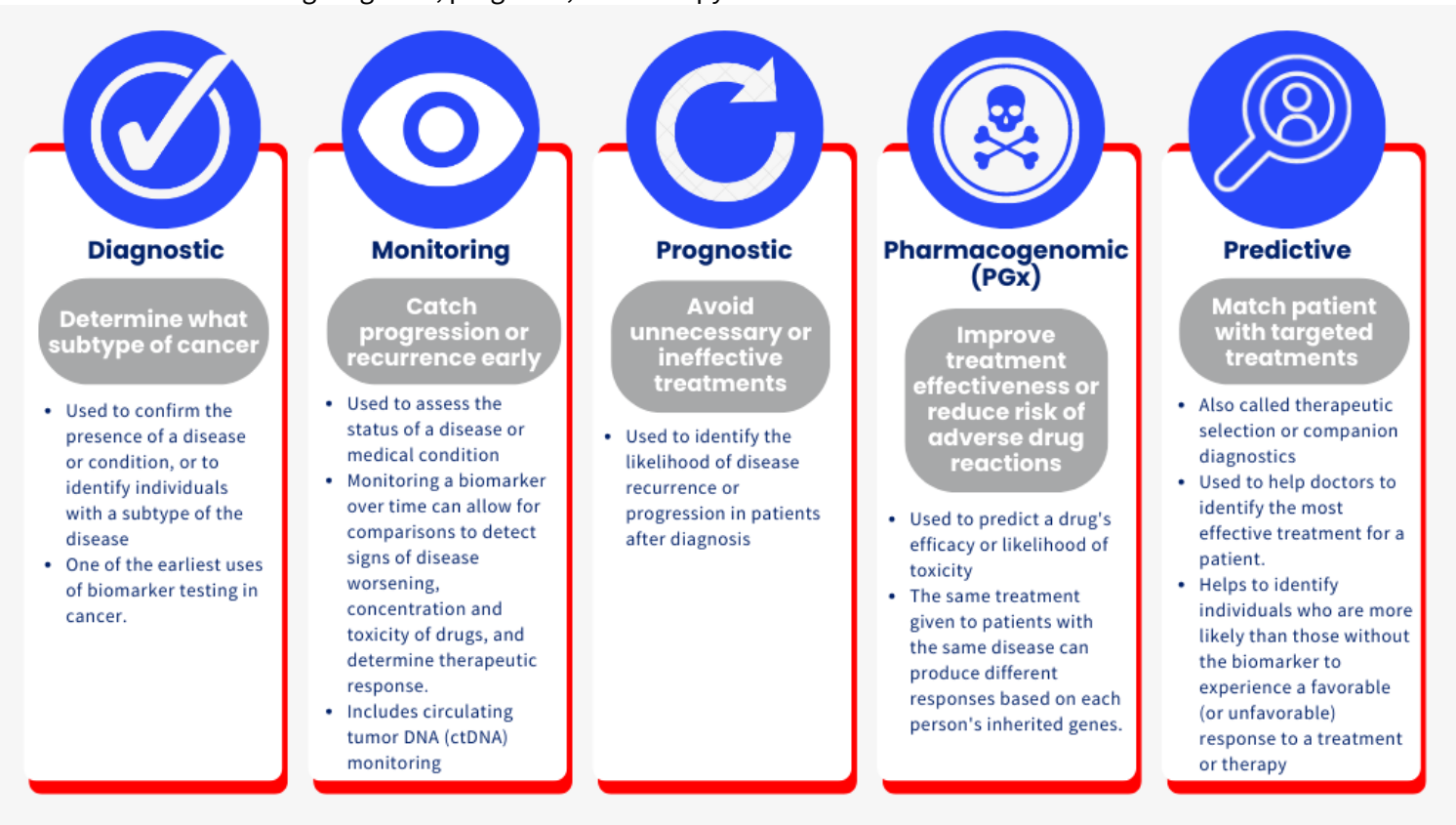
Biomarker Testing: Breaking Down the Terminology

Categories of Biomarkers

There are a variety of clinical uses for **biomarker testing**. Distinct categories of biomarkers can reveal information that is critical to informing diagnosis, prognosis, and therapy selection.



Single Marker vs. Panel Testing

There are many different types of biomarker tests and different tests are appropriate for different patients and circumstances. Oncology providers rely on clinical practice guidelines, such as those published by the National Comprehensive Cancer Network (NCCN) and the American Society of Clinical Oncology (ASCO) to inform testing and treatment decisions. In a survey of oncology providers, 91% reported consulting clinical practice guidelines to determine when to recommend or order biomarker testing for their patients.[i] As the science of biomarker-driven care is quickly evolving, clinical practice guidelines – which are developed and updated regularly based on rigorous evaluation of clinical evidence – are an essential resource to help providers offer the best care informed by the latest evidence.

Single marker tests identify or measure one marker (e.g., gene or molecule). For example, a single-gene biomarker test.

Panel tests identify or measure multiple markers (ranging from a few to several hundred) in the same test.

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Comprehensive biomarker testing looks for all recommended biomarkers based on clinical guidelines. This is often done with a panel test. For some cancers, panel testing is recommended by clinical guidelines. Panel testing can limit disruptions in care, including the need for multiple biopsies to collect biospecimen samples for testing, as well as delays in initiating the most appropriate treatment.

Broad panel testing minimizes tissue use, enables personalized treatment, and can decrease the use of ineffective treatments and unwarranted side effects, in addition to opening pathways to early clinical trials. However, many payors do not reimburse for broad panel testing, despite strong evidence that panel tests lead to overall cost savings for testing and treatment.[ii,iii,iv]

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[i] American Cancer Society Cancer Action Network. Survey Findings Summary: Understanding Provider Utilization of Cancer Biomarker Testing Across Cancers. Dec. 2021. https://www.fightcancer.org/sites/default/files/national_documents/provider_utilization_of_biomarker_testing_polling_memo_dec_2021.pdf

[ii] Brito, R. A., Collum, B., Hastings, K., Avalos-Reyes, E. A., Karos, R., & Jackson, K. A. (2020, May 25). Total cost of lung cancer care associated with broad panel versus narrow panel sequencing. Journal of Clinical Oncology. https://ascopubs.org/doi/abs/10.1200/JCO.2020.38.15_suppl.7077

[iii] Pennell, N. A., Mutebi, A., Zhou, Z.-Y., Ricculli, M. L., Tang, W., & Wang, H. (2019, May 16). Economic Impact of Next-Generation Sequencing Versus Single-Gene Testing to Detect Genomic Alterations in Metastatic Non–Small-Cell Lung Cancer Using a Decision Analytic Model. JCO Precision Oncology. https://ascopubs.org/doi/abs/10.1200/PO.18.00356

[iv] Yu, T. M., Morrison, C., Gold, E. J., Tradonsky, A., & Arnold, R. J. G. (2018, June 8). Budget Impact of Next-Generation Sequencing for Molecular Assessment of Advanced Non–Small Cell Lung Cancer. https://www.valueinhealthjournal.com/issue/S1098-3015(20)X0011-8