

What is personalised care in cancer?



Everyone is unique, and so is every cancer. Personalised cancer care is **tailored to an individual**. It considers the genetic information of a person's cancer and their lifestyle and environment.¹⁻³

Moving towards personalised cancer care

We are moving towards **personalised** cancer care. Over the last decade there has been an important move away from a **traditional** approach to a **precision** approach to cancer care.⁴⁻⁷



- Cancer was usually treated according to its location in the body and the stage it had reached (if it had spread)^{1,8}
- **Everyone with the same type and stage of cancer was managed the same, with traditional treatments (chemotherapy and radiation therapy) and/or surgery^{1,8}**



- New tests and scientific discoveries have helped us to better understand how certain molecules can contribute to cancer developing^{2,10}
- Today, there are more than 200 known types and subtypes of cancer^{9,11}
- A cancer's genetic information (known as biomarkers) can lead to a better understanding of what is making it grow, to help find the best treatment options^{2,9,10}
- **This approach looks at a cancer's genetic information, using the most up-to-date tests, to help decide the best treatment²**



- The goal of personalised care is to tailor care for every individual's unique cancer, from screening to diagnosis and treatment⁵
- The hope for the future is to not only use a cancer's genetic information to help guide decisions about care (like in precision care), but to also consider the person's environment and lifestyle²
- **Testing cancers and collecting and studying the genetic information can help make this a reality²**

Testing cancers is key for personalised care



Testing for cancer biomarkers helps doctors know more about person's cancer. It can also help guide decisions about treatment.²

Biomarkers might be identified from a sample of the cancer using (a **biopsy**). This is known as **biomarker testing**. **Results** from these tests can help doctors choose the most effective **treatment**.^{2,12–17}



Biopsy

A tissue or blood sample can be taken (also known as a **biopsy**)

Finding biomarkers

Single biomarker tests detect one biomarker

Comprehensive genomic profiling detects multiple biomarkers with a single test

Test results

Test results may reveal biomarkers (but results are not always conclusive)

Personalised treatments

Targeted treatments and **immunotherapies** can target the detected biomarker, making the treatment more effective, with fewer side effects than traditional treatments

What are biomarkers?

Biomarkers are molecules found in cells (e.g. genes) that provide important information about a person's cancer.¹⁵ New biomarkers for different cancer types are constantly being discovered.²

Targeted treatments and **immunotherapies** are two types of treatment often used to target biomarkers in specific cancer cells. They can be more effective and cause fewer side effects than traditional treatments.¹²

Biomarker testing is commonly part of the routine care for some cancer types, including:^{18–20}



advanced lung cancer

It also offers promise for other cancers, which otherwise may be difficult to diagnose or treat, such as:^{20–22}



rare cancer



cancer of unknown primary*

Example: A gene called EGFR is activated too much in some lung cancers. This can cause the cancer to grow. Cancers that test positive for the EGFR biomarker, may respond well to a type of treatment called EGFR inhibitors.^{19,23}

*Cancer of unknown primary is a cancer that has spread and the place where it began (the **primary** site) is unknown.²¹

Potential benefits of personalised cancer care

Personalised care can provide better treatments and better ways to manage cancer.^{6,24–26} It can help people avoid unnecessary treatments that don't work for them and allow them to start the right treatment earlier.²⁵ If used in practice, personalised care could lead to:

- Better **health outcomes**^{24,25}
- Improved **quality of life** with less impact on daily routines^{6,25}
- **Financial benefits** by using more effective treatments earlier^{6,25}
- Broader benefits to **society** through improved health and wellbeing, and more efficient use of healthcare resources^{25–27}

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Veeva document number: M-XX-00007246

Date of preparation: February 2022



Why should I get tested?

As our understanding of cancer improves, better and more personalised care plans can be developed. **Testing cancers is key to this.**^{2,24}

Testing could offer many benefits, as shown below.



Biomarker testing may lead to a more **accurate diagnosis**. This can help guide care plans and also allow people to learn more about their cancer.²⁴



Greater knowledge means people affected by cancer can be more involved in choosing **treatment and care options** based on their unique needs.²⁴



Digital health tools can monitor symptoms, cancer progression and treatment responses. This can help guide discussions with doctors, make sure the cancer is being regularly checked and provide reminders of any actions needed. They can also help us understand how different cancer types are developing.^{24,26}



Testing cancers and collecting and studying the genetic information can help researchers carry out more efficient and effective medical **research**, for new or improved cancer treatments.^{25,28}

Although great progress has been made, there is still some way to go to achieve truly personalised cancer care.^{5,7} **The cancer community can help.**

By **getting tested and giving permission to share your cancer's genetic information**, you can help yourself and others receive personalised cancer care, for better outcomes and more time for life^{2,4,25}



References

1. Roche. Genomics and the personalisation of cancer care. [Internet; cited February 2022]. Available from: https://www.roche.com/about/priorities/personalised_healthcare/genomic-profiling.html
2. European Society for Medical Oncology. Personalised Cancer Medicine: An ESMO Guide for Patients. [Internet; cited February 2022]. Available from: <https://www.esmo.org/content/download/20122/337223/1/ESMO-Patient-Guide-Personalised-Cancer-Medicine.pdf>
3. Lucy R Yates et al. The European Society for Medical Oncology (ESMO) Precision Medicine Glossary. *Annals of Oncology*, 2018, Volume 29, Pages 30–35. Available from: <https://www.sciencedirect.com/science/article/pii/S0923753419350112>
4. Giulia Sedda et al. Challenges and innovations in personalized medicine care. *Future Oncology*, 2019, Volume 15, Pages 3305–3308. Available from: <https://www.futuremedicine.com/doi/pdf/10.2217/fon-2019-0284>
5. Paulina Krzyszczyk et al. The growing role of precision and personalized medicine for cancer treatment. *Technology (Singapore World Science)*, 2018, Volume 6, Pages 79–100. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6352312/>
6. Macmillan Cancer Support. Impact of new personalised cancer treatments. [Internet; cited February 2022]. Available from: https://www.macmillan.org.uk/_images/impact-of-new-personalised-cancer-treatments_tcm9-342003.pdf
7. Fortunato Ciardiello et al. Delivering precision medicine in oncology today and in future—the promise and challenges of personalised cancer medicine: a position paper by the European Society for Medical Oncology (ESMO). *Annals of Oncology*, 2014, Volume 25, Pages 1673–1678. Available from: [https://www.annalsofoncology.org/article/S0923-7534\(19\)35106-3/fulltext](https://www.annalsofoncology.org/article/S0923-7534(19)35106-3/fulltext)
8. Cancer Research UK. Personalised medicine. [Internet; cited February 2022]. Available from: <https://www.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/personalised-medicine>
9. Roche. What is personalised healthcare? [Internet; cited February 2022]. Available from: https://www.roche.com/about/priorities/personalised_healthcare/what_is_phc.htm
10. Douglas Hanahan. Hallmarks of Cancer: New Dimensions. *Cancer Discovery*, 2022. Volume 12, Issue 1, Pages 31–46. Available from: <https://aacrjournals.org/cancerdiscovery/article/12/1/31/675608/Hallmarks-of-Cancer-New-DimensionsHallmarks-of>
11. Qingxuan Song et al. Cancer classification in the genomic era: five contemporary problems. *Human Genomics*, 2015, Volume 9. Available from: <https://humgenomics.biomedcentral.com/articles/10.1186/s40246-015-0049-8>
12. American Cancer Society. Precision or Personalized. [Internet; cited February 2022]. Available from: <https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/precision-medicine.html>
13. National Cancer Institute. Biomarker Testing for Cancer Treatment. [Internet; cited February 2022]. Available from: <https://www.cancer.gov/about-cancer/treatment/types/biomarker-testing-cancer-treatment>
14. K M Johnston et al. Comprehensive genomic profiling for non-small-cell lung cancer: health and budget impact. *Current Oncology*, 2020, Volume 27, Issue 6, Pages e569–e577. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7755443>
15. My Cancer. What Are Biomarkers? [Internet; cited February 2022]. Available from: <https://www.mycancer.com/resources/what-are-biomarkers>
16. Roche. Genomic testing infographic. [Internet; cited February 2022]. Available from: <https://www.roche.com/dam/jcr:9629a2ae-ed72-471b-bbca-f644479e8a56/en/PCTTT-genomic-testing-infographic.pdf>
17. Jeffrey Gagan, Eliezer M Van Allen. Next-generation sequencing to guide cancer therapy. *Genome Medicine*, 2015, Volume 7, Pages 1–10. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4517547>
18. Céline Mascaux et al. Personalised medicine for nonsmall cell lung cancer. *European Respiratory Review*, 2017, Volume 26. Available from: <https://err.ersjournals.com/content/26/146/170066>
19. European Society for Medical Oncology. Personalised Medicine at a Glance: Lung Cancer. [Internet; cited February 2022]. Available from: <https://www.esmo.org/for-patients/personalised-medicine-explained/Lung-Cancer>



20. Shuhang Wang. Comprehensive Genomic Profiling of Rare Tumors: Routes to Targeted Therapies. *Frontiers in Oncology*, 2020, Volume 10.
Available from: <https://www.frontiersin.org/articles/10.3389/fonc.2020.00536/full>
21. Michael S Lee, Hanna K Sanoff. Cancer of unknown primary. *BMJ*, 2020, Volume 371.
Available from: <https://www.bmj.com/content/371/bmj.m4050.long>
22. Jeffrey S Ross et al. Comprehensive Genomic Profiling of Carcinoma of Unknown Primary Site: New Routes to Targeted Therapies. *JAMA Oncology*, 2015, Volume 1, Issue 1, Pages 40–49.
Available from: <https://jamanetwork.com/journals/jamaoncology/fullarticle/2108853>
23. American Cancer Society. Lung Cancer Biomarker Testing. [Internet; cited February 2022].
Available from: <https://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer/learn-about-lung-cancer/how-is-lung-cancer-diagnosed/lung-cancer-tumor-testing/egfr>
24. National Health Service. Improving outcomes through personalised medicine. [Internet; cited February 2022].
Available from: <https://www.england.nhs.uk/wp-content/uploads/2016/09/improving-outcomes-personalised-medicine.pdf>
25. Charles River Associates. The benefits of personalised medicine to patients, society and healthcare systems. [Internet; cited February 2022].
Available from: <https://www.crai.com/insights-events/publications/benefits-personalised-medicines-patients-society-and-healthcare-systems/>
26. Arjun Panesar. What Is the Future of Healthcare? Machine Learning and AI for Healthcare, 2020,
DOI: 10.1007/978-1-4842-6537-6_9.
Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7989871>
27. National Health Service. What is personalised care? [Internet; cited February 2022].
Available from: <https://www.england.nhs.uk/personalisedcare/what-is-personalised-care/>
28. Nature. How cancer genomics is transforming diagnosis and treatment. [Internet; cited February 2022].
Available from: <https://www.nature.com/articles/d41586-020-00845-4>