The Future of Cancer Care: How Trends in Oncology impact Underwriting and Claims

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Swiss Re

A Shifting Landscape

- Cancer is no longer one event with one risk trajectory.

- Evolving into a spectrum :

  Curable, Chronic, Recurrent

  Molecularly defined

  Longer survival

  Escalating costs

Evidence Today, Better Decisions Tomorrow

Changing Cancer Landscape: New epidemiology trends, Survival & Survivorship

The Future is Now

Advances in Oncology: Diagnostics & Treatment

Drivers of Cancer Epidemiology

- Ageing Populations
- Demographic change: Shifting Incidence and Geography
- Rising Early-Onset Cancers
- Changing Risk factors
- Rapid medical innovation in diagnosis and treatment
- Survivorship

Shift in Cancer Epidemiology

Early-onset cancer (EOC) typically refers to cancer diagnosed after adolescence and before the age of 50 years

- Between 1990 and 2019, the global incidence of early-onset cancer **increased by 79.1%**
- Globally, approximately **65–67%** of early onset cancers **occur in women**

RD Kehm, et al. Early onset cancer trends and the persistently higher burden of cancer in young women. The Oncologist, 2025, 30, oyaf084.

The Why and What of EOCs

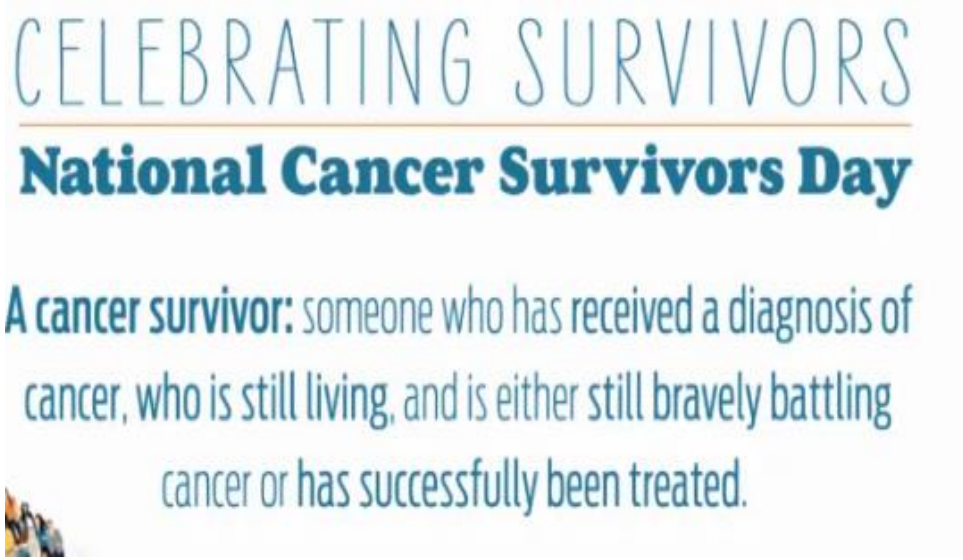
WHY

- Multifactorial but drivers are not well understood
- Early sustained metabolic dysfunction
- Microbiome and inflammatory disruption
- Modern environment – dietary exposures (e.g. UPF, microplastics)

WHAT

- Stage at diagnosis - often advanced
- Distinct tumor biology - ? more aggressive molecular profiles
- Delayed diagnosis and health care access
- Treatment – multimodal and related toxicity
- Longer survivorship and persistent biological vulnerability
- Psychosocial and functional impact

Changing Face of Survivorship



More young survivors imply longer and more complex protection tails, highlighting potential protection gaps,

Hindustan Times

9 hours, 55 minutes: US climber, a cancer survivor, summits Mt Everest in record time

Story by Stuti Gupta • 17h • 2 min read

Cancer Survivorship - NCI

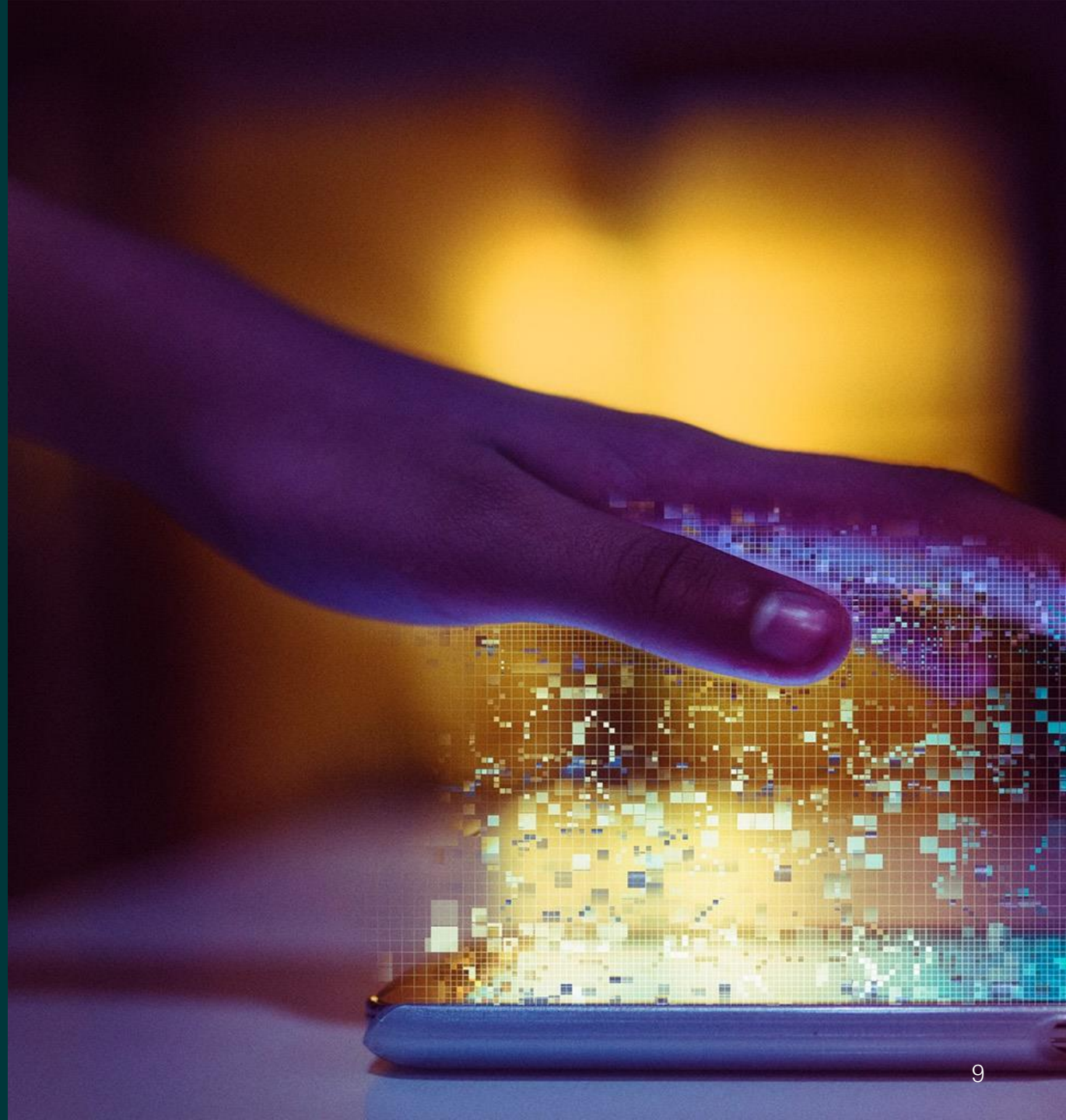
Shifting paradigms, Shaping Survival

Early Detection

New treatments which make a difference

Modern Biomarker based classification and change in prognosis

Future ready cancer risk assessment



The Spectrum

- A 55-year-old female H/O Breast cancer at age of 46 years with history of early onset breast cancer in mother

  T2N0M0 Grade 3, ER/PR +ve ; HER2 +, Optimum treatment taken and no recurrence > 9 yrs

Same stage, very different risk.

Cancer is becoming more biologically defined

- **TNM staging:** **Tumour size, Lymph node involvement, Metastasis** } **TNM** Anatomic staging standard staging criteria

- **Biomarkers:** **Relevant to Staging, Prognosis, Risk stratification or Treatment selection.**

Risk groups are getting more granular – from anatomy to biology

Anatomy

Tumor biology (+ molecular profiling)

ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage 0	Tis	N0	M0
Stage IA	T1*	N0	M0
Stage IB	T0	N1mi	M0
	T1*	N1mi	M0
Stage IIA	T0	N1**	M0
	T1*	N1**	M0
	T2	N0	M0
Stage IIB	T2	N1	M0
	T3	N0	M0
Stage IIIA	T0	N2	M0
	T1*	N2	M0
	T2	N2	M0
	T3	N1	M0
	T3	N2	M0
Stage IIIB	T4	N0	M0
	T4	N1	M0
	T4	N2	M0
Stage IIIC	Any T	N3	M0
Stage IV	Any T	Any N	M1

			ER+, PR+, HER2+	ER+, PR+, HER2-	ER+/PR-, HER2+	ER-/PR+, HER2+	ER-, PR-, HER2+	ER+, PR-, HER2-	ER-, PR+, HER2-	ER-, PR-, HER2-	Anatomic stage
TisN0	M0	G1-3	0	0	0	0	0	0	0	0	0
T1N0 T0N1mi T1N1mi		G1	IA	IA	IA	IA	IA	IA	IA	IA	IA
		G2	IA	IA	IA	IA	IA	IA	IA	IB	IA
		G3	IA	IA	IA	IA	IA	IA	IA	IB	IA
T0N1 T1N1 T2N0		G1	IA	IA	IB	IB	IIA	IB	IB	IIA	IIA
		G2	IA	IA	IB	IB	IIA	IIA	IIA	IIA	IIA
		G3	IA	IB	IIA	IIA	IIA	IIA	IIA	IIA	IIA
T2N1 T3N0		G1	IA	IA	IIB	IIB	IIB	IIB	IIB	IIB	IIB
		G2	IB	IB	IIB	IIB	IIB	IIB	IIB	IIB	IIB
		G3	IB	IIA	IIB	IIB	IIB	IIB	IIB	IIIA	IIB
T0N2 T1N2 T2N2 T3N1 T3N2		G1	IB	IB	IIIA	IIIA	IIIA	IIIA	IIIA	IIIA	IIIA
		G2	IB	IB	IIIA	IIIA	IIIA	IIIA	IIIA	IIIB	IIIA
		G3	IIA	IIB	IIIA	IIIA	IIIA	IIIA	IIIA	IIIC	IIIA
T4N0 T4N1 T4N2 AnyN3		G1	IIIA	IIIA	IIIB	IIIB	IIIB	IIIB	IIIB	IIIB	IIIB
		G2	IIIA	IIIA	IIIB	IIIB	IIIB	IIIB	IIIB	IIIC	IIIB
		G3	IIIB	IIIB	IIIB	IIIB	IIIB	IIIC	IIIC	IIIC	IIIB
Any	M1	Any	IV	IV	IV	IV	IV	IV	IV	IV	IV

+Oncotype DX®

Multigene assays, targeted sequencing, molecular subtypes

NGS panels, ctDNA, MRD, multi-omics, longitudinal profiling, clonal evolution, AI

American Joint Committee on Cancer. AJCC Cancer Staging Manual. 7th ed. New York, NY: Springer; 2010.
Amin et al., AJCC Cancer Staging Manual. 8th ed. New York, NY: Springer; 2017.
Koh et al., Korean Journal of Radiology 2018
Mook et al., Ann Oncol 2010
Mosele et al., Ann Oncol 2024

Prognostic staging

- The application of the prognostic stages is more detailed, **but it more accurately predicts outcome**
- The **clinical utility of biologic factors** such as grade, hormone receptor expression, HER2 overexpression and/or amplif ication, and genomic panels **has become at least as important as the anatomic extent of disease to predict survival**.

Table 2. Hazard Ratio (HR) for Disease-Specific Survival by Stage in the California Cancer Registry

	California Cancer Registry, HR (95% CI)	
Stage	Anatomic Stage	Prognostic Stage
IA	1 [Reference]	1 [Reference]
IB	1.62 (1.22-2.16)	3.65 (3.12-4.26)
IIA	3.54 (3.18-3.94)	7.10 (6.05-8.34)
IIB	8.85 (7.71-10.16)	10.26 (8.62-12.20)
IIIA	10.72 (9.51-12.08)	14.48 (12.35-16.98)
IIIB	16.71 (13.20-20.09)	23.92 (20.33-28.14)
IIIC	22.63 (19.94-25.68)	45.22 (38.93-52.53)
IV	53.16 (47.03-60.10)	103.9 (88.85-121.4)

Weiss A, et al. Validation Study of the American Joint Committee on Cancer Eighth Edition Prognostic Stage Compared with the Anatomic Stage in Breast Cancer. *JAMA Oncol.* 2018;4(2):203–209.

Table 3
Multivariable Cox models for CSS.

	Anatomic staging model		Prognostic staging model	
	Hazard ratio (95% C.I.)	*p*	Hazard ratio (95% C.I.)	*p*
Staging				
IA	1	—	1	—
IB	0.39 (0.05—2.79)	0.345	2.72 (1.93—3.82)	<0.001
IIA	2.30 (1.64—3.23)	<0.001	4.20 (3.03—5.80)	<0.001
IIB	4.62 (3.27—6.53)	<0.001	6.24 (4.37—8.91)	<0.001
IIIA	5.41 (3.81—7.68)	<0.001	6.91 (4.90—9.74)	<0.001
IIIB	6.12 (3.46—10.83)	<0.001	10.28 (7.23—14.61)	<0.001
IIIC	11.36 (8.02—16.10)	<0.001	19.15 (13.23—27.71)	<0.001
Age at diagnosis (years)				
≤35	1	—	1	—
36—50	0.65 (0.41—1.05)	0.076	0.73 (0.45—1.16)	0.180
51—65	0.74 (0.47—1.17)	0.199	0.74 (0.47—1.17)	0.201
≥66	1.66 (1.02—2.69)	0.042	1.58 (0.98—2.57)	0.063
Ethnicity				
Chinese	1	—	1	—
Malay	1.42 (1.09—1.85)	0.009	1.44 (1.11—1.88)	0.006
Indian	1.24 (0.88—1.76)	0.219	1.25 (0.88—1.77)	0.210
Others	0.36 (0.20—0.66)	0.001	0.38 (0.21—0.69)	0.002
Receipt of chemotherapy				
No	1	—	1	—
Yes	1.37 (1.06—1.78)	0.017	1.18 (0.91—1.53)	0.204
AIC value	7607.31		7538.87	
C-index	0.77		0.79	

Wong, R.X. et al. Validation of the AJCC 8th prognostic system for breast cancer in an Asian healthcare setting. The Breast, Volume 40, 38 - 44

Biomarkers and Treatment decisions

• Clinical case

- Breast cancer
- Tumor ~1–2 cm
- Neg nodes
- HR-positive
- HER2-negative

Gene expression profiling

Multigene assays, targeted sequencing, molecular subtypes

Adjuvant Endocrine therapy

?

Adjuvant Chemotherapy

?

Oncotype DX recurrence score 0–10, distant recurrence risk is low – usually No chemo

HER2 positive invasive cancer Usually anti-HER2 therapy ± chemotherapy and Endocrine therapy if ER/PR positive

Harris et al, J Clin Oncol 2016
NCCN Guidelines Breast cancer
Sparano et al., N Engl J Med 2018
Kalinsky et al., N Engl J Med. 2021

Evolving Cancer Risk Assessment

Old questions asked	What we need to ask now	Red flags to look for
What cancer?	What type and molecular subtype?	Aggressive biology despite early stage
What stage?	Was treatment curative or palliative?	Relapse after short treatment-free interval
When did treatment end?	Is treatment still ongoing?	Ongoing later-line therapy
	What is the response ?	Toxicity outlasting treatment
	Any persistent toxicity or functional impairment?	Response does not define functional capacity
	What markers for relapse are being followed?	High financial toxicity or fragmented care

Traditional approach

New approach

Accurately applied, aligned with medical reality.

Turning oncology complexity into clear actionable Insights

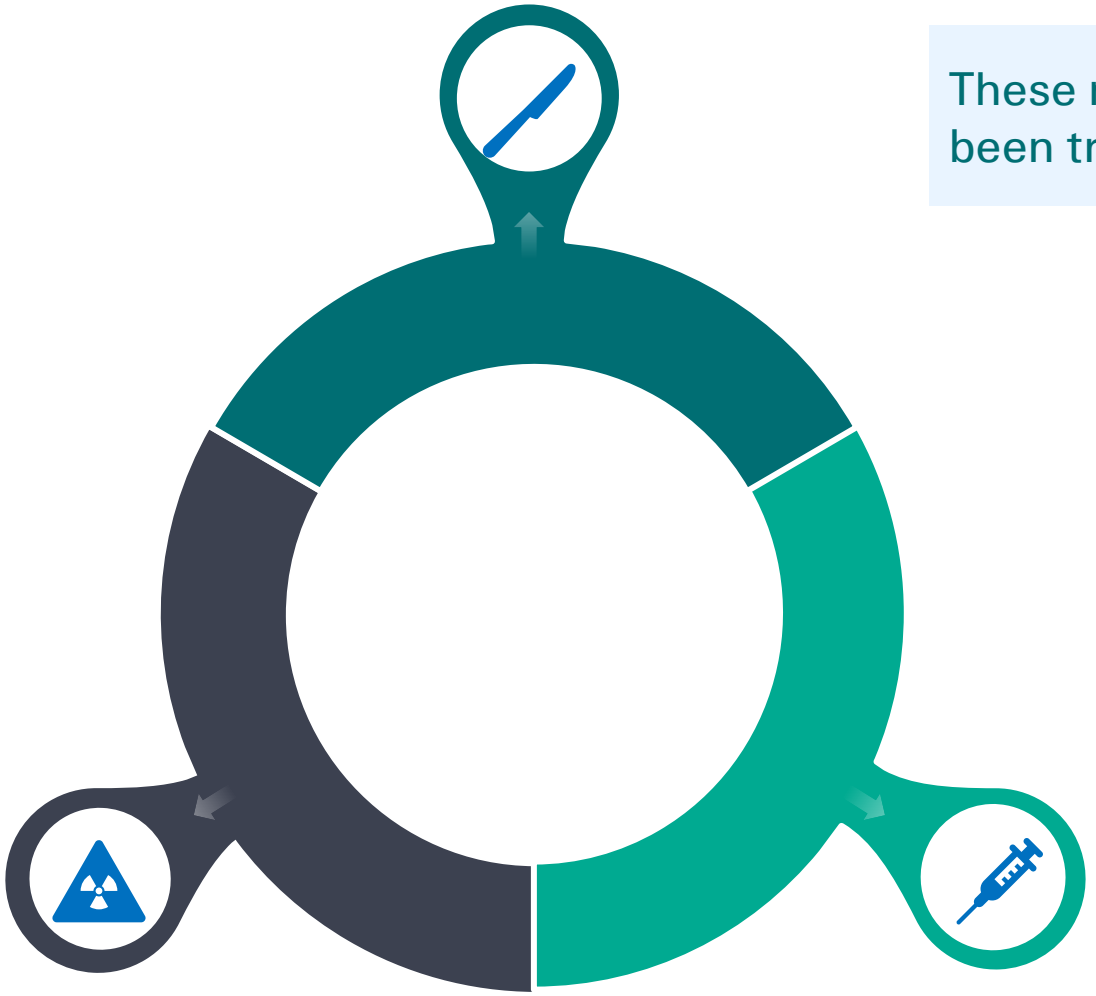
Life Guide helps you do that with a pragmatic approach

Swiss Re

Precision oncology

Goal is to deliver the right treatment to the right patient at the right dose and right time

Traditional pillars of Cancer Treatment



These modalities **remain foundational,** but outcomes have been transformed by advances, e.g., immunotherapies.

Surgery

Removal of the primary tumor and, where feasible, metastatic disease

Systemic chemotherapy

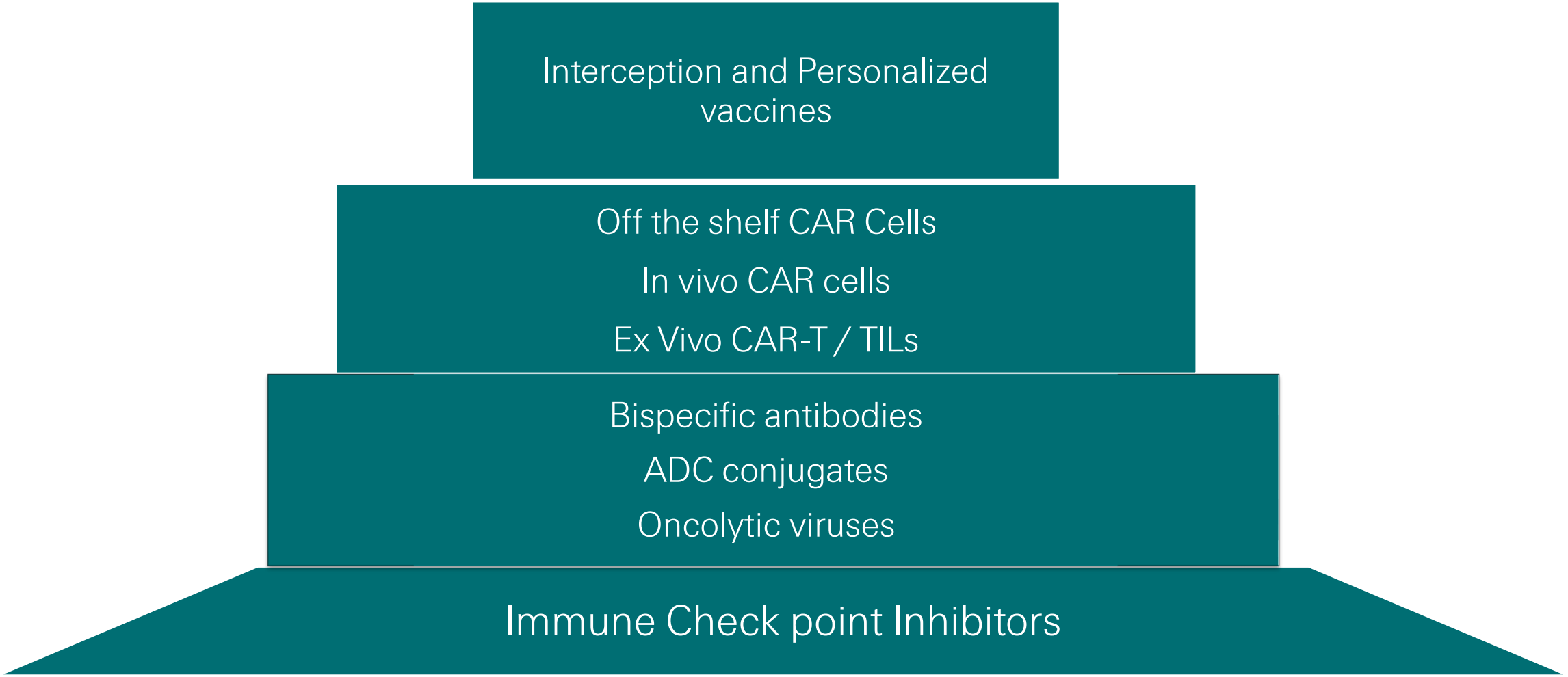
Cytotoxic treatment targeting rapidly dividing cells throughout the body

Radiotherapy

Localized tumor control using external beam radiation or brachytherapy

Immunotherapy

A treatment that uses the body's own immune system to control and eliminate cancer



How is Immunotherapy different

	Targeted therapy	Immunotherapy
	Directly targets a cancer cell pathway , mutation , receptor	Stimulates, restores or redirects the immune system to attack cancer
Target	The tumour cell or tumour microenvironment pathway	Immune response, immune checkpoints, T cells, NK cells or immune recognition
Typical requirement	Molecular or biomarker target such as EGFR, ALK, HER2, BRAF, BRCA	Immune-related biomarker may help, such as PD-L1, MSI-H/dMMR, TMB,
	EGFR-mutated lung cancer → EGFR inhibitor HER2-positive breast cancer → HER2-directed treatment	PD-1 inhibitor in melanoma or lung cancer CAR-T therapy in lymphoma or myeloma Bispecific antibody engaging T cells against malignant cells
Treatment pattern	Often continuous until progression or intolerance,	Can be fixed-duration, continuous, or one-time cellular therapy depending on drug/class

New treatment use Beyond Advanced cancers
Changing survivorship

- Checkpoint Inhibitors
- Approved for a variety of PD-1 /PD-L1 positive cancers
  - Advanced cancers, e.g., **unresectable or metastatic** melanoma
  - **Adjuvant therapy**, e.g., stage IIB, IIC, or III melanoma following complete resection
  - **Neoadjuvant therapy**, e.g., high-risk **early-stage** triple-negative breast cancer

Waldmann et al., Nat Rev Immunol 2020
Wolchok et al., NEJM 2025
Sharma et al., Cell 2015
Cancer Research Institute

Does every patient benefit from immunotherapy?

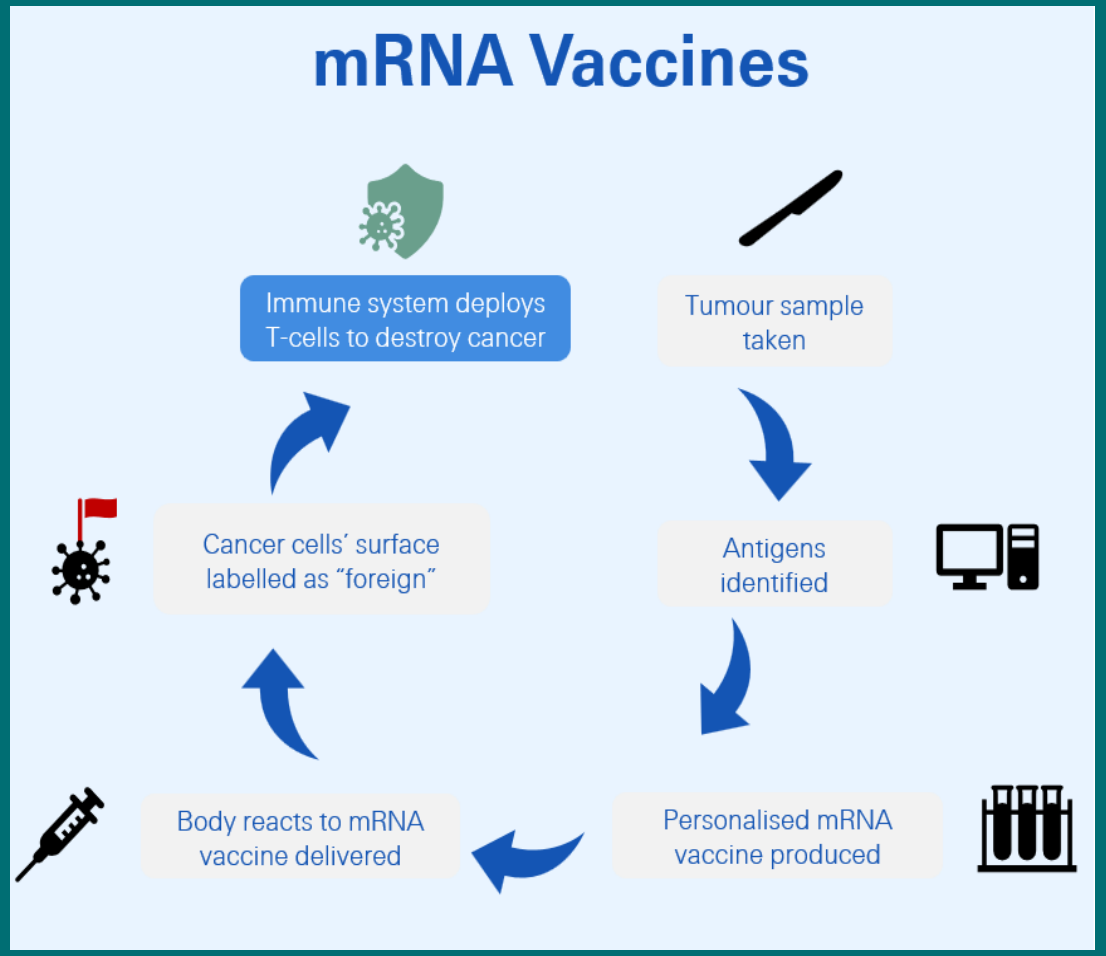
- Melanoma and non-small cell lung cancer (NSCLC) patients, with an objective response rate (ORR) of 40–>50%
- Relapsed or refractory Hodgkin's lymphoma: ORR 87% with 17% complete response
- Hepatocellular carcinoma: ORR 17-32%
- Urothelial bladder: ORR 13-24%
- Triple-negative breast cancer (TNBC): ORR ~ 19%

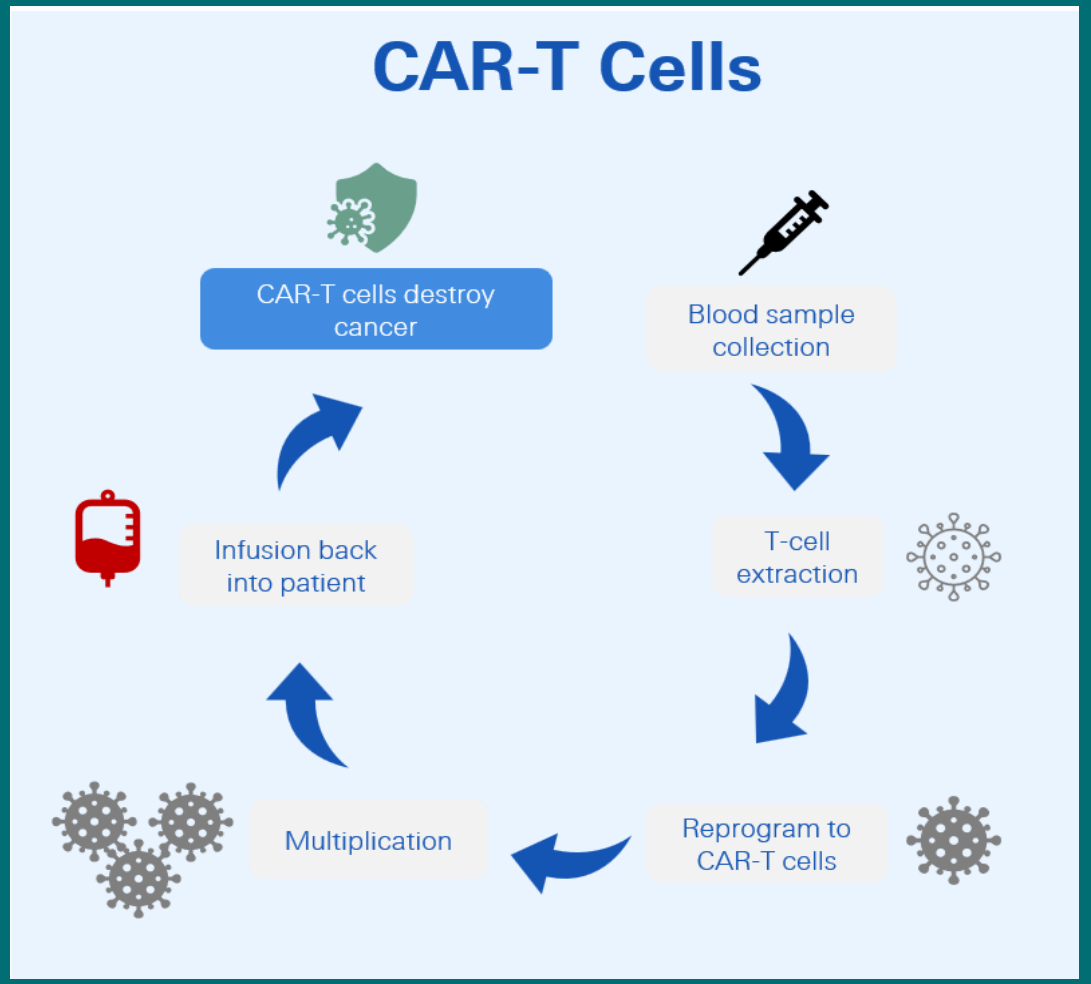
Responders vs. Non-responders

- PD-L 1 expression / copy numbers
- Levels of immunosuppressive cells
- Neoantigen load / mutations
- Number of tumor-infiltrating immune cells
- Type and level cytokines
- Gene and epigenetic signatures

Darvin et al., Exp Mol Med 2018

Promising Immunotherapies

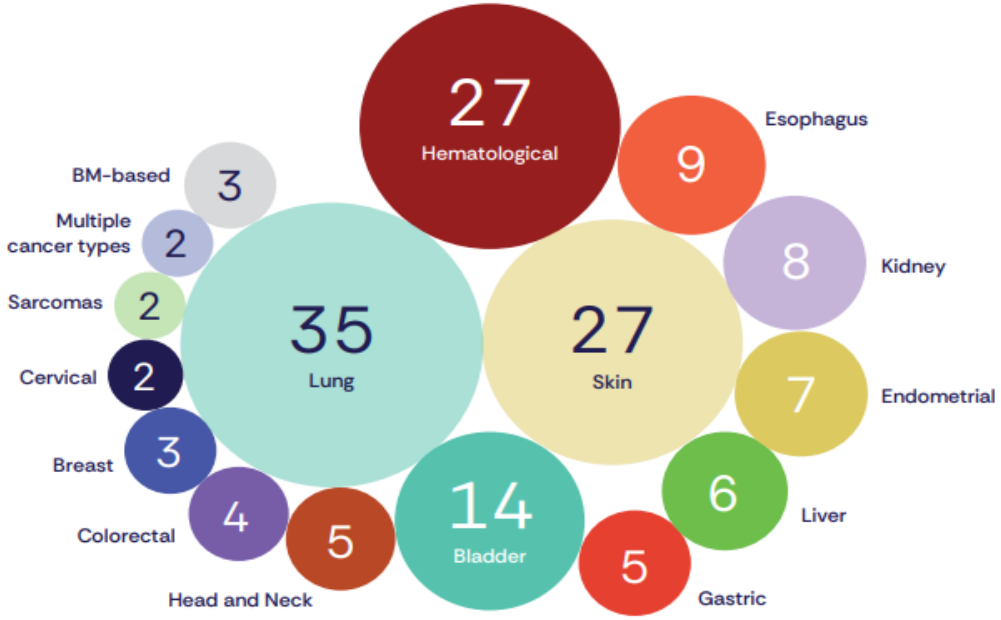




The Treasure Chest of Immunotherapy

FIGURE 1B **Immunotherapies Approved by Cancer Type Overall**

BM, biomarker.



- GROUND TRUTHS The Remarkable Proliferation of Cancer Immunotherapies On a Path to Interception—Prevention Vaccines ERIC TOPOL MAY 24, 2026
- Conilh L, et.al.Navigating the clinical progress of antibody-drug conjugates: Emerging opportunities and remaining challenges Cell, 189, 2791-2820
- 2025-CRI-Insights-Impact.pdf

Asian markets – availability and access of ICIs

Country	Immune check point inhibitors
Japan	Broad ICI approvals; strong national access but highcost pressure
South Korea	Global ICIs approved; reimbursement is expanding but indication-specific
China	Many domestic PD-1/PD-L1 agents plus global drugs; fastest-growing
India	Major ICIs approved/available, but affordability and insurance coverage limit real-world use
Australia	TGA approvals broad; PBS reimbursement determines practical access

Trends in usage and drug costs of immune checkpoint inhibitors in Japan | Japanese Journal of Clinical Oncology | Oxford Academic
RACGP - AJGP (Australian Journal of General Practice)

The Workarounds

Therapy	Reported cost
CAR-T: Kymriah	US$475,000 list price, excluding delivery of care, hospitalisation, toxicity management and follow-up
NexCAR19 / Talicabtagene autoleucel Local India product	CDSCO-approved for relapsed/refractory B-cell NHL and B-ALL,

NIH NATIONAL CANCER INSTITUTE

Study in India Could Make Immunotherapy More Affordable Worldwide

November 22, 2022, by Nadia Jaber

Establishing Costs for Commercial Chimeric Antigen Receptor T-Cell (Tisagenlecleucel; Kymriah) in Children and Young Adult B-Cell Acute Lymphoblastic Leukemia; A Merged Analysis from the Prwcc and PHIS | Blood | American Society of Hematology
NexCAR19™ for HCPs | CAR-T Cell Therapy for Lymphoma & Leukemia Treatment

Where AI is most real today

Workflow support, pattern recognition, and clinician decision support

AI in diagnosis

Digital pathology - whole-slide image review for cancer detection, classification, and prognosis support

Radiology support - lesion detection, segmentation, measurement, and workflow triage in imaging

Biomarker prediction - estimating molecular features from pathology or imaging in selected settings

Risk stratification - helping identify who may need further work-up or closer review

AI in treatment

Precision oncology support - integrating pathology, genomics, imaging, and biomarkers **for treatment planning**

Guideline navigation - AI-assisted access to evidence-based recommendations, such as ASCO Guidelines Assistant

Tumour board support - summarising complex clinical data for multidisciplinary discussion

Trial matching and drug development - finding trial candidates and analysing oncology development data

AI in oncology

AI pathology as a digital prognostic/predictive biomarker

Press Releases

Artera Receives U.S. FDA De Novo Marketing Authorization for AI-Digital Pathology Software Revolutionizing Prostate Cancer Care

August 13, 2025

AI pathology for immunotherapy-response biology

Synergistic H&E and IHC image analysis by AI predicts cancer biomarkers and survival outcomes in colorectal and breast cancer

Cheng, Y., Lama, N., Chen, M. *et al.* Synergistic H&E and IHC image analysis by AI predicts cancer biomarkers and survival outcomes in colorectal and breast cancer. *Commun Med* **5**, 328 (2025).

Redefining Pancreatic cancer

Diagnostics

BioSpace

ClearNote Health to Present Early Detection Validation Data for Avantect® Pancreatic Cancer Test at 2026 ASCO Annual Meeting

May 24, 2026 | 4 min read

CANCER

Mayo Clinic AI helps specialists detect pancreatic cancer up to 3 years before diagnosis in landmark validation study

Susan Murphy

April 29, 2026

MAYO CLINIC | News Network

Treatment

ORIGINAL ARTICLE

Daraxonrasib or Chemotherapy in Previously Treated Metastatic Pancreatic Cancer

Authors: Eileen M. O'Reilly, M.D., Zev A. Wainberg, M.D., Andrew E. Hendifar, M.D., Mitesh J. Borad, M.D., Filippo Pietrantonio, M.D., Shubham Pant, M.D., Pascal Hammel, M.D., +13, for the RASolute 302 Trial Investigators* Author Info & Affiliations

Published May 31, 2026 | DOI: 10.1056/NEJMoa2605555 | Copyright © 2026

KRAS Inhibitors Take Center Stage

mRNA Vaccine Provides Robust Immunity for Some Patients

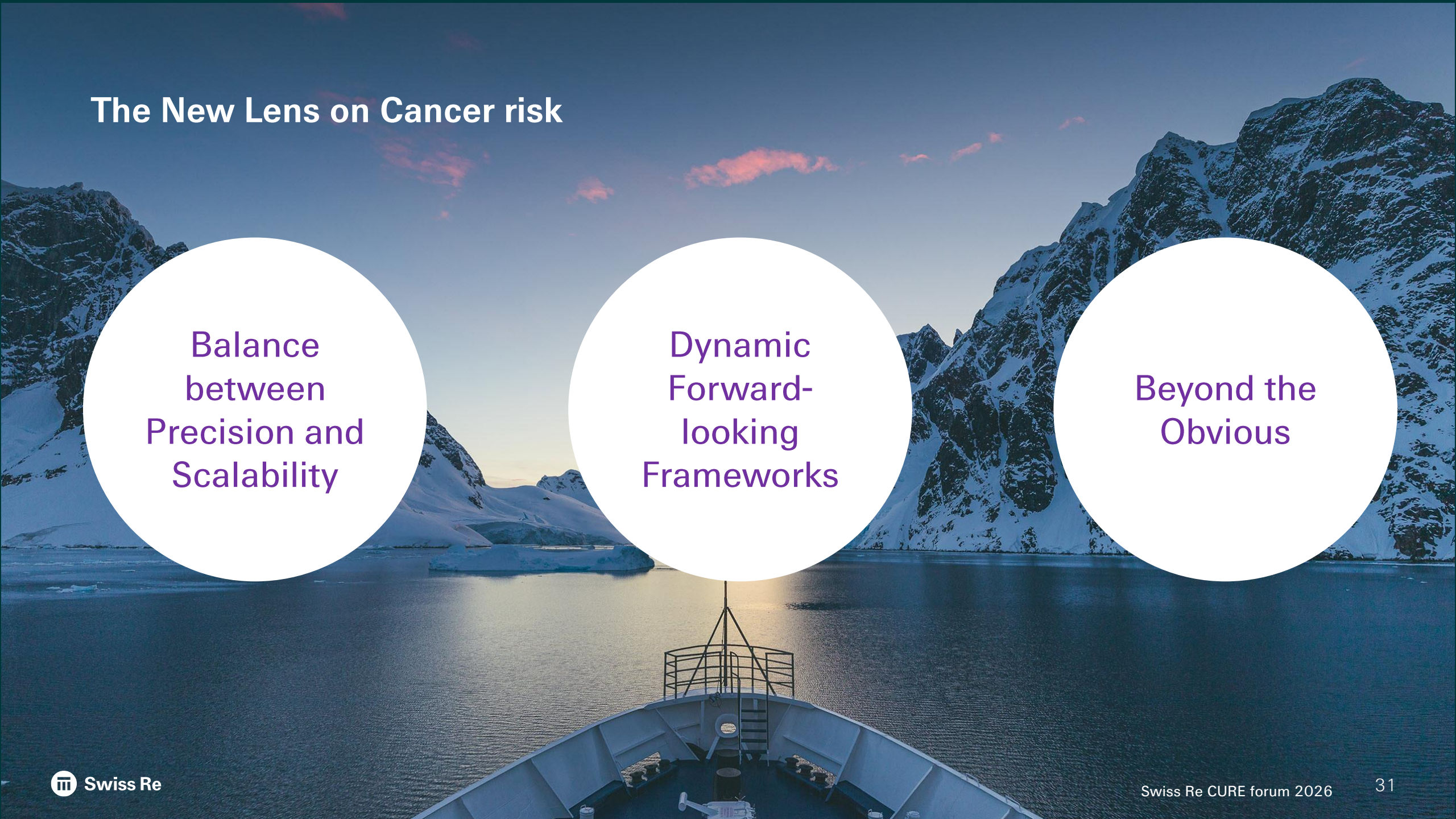
Trial of personalized RNA neoantigen vaccines

ClearNote Health to Present Early Detection Validation Data for Avantect® Pancreatic Cancer Test at 2026 ASCO Annual Meeting – BioSpace
Mayo Clinic AI helps specialists detect pancreatic cancer up to 3 years before diagnosis in landmark validation study - Mayo Clinic News Network
Daraxonrasib or Chemotherapy in Previously Treated Metastatic Pancreatic Cancer New England Journal of Medicine
The Olayan Center for Cancer Vaccines at MSK | Memorial Sloan Kettering Cancer Center

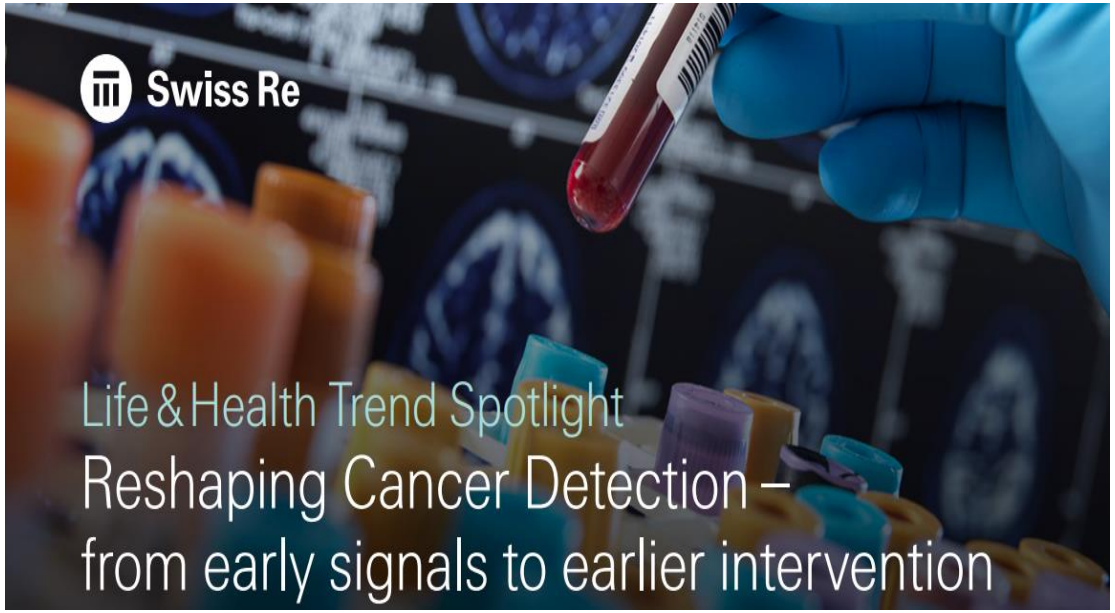
The New Lens on Cancer risk

Risk Change	Underwriting Impact	Claims Impact
Increased detection and early-stage cancers	Need for more granular risk assessment beyond stage	Higher claim frequency, especially in CI/medical
Shift to early-stage / indolent cancers	Reduced reliance on stage alone; greater focus on tumour biology and grading	Lower average claim severity, but higher volumes
Greater diagnostic precision (molecular, AI)	Incorporation of biomarkers and tumour biology; increased complexity	More complex eligibility and definitions
Increasing heterogeneity of cancer pathways	More individualized underwriting decisions	More variable and heterogeneous claims outcomes
Growing survivorship	Need to assess residual risk in cancer survivors	More recurrence, secondary cancers, and repeat claims

The New Lens on Cancer risk



Cancer Update



Life Guide update 2026 : Cancer calculator

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