Swiss Re

Life & Health Trend Spotlight
Advancements in Cancer Treatments – the pathway to personalisation

Cancer treatments have evolved from traditional modalities, such as surgery and chemotherapy, towards increasingly personalised, biomarker-led care. Newer treatments, molecular targets, and combination therapies are changing outcomes for selected cancers. The aim is to improve survival, reduce recurrence and preserve quality of life. These developments will reshape mortality and morbidity risk, survivorship, and their impact on Life & Health insurance.

Cancer is a complex, multi-stage disease that often develops over decades. Despite rising incidence, mortality continues to improve. Between 1990 and 2023, age-standardised cancer deaths declined by 24% globally, with much of this progress occurring in high- and upper-middle-income countries[1].

Influenced by genetics, ageing, lifestyle and environmental exposures, more than one-third of cases are linked to modifiable risk factors. We explored these in the first publication of our cancer series: *Cancer epidemiology: new trends and risks, and what they mean for insurance.*

Advances in screening and diagnostics have improved outcomes by enabling earlier detection. New technologies increasingly seek to identify cancer at pre-symptomatic stages, as discussed in our second publication *Reshaping Cancer Detection – from early signals to earlier intervention.*

Find out more

For more detailed information visit www.swissre.com/reinsurance/insights/personalisation-of-cancer-treatment.html

Cancer treatment innovation is essential in converting progress from screening and diagnostics into sustained survival gains. *In this third publication in our cancer series,* Swiss Re has identified three key themes shaping the future of cancer treatments: improvements in established therapies, the rise of precision and personalised oncology, and the impact of AI. All of these have implications for L&H insurance.

Key message

- **Precision oncology is reshaping cancer care:** treatment pathways are gradually becoming personalised, guided by tumour biology alongside cancer site.
- **Novel treatments are transforming outcomes:** targeted therapies and immuno-therapies are improving survival for selected cancers, dependent on type and stage.
- **Established approaches are improving:** surgery, radiotherapy and chemotherapy are becoming more precise, less invasive and increasingly combined with novel treatments.
- **Healthcare sequencing matters:** the greatest gains are anticipated from combining therapies and deploying them earlier in the disease course.
- **AI is accelerating innovation:** drug discovery, treatment selection, planning and monitoring, are being enhanced by AI. Robust evidence for long-term survival and quality-of-life benefits are still emerging.
- **Cancer survivorship is becoming more complex:** improved survival is creating a growing population with recurrence risk and potentially long-term morbidity.
- **Access determines impact:** treatment availability, manufacturing capacity, health-care infrastructure, and cost will continue to shape who benefits from innovation.
- **Life & Health insurance risk is evolving:** better survival may improve mortality outcomes, while longer survivorship, treatment-related morbidity and high-cost therapies increase complexity for underwriting, claims and pricing across business lines.

Established cancer treatments

Surgery, chemotherapy and radiotherapy remain the backbone of cancer treatment (Table 1). They have delivered steady improvements over the past decades through enhanced precision, less invasive surgery and better treatment planning and sequencing. However, with medicine's greater understanding of tumour biology, treatment resistance and variable patient responses, breakthroughs are expected to come from new therapies, and incremental improvements to established ones.

Table 1: Treatment modalities at a glance

	Surgery	Radiotherapy	Chemotherapy	Immunotherapy	Targeted therapy	Combination therapies
Type	Established	Established	Established	Precision	Precision	Multi-modal
Main mechanism	Removal of tumour and affected lymph nodes	Uses radiation to destroy cancer cells and stop growth	Kills rapidly dividing cells	Activates or redirects the body's immune response	Blocks cancer-specific targets (pathways, signals or hormone receptors)	Combines different treatments
Scope	Local	Local	Whole body	Whole body	Whole body	Local/ whole body
Key strengths	Foundation for solid tumours	Precise local control	Treats cancer throughout the body	Targeted with durable responses, especially in advanced cancers	Personalised treatment with targeted long-term control	Generally more effective than single treatments
Key limitations	Limited in metastatic disease, and solid tumours need to be accessible	Damages healthy local tissue	Widespread toxicity and resistance	Benefits only some cancers. Costs and manufacturing challenges	Resistance and selected eligible patients. Limited efficacy. Cost and access challenges	Complexity, cost and inter-disciplinary treatment planning and burden.
Side effects/ long-term complications	Scarring, functional loss, recurrence risk	Fatigue, skin reactions, organ damage, secondary cancer risk	Fatigue, nausea, infection risk, anaemia. Possible long-term risk of cardiac, cognitive, fertility, and nerve damage	Immune-related inflammation affecting major organ systems. Some effects may be severe or persistent. Potential long-term autoimmune effects	Chronic treatment burden, side effects including toxicity across multiple organs	Higher cumulative toxicity, overlapping side effects, longer monitoring

Surgery

Surgery remains the cornerstone of treatment for most solid tumours, aiming to remove the cancer and if appropriate, nearby lymph nodes, whilst sparing healthy tissue and function where possible. Surgery may not always be feasible due to tumour location, patient frailty or comorbidities. Microscopic cancer deposits can also remain after surgery and cause recurrence. As such, many patients receive additional treatment to improve long-term outcomes. Perioperative mortality has declined substantially over recent decades because of advances in surgical techniques, anaesthesia, perioperative care, patient selection and quality monitoring. However, risks remain dependent on procedure type, patient factors and healthcare capacity.

Advances are increasingly focusing on improving operative precision, with the aim of removing the tumour completely, while reducing complications and subsequent morbidity. Minimally invasive and robot-assisted techniques in selected procedures are supporting faster recovery and helping preserve function and quality of life. These approaches may also broaden surgical options for selected higher-risk patients. Image-guided techniques, including intraoperative imaging, fluorescence guidance, surgical navigation and augmented reality, are further examples of this broader move towards more precise surgery.

Radiotherapy

Radiotherapy uses high-energy radiation to damage cancer cell DNA and trigger cell death. While highly effective, treatment response varies due to differences in tumour biology and genetics. Some cancer cells can repair radiation-induced damage, while oxygen-starved regions of tumours are less sensitive and may require up to three times the standard radiation dose, making it harder to improve tumour control without harming nearby healthy tissue[2].

Modern radiotherapy is becoming increasingly precise and aims to overcome these limitations through advanced imaging, AI-assisted planning and techniques that better target tumours while reducing side effects[3, 4].

- Stereotactic radiotherapy can deliver highly targeted, high-dose treatment in a small number of sessions, compared with conventional radiotherapy, which may require treatment over several weeks[5, 6]. This has curative potential in some early-stage lung cancers and is becoming common for some brain tumours for durable, local control[7].
- Proton therapy delivers highly focused radiation with reduced exposure to surrounding tissue and is increasingly used for childhood cancers and tumours near critical organs, such as eye cancers[8].

- Carbon ion therapy may improve outcomes in oxygen-starved tumours that are less responsive to conventional radiation[9].
- Targeted radionuclide therapies deliver radiation directly to cancer cells, combining the precision of targeted therapies with the cancer-killing effects of radiation[10, 11]. A related approach is brachytherapy, where radioactive 'seeds' are implanted directly within or adjacent to a tumour. In prostate cancer, for example, these seeds deliver highly localised radiation to the tumour, while limiting damage to nearby healthy tissue[12].

Chemotherapy

Chemotherapy works by damaging cancer cells or disrupting their ability to grow and divide. However, as a systemic treatment, it also affects healthy fast-growing cells in the skin, bone marrow, digestive system and hair follicles, causing side effects such as nausea, fatigue, infection risk and hair loss. This can reduce quality of life and limit treatment intensity. Cancer cells can also become resistant by repairing damage or pumping drugs out of the cell. New delivery systems, including nanoparticles, aim to target chemotherapy more directly to solid tumours, improving effectiveness while reducing side effects[13].

Chemotherapy is also being used more strategically, for example before surgery to shrink tumours or alongside other treatments to improve outcomes and reduce recurrence risk.

Survivorship care

For insurers, post-cancer treatment risks remain important. Late effects may appear months or years after treatment. Long-term effects can persist for decades, and even include the development of treatment-related secondary cancers. Psychological impacts are also common, including fear of recurrence or returning to work. Risks vary by treatment type, intensity, toxicity and patient factors such as age, baseline health and genetics.

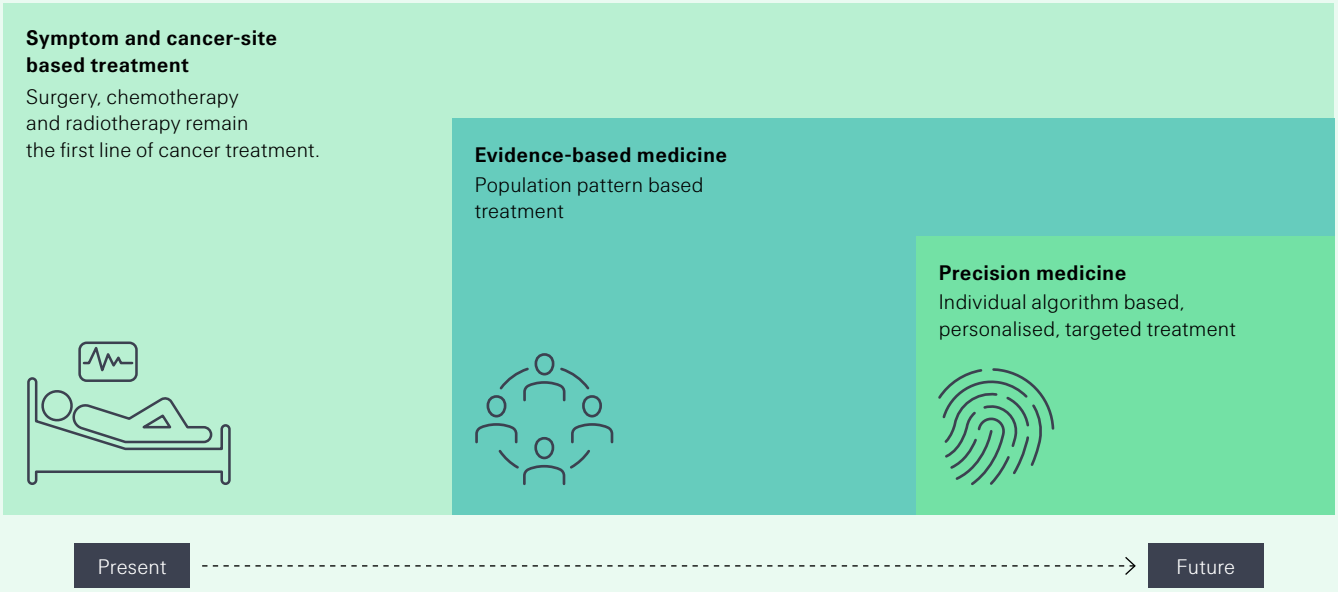
Surgery, in some cases, can lead to long-term pain, scarring, reduced mobility and functional impairment. Some patients may also face complications from reconstruction, amputations or organ removal.

Radiotherapy may cause local tissue damage that appears months or years later. Risks depend heavily on the treatment site and radiation dose but can include major organ impacts (lung scarring or heart damage), skin and soft tissue impacts and other functional changes. In some cases, secondary cancers are also a risk.

Chemotherapy and other drug-based treatments have the potential to affect major organs, including the heart and lungs, and cause neurological complications such as numbness or tingling. Other long-term effects may include persistent fatigue, cognitive changes, hearing loss, fertility problems and early menopause.

Survivorship care should include a treatment summary, risk-based monitoring, age-appropriate screening, and support for physical, emotional, reproductive and social recovery.

Figure 1: The evolution of cancer treatments



Personalised and precision oncology: immunotherapies and targeted treatments tailored to tumour biology

Cancer treatment is shifting from traditional approaches towards precision oncology. Genomic sequencing, biomarker testing and molecular profiling are used to match treatments to the underlying biological features of an individual tumour. This means cancers from different organs may receive the same therapy if they share the same molecular target.

Two major pillars of this shift are **immunotherapies**, which help the immune system recognise and attack cancer cells, and **targeted therapies**, which block specific molecular pathways that cancer cells use to survive and multiply. Together, these approaches have delivered major survival gains in selected cancers, including melanoma, lung, kidney, bladder and some blood cancers.

Future outlook: progress will depend on matching the right treatment to the right patient, and using effective treatments and combination approaches earlier, with a view to strengthen immune response and overcome resistance. Advanced testing can support accurate treatment matching and monitoring tumour evolution over time. Wider adoption will require managing side effects, improving response durability and proving effectiveness across more cancers, while overcoming cost and manufacturing barriers.

Immunotherapy

Immunotherapy helps the immune system to recognise and attack cancer cells.

Many immunotherapies work by boosting T-cells, a type of white blood cell that can identify and destroy abnormal cells by recognising surface proteins (markers) called antigens. However, cancer can evade the immune system by hiding from these cells and creating a tumour microenvironment, that suppresses or switches off the immune response.

Immunotherapy aims to overcome these evasion barriers by bolstering the immune response. However, benefits remain uneven. Some cancers respond strongly, while others show little or short-lived benefit. Even within the same cancer type, outcomes can vary considerably between patients. Immunotherapy can also cause immune-related side effects if healthy tissue is attacked.

Table 2: Immunotherapies at a glance

Modality	Mechanism	Selected applications	Future outlook for broader use
Immune checkpoint inhibitors (ICI)	T-cell activity is regulated by natural 'checkpoint' proteins, which cancers can switch off, suppressing T-cell activity. ICIs counteract this, restoring T-cells' ability to destroy cancer.	• First major breakthrough in melanoma (2011)[14]. • In advanced melanoma over half of patients can now survive 10 years with some regimens, compared to an average of 6-9 months previously[15]. • FDA-approved ICIs now cover a wide range of solid tumour indications (including breast, stomach, colorectal, liver, and lung cancers) and some blood cancers such as Hodgkin's lymphoma[16]. • Keytruda® (pembrolizumab) is a PD-1 inhibitor and is one of the world's leading multi- cancer drugs[17].	• Expansion into earlier-stage disease and new combinations. • Progress depends on overcoming resistance, managing side effects, costs and improving biomarker-guided patient selection[18].
Therapeutic vaccines, including mRNA vaccines	Therapeutic cancer vaccines are designed to treat existing cancer or prevent recurrence. Personalised mRNA vaccines use tumour analysis to identify patient-specific cancer markers, known as neoantigens, and train T-cells to recognise them. Other approaches target shared cancer markers.	• Progress has historically been slow. • 3 FDA-approved therapeutic vaccines (2024), used to treat prostate and bladder cancer, and melanoma[19]. • mRNA technology has accelerated after COVID-19. Early trials suggest they may strengthen ICI responses. In high-risk melanoma, risk of recurrence or death was reduced by 49% in one trial[20]. • Shared marker vaccines are also being developed, including KRAS for pancreatic and colorectal cancer[21]. • Preventative vaccines like alpha-lactalbumin vaccines for triple-negative breast cancer have also shown promise[22].	• Wider use depends on faster and cheaper manufacturing of vaccines at scale. • Biomarker-guided selection to identify patients most likely to benefit from treatment. • Evidence of treatment impact across cancer types and earlier stages, particularly in combination with other treatments.
Cell therapies: CAR-T, CAR-NK, bispecific antibodies	CAR-T modifies a patient's own T-cells in a lab with chimeric antigen receptors (CARs) to recognise cancer cells. CAR-NK uses natural killer cells, as an off-the-shelf alternative. Bispecific antibodies bring immune cells and cancer cells physically together so the immune system can attack the tumour[23].	• CAR-T: strongest success in blood cancers, with 16 therapies approved globally[24]. • The first CAR-T therapy for solid tumours has been approved in China for advanced gastric cancer[25]. • In a trial on relapsed or treatment-resistant large B-cell lymphoma, CAR-T therapy with Kymriah® (tisagenlecleucel) gave a 12-month overall survival of 49%; historically, advanced patients without CAR-T would only have a 1-year survival rate of 23%[26]. • CAR-NK: remains earlier stage, without approved therapies[27]. • Bispecific antibodies: expanding rapidly, with several FDA approvals particularly in blood cancers, with fewer applications in solid tumours[28].	• Off-the-shelf, in-vivo and gene-edited approaches may lower cost and expand access. • Key barriers include safety, immune rejection and durability of response, alongside manufacturing complexity with very high costs. • Success in solid tumours remains more limited.

Other approaches include oncolytic viruses (which infect and destroy tumour cells while stimulating an immune response) and cytokine therapies (which boost immune responses)[29, 30]. Their use remains limited by delivery challenges, toxicity and unconvincing standalone efficacy, but they may become more relevant in combination with other cancer treatments.

Personalised cancer immunotherapies

mRNA VACCINES

CAR-T CELL THERAPY

Tumour biopsy

A sample of the patient's tumour is collected.

Antigen identification

Scientists identify a patient's unique cancer cell antigens (targets).

Personalised treatment delivered

mRNA vaccine

Personalised tumour- specific treatment produced and injected.

Gives your body instructions to produce more of the unique antigens to recognise cancer as foreign.

CAR-T cells returned

T cells are modified to recognise antigens on cancer cells.

They are multiplied in the lab, and infused into the patient.

Immune system activated

The vaccine or CAR-T cells trigger an immune response, ready to attack cancer cells.

Identify and kill cancer cells

Activated immune cells (white blood cells), find and destroy cancer.

Targeted therapies

Targeted therapies act on specific molecular features that cancer cells rely on to grow, survive or spread. These features may include mutated genes, overactive growth signals, hormone receptors, or abnormal proteins on the cancer cell surface. Unlike chemotherapy, which broadly attacks rapidly dividing cells, targeted therapies are designed to act mainly on cancer cells, to reduce damage to healthy tissue.

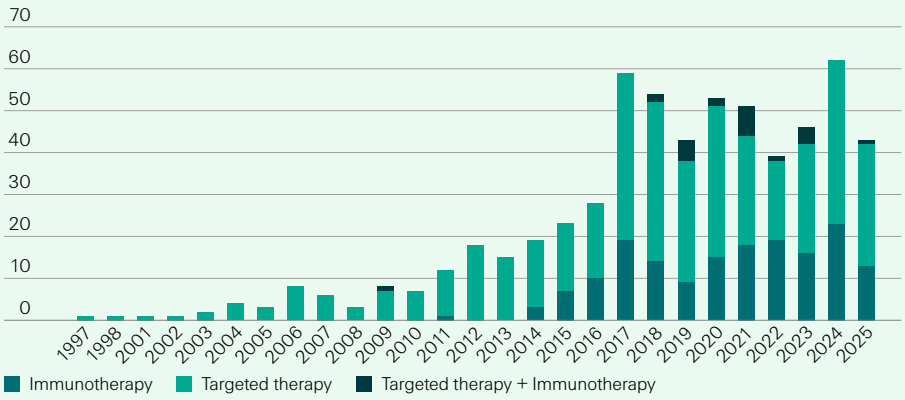
Targeted therapies include **small molecule inhibitors** and **monoclonal antibodies** (including **antibody-drug conjugates)**:

Table 3: Targeted therapies at a glance

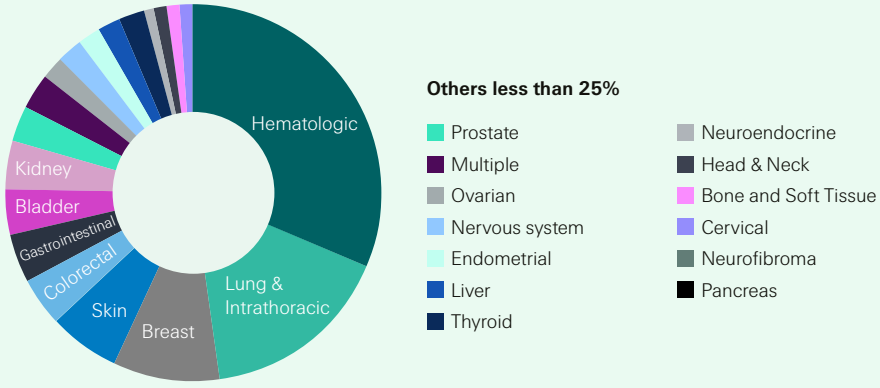
Modality	Selected applications in clinical studies
Small molecule inhibitors One of the largest classes of targeted therapy. They enter cells and block proteins involved in cancer growth.	**Tyrosine kinase inhibitors:** Glivec® (imatinib) transformed chronic myeloid leukaemia into a long-term manageable condition for many patients, with survival benefits sustained for 11 years of follow-up in one clinical trial[31]. **KRAS/RAS protein:** previously considered "undruggable", this is now a highly active drug development area. Recently, daraxonrasib doubled median pancreatic cancer survival in a landmark clinical trial to 13.2 months with fewer severe side effects[32]. KRAS/RAS is now being targeted in lung, colorectal and other cancers. **EGFR protein:** EGFR alterations occur in 10–15% of US lung cancers[33]. Tagrisso® (osimertinib) increased the 5-year survival rate to 88%, from 78% with placebo, reducing risk of death by 51% in non-small cell lung cancer in one clinical trial[34]. Other treatments have improved outcomes for some lung cancer-related brain metastases[35].
Monoclonal antibodies including antibody-drug conjugates (ADC) Therapies that bind to proteins on the surface of cancer cells, blocking growth signals or helping the immune system attack the tumour. In ADCs these have a chemotherapy payload attached, delivering the drug directly to cancer cells.	**HER2 receptor:** Herceptin® (trastuzumab) transformed breast cancer, reducing recurrence by 34% and mortality by 33% in a metanalysis of multiple studies[36]. Applications are now expanding into gastric, lung, bladder and HER2-low / HER2-mutant tumours, especially when combined with ADCs. **HER2-targeted ADC:** Enhertu® (trastuzumab deruxtecan) demonstrated 12.5 months overall median survival, compared to 8.4 months on chemotherapy, in a trial on advanced gastric cancer[37]. **CD20 protein:** MabThera® (rituximab) changed treatment of some blood cancers. In one study, adding it to standard chemotherapy increased 10-year overall survival from around 28% to 44%[38].

This field has expanded rapidly, with more than 150 FDA-approved drugs and over 400 approved treatment regimens across over 30 types of cancer, as of 2025[39, 40]. However, benefits depend heavily on biomarker testing, access to treatment and how long cancers remain sensitive before resistance develops.

FDA-approved targeted therapies and immunotherapies by modality, 1997–2025



FDA-approved targeted therapies and immunotherapies by cancer type, 1997–2025



Artificial intelligence (AI) as an enabling layer

AI is increasingly acting as an enabling layer across the entire cancer pathway, supporting earlier detection, treatment selection, planning, and monitoring. By analysing large volumes of genomic, imaging and clinical data, it can support improved clinical decision making. However, its impact will depend on robust validation of representative datasets useful to clinicians, as well as overcoming regulatory challenges. While efficiency gains are increasingly clear, evidence for improvements in survival and quality of life is still emerging.

AI applications across cancer care

1

Drug discovery and development

Identifying effective targets and therapies, and optimising trials

Drug identification

Identification of novel drug combinations to accelerate discovery and repurpose medications.

- In one laboratory cell study, 3 of 12 AI-selected combinations of affordable non-cancer drugs exceeded the standards for current treatments[41].

Drug response

Prediction of cancer response to drugs using multi-modal data.

- A tool predicted drug response with 99.3% accuracy, potentially shortening preclinical R&D from 3 years to 3 months while finding new targets[42].
- A tool combining imaging, biopsy and clinical data from almost 2 500 breast cancer patients, predicted treatment response before surgery and outperformed radiologists[43].

Trial design

Improve clinical trial efficiency, patient selection and potential treatment response.

2

Treatment planning and delivery

Integrating genomic, clinical and imaging data to inform patient treatment selection

Treatment selection and planning

Integrates data to support treatment selection and plans. Identifies patient most likely to benefit, reducing unnecessary interventions.

Surgical and radiotherapy precision

- **Surgery:** Improved planning for minimally invasive or robotic procedures by more accurate tumour localisation, reducing complications and preserving healthy tissue and function.
- **Radiotherapy:** Precisely delivering radiation to protect surrounding healthy tissue, while optimising dosage.

Resistance prediction

Prediction of patients most likely to respond to treatment or develop resistance, avoiding ineffective therapies, and reducing side effects.

Predictive biomarker identification

Generate faster, lower-cost predictive biomarkers from clinical data, as opposed to molecular testing, making precision oncology more accessible[44].

3

Disease monitoring and prognosis

Forecasting treatment response, disease progression and recurrence risk for earlier intervention and personalised follow-up

Prognosis and disease progression

- Integrates imaging, biopsy, clinical and molecular data to predict survival, disease progression and recurrence risk.
- A study analysing biopsy images predicted brain metastases risk in some early-stage lung cancer with 87% accuracy, compared with 57% among pathologists[45].

Short-term mortality prediction

A pan-cancer AI model outperformed 10 separate cancer-specific models in predicting 30-day mortality in advanced cancers, potentially helping clinicians avoid ineffective end-of-life treatment[46].

Opportunities

- Faster drug discovery
- More efficient trials
- More accurate decisions
- Targeted resource use
- Fewer unnecessary interventions
- Potential to improve outcomes and quality of life

Key challenges

- High-quality representative data
- Interoperable data infrastructure
- Clinical validation and integration in real-world settings
- Regulatory approval and governance

Impact on Life & Health insurance products

Cancer is a major driver of L&H claims. Earlier diagnosis and more effective treatments are improving survival and reducing death rates across many cancers. While this is favourable for mortality portfolios, rising incidence, longer survivorship and high-cost therapies may increase morbidity and medical claims. L&H insurers will need to consider these changes in product design, underwriting and claims management.

Pricing impacts and assumptions are likely to vary by product, cancer type, severity and prognosis, and market-specific access to care. Longer-term assumptions should reflect growing survivorship, the residual burden of recurrence, second cancers and treatment-related morbidity. Scenario testing can help understand uncertainty around specific treatments and their market adoption, to assess portfolio impacts across the insured population.

Mortality

- Mortality improvements are likely to vary across cancer types, with the greatest impact anticipated where new advancements enable long-term remission.
- In the short term, these gains may remain strongest in diseases that have already benefited from major therapeutic advancements, such as breast and lung cancers. In the future, improvements may come from currently hard-to-detect and treat conditions, including pancreatic, oesophageal and brain cancers.
- Early detection may reduce near-term death claims, from earlier, more effective intervention, although impacts will vary by market due to differences in healthcare capacity, including specialist centres and treatment availability.

Longevity

- Longevity assumptions may need to reflect improved cancer survival, while recognising that gains in life expectancy may not be matched by equivalent improvements in healthy-years among long-term survivors. This would, in turn, increase annuity costs from longer life expectancies.

Longer survival may shift mortality to older ages, with recurrence, second cancers and other non-cancer comorbidities becoming increasingly important drivers of later-life death.

Critical illness (CI)

- Pricing is unlikely to be impacted by treatment advancements when claims are triggered on for diagnosis. However, they may become more important for products with severity- or stage-based benefits, if new treatments reduce progression to more advanced disease.
- More cancer survivors seeking new or additional cover will increase complexity and heterogeneity in underwriting.
- Longer survival may increase the likelihood of recurrence, secondary cancers, or subsequent covered CI events, depending on policy definitions.
- Product and claims experience will depend on policy features and factors such as early or low-risk and advanced cancers. Other considerations need to include cancer definitions, stage-based benefits, recurrence clauses, reset periods and the handling of multiple-event claims.
- Demand for CI cover will likely remain strong in markets where benefits help fund expensive treatments which are constricted by reimbursement, availability and patent protection.

Disability income/Income protection (DI/IP)

- Treatment advances have mixed implications for DI/IP. More effective treatments may enable some policyholders to recover more quickly and return to work sooner, reducing claim duration.
- However, longer survival without full functional recovery may extend periods of work impairment and extended claims duration. Over time, survivors may also face higher risks of recurrence and secondary cancers.
- Less invasive surgery and targeted therapies may allow some people to continue working during treatment. However, long-term treatment and side-effects may meet DI/IP claims thresholds, depending on occupation and policy design, including proportionate benefit provisions.
- Claims experience will depend heavily on product design, including impairment-based triggers, benefit definitions and rehabilitation provisions with return-to-work support.
- Overall, improved outcomes could support lower claim severity, as more cancers are successfully treated.

Medical expense/Medical reimbursement (MedEx/MedRe)

- Medical insurance is likely to see the most immediate impact of advancements, dependent on benefit limits and policy coverage terms.
- Many new precision medicines are patented, expensive and limited in availability. In addition to testing and ongoing monitoring, this adds pressure to healthcare inflation along with the current and cumulative costs incurred by existing treatments.
- Advanced diagnostics, such as biomarker testing, may increase upfront costs but could improve patient selection and reduce ineffective treatment and improve outcomes.
- However, this may become cost-effective overall, if new treatments are curative, improve outcomes with meaningful quality of life changes, slow progression, or shift treatment to lower-cost healthcare settings.
- Market access will increasingly shape cancer claims experience. Patient access may be dependent on reimbursement and funding mechanisms: state subsidies, health insurance coverage and price negotiations between funders and pharmaceutical companies, and regulatory approval.

Long-term care (LTC)

- Improved survival may increase LTC exposure, as more individuals reach older ages with frailty and multimorbidity.
- Better treatment and supportive care may reduce LTC reliance for some survivors, while others may require ongoing assistance.
- Product design may move towards more flexible benefits covering rehabilitation, extended home care, palliative treatment and survivorship services.

Impact on Underwriting and Claims

Underwriting

- Increasing survivorship means more applicants are likely to present with a cancer history.
- Underwriting risk classification may benefit from incorporating additional factors such as new biomarkers, alongside the traditional site-and-stage framework, as oncology knowledge expands.
- Underwriting operations will need to accommodate more complex medical histories and disclosures, possibly requiring increased medical reporting and oncology expertise.
- Where supported by robust evidence, a new range of prognostic factors support decision making. Although their availability, consistency and interpretation can vary between markets.
- Underwriting frameworks and decision-support tools should remain consistent, accurate and current in a complex environment.
- The risk of information asymmetry may increase, particularly where applicants have access to private genetic or biomarker information, or advanced treatments that are not captured in standard underwriting disclosures.
- As longer-term evidence becomes available, underwriting decisions should become clearer for cancers with established treatment pathways, though uncertainty will remain for newer therapies.

Claims

- Claims assessment will likely become more technically complex as treatment personalisation, pathways, effectiveness and access vary. For accelerated or terminal illnesses payout products, differing prognoses from new and expanding treatments may add another layer of complexity.
- This may require stronger oncology expertise, particularly to interpret biomarkers, treatment response, recurrence, progression, residual impairment, and survival outcomes, which may vary by patient. Definitions should keep pace with evolving disease classifications, improved diagnostic and long-term prognosis, while also considering the impact of morbidity.
- High-cost therapies create governance requirements as well as cost concerns for medical products. Insurers may need evidence of appropriateness evaluation of pre-authorisation standards, and establishment of fair and transparent claims criteria for both insurers and policyholders. Longer survival will increase the risk of recurrence, secondary cancers and multiple-event claims.
- Compared with previous decades, more patients are likely to remain in work or return to work during and after cancer treatment, for DI/IP products. This increases the importance of vocational rehabilitation and return-to-work support. A more nuanced assessment of functional capacity is also needed, as survival or remission is not synonymous with functional recovery – especially where fatigue, cognitive effects, immune toxicity or ongoing treatment burden remains.

Swiss Re's global underwriting manual, Life Guide, continues to evolve in line with advances in cancer care and improved outcomes.

The 2026 Life Guide update introduces a redesigned Cancer Calculator to support consistent, evidence-based and practical risk assessment. The guidance on key topics, including breast, prostate and colorectal cancer have been updated, reflecting the latest medical evidence and risk factors. Together, these enhancements help translate advances into pragmatic, day-to-day underwriting decisions, making an increasingly complex condition easier for underwriters to assess.

Conclusion

- Cancer treatment is advancing from the established to more nuanced, personalised and targeted pathways. How these change cancer care will depend on disease stage and tumour biology, as well as market access. Some therapies will deliver broad benefits while others will remain constrained by cost, access and infrastructure.
- For L&H insurers, this represents both an opportunity and a challenge. As more people survive, mortality may improve for selected cancers, and a growing number of individuals will live longer after diagnosis. At the same time, survivorship brings new considerations, including recurrence, late effects, functional impairment and longer-term treatment needs. Underwriting, pricing and claims practices will therefore need to continue to keep pace as cancer outlooks continue to change.

Cancer is not a single disease, and the fight against it will not evolve in just a single direction. Swiss Re's focus on cancer over the course of 2026 underscores our deep commitment to help the L&H industry keep pace with this growing complexity as we all seek to live longer, healthier lives.

1 *Cancer deaths expected to rise to over 18 million in 2050 - an increase of nearly 75% from 2024, study forecasts, IHME, September 2025.*
2 *K. J. A. Bigos et al., 'Tumour response to hypoxia: Understanding the hypoxic tumour microenvironment to improve treatment outcome in solid tumours', Frontiers in Oncology, 2024.*
3 *R. Afzal et al., 'Modern Advancements in Radiation Oncology: What Every Oncologist Should Know', JCO Oncology Practice, 2026.*
4 *M. Webster et al., 'New Approaches in Radiotherapy', Cancers, 2025.*
5 *The Royal College of Radiologists, Radiotherapy dose fractionation, 2024, accessed June 2026.*
6 *A. Khan et al., 'Stereotactic radiotherapy: An educational narrative review', Precision Clinical Medicine, 2025.*
7 *R. Gale et al., 'Radiation Therapy for Cancer', MSD Manuals, 2024.*
8 *J. Kim et al., 'Proton Beam Therapy for the Treatment of Cancer in Children and Adults: A Health Technology Assessment', CADTH health technology assessment; no.145, 2017.*
9 *What is carbon ion therapy: A Look Inside the Cancer Treatment, Mayo Clinic Magazine, accessed June 2026.*
10 *N. Lepareur et al., 'Clinical Advances and Perspectives in Targeted Radionuclide Therapy', Pharmaceutics, 2023.*
11 *R. Goldbrunner, et al., 'EANO guideline on the diagnosis and management of meningiomas', Neuro-Oncology, 2021.*
12 *E. Gutiérrez-Valencia et al., 'Partial or focal brachytherapy for prostate cancer: a systematic review and meta-analysis', British Journal of Radiology, 2025.*
13 *V. F. Gomerdinger et al., 'Advancing engineering design strategies for targeted cancer nanomedicine', Nature Reviews Cancer, 2025.*
14 *Ipilimumab, FDA Center for Drug Evaluation and Research Approval letter, March 2011.*
15 *Ten-year survival data show long-term benefit of immunotherapy in melanoma, BioPharma Dive, September 2024.*
16 *Immune Checkpoint Inhibitors, National Cancer Institute NCI, accessed June 2026.*
17 *Keytruda holds the top brand slot, but tirzepatide and semaglutide have already passed it at the molecule level in FY2025, Drug Discovery and Development, April 2026.*
18 *D. Zhang et al., 'Revisiting immune checkpoint inhibitors: New strategies to enhance efficacy and reduce toxicity', Frontiers in Immunology, 2024*
19 *D. Olle, 'Therapeutic vaccines for cancer', Health and Medicine, EBSCO Information Services, 2024.*
20 *A. Khattak, et al., 'Intismeran Autogene Plus Pembrolizumab Versus Pembrolizumab Alone in High-Risk Resected Melanoma: 5-Year Update of the Randomized Phase 2b KEYNOTE-942 Study', Journal of Clinical Oncology, 2026.*
21 *Vaccine Targeting KRAS in Pancreatic and Colorectal Cancer Shows Promise, Memorial Sloan Kettering Cancer Center, August 2025.*
22 *E. E. Rhoades et al., 'Phase I trial of alpha-lactalbumin vaccine in patients with high-risk early triple-negative breast cancer (TNBC) and those at genetic risk for TNBC', Journal for ImmunoTherapy of Cancer, 2024.*
23 *A. Z. Mehrabadi et al., 'Therapeutic potential of CAR T cell in malignancies: A scoping review', Biomedicine & Pharmacotherapy, 2022.*
24 *G. Zi et al., 'Advances and prospects in cell therapy for cancer: explorations from T cells to stem cells', Signal Transduction and Targeted Therapy, 2026.*
25 *The National Medical Products Administration of China, NMPA approves the marketing of satricabtagene autoleucel injection, accessed June 2026.*
26 *S. J. Schuster et al., 'Tisagenlecleucel in adult relapsed or refractory diffuse large B-cell lymphoma', New England Journal of Medicine, 2019.*
27 *A. Keener, 'Natural killer cells show their cancer-fighting worth', Nature Outlook: Cancer treatment, 2024.*
28 *Bispecific antibody therapy, Mayo Clinic, accessed June 2026.*
29 *D. Xiao et al., 'Oncolytic viruses: advanced strategies in cancer therapy', Signal Transduction and Targeted Therapy, 2026.*
30 *T. Floros et al., 'Anticancer Cytokines: Biology and Clinical Effects of IFN-α2, IL-2, IL-15, IL-21, and IL-12', Semin Oncology, 2015.*
31 *A. Hochhaus et al., 'Long-Term Outcomes of Imatinib Treatment for Chronic Myeloid Leukemia', The New England journal of medicine, 2017.*
32 *E. O'Reilly et al., 'Daraxonrasib or Chemotherapy in Previously Treated Metastatic Pancreatic Cancer', New England Journal of Medicine, 2026.*
33 *EGFR and Lung Cancer, American Lung Association, accessed June 2026.*
34 *M. Tsuboi et al., 'Overall Survival with Osimertinib in Resected EGFR-Mutated NSCLC', New England Journal of Medicine, 2023.*
35 *W. Shalata et al., 'Efficacy of Tyrosine Kinase Inhibitors in ALK and EGFR-Mutated Non-Small Cell Lung Cancer with Brain Metastases', Medical Sciences, 2025.*
36 *Early Breast Cancer Trialists' Collaborative Group (EBCTCG), 'Trastuzumab for early-stage, HER2-positive breast cancer: a meta-analysis of 13,864 women in seven randomised trials', Lancet Oncology, 2021.*
37 *K. Shitara et al., 'Trastuzumab deruxtecan in previously treated HER2-positive gastric cancer', New England Journal of Medicine, 2020.*
38 *B. Coiffier et al., 'Long-term outcome of patients in the LNH-98.5 trial, the first randomized study comparing rituximab-CHOP to standard CHOP chemotherapy in DLBCL patients: a study by the Groupe d'Etudes des Lymphomes de l'Adulte', Blood, 2010.*
39 *O. Landau et al., 'OncoAID: an open access targeted anti-cancer drugs database', Frontiers in Pharmacology, 2025.*
40 *U.S. Food and Drug Administration, Drug Approvals and Databases, accessed June 2026.*
41 *A. Abdel-Rehim et al., 'Scientific hypothesis generation by large language models: laboratory validation in breast cancer treatment', Journal of The Royal Society Interface, 2025.*
42 *New AI technology could bring cancer drugs to patients in half the current time, Institute of Cancer Research, March 2025.*
43 *Innovative artificial intelligence model improves predictions for breast cancer treatment, Netherlands Cancer Institute, February 2025.*
44 *M. Ligero et al., 'Artificial intelligence-based biomarkers for treatment decisions in oncology', Trends in Cancer, 2025.*
45 *AI may predict spread of lung cancer to brain, Ecancer, March 2024.*
46 *C. Vesteghem et al., 'Machine learning for prediction of 30-day mortality in patients with advanced cancer: comparing pan-cancer and single-cancer models', ESMO Real World Data Digit Oncology, 2025.*

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