

ONCODAILY MEDICAL JOURNAL

Article

Bridging the Global Divide in Colorectal Cancer Care: Findings from the "Global Cancer Movement – Challenging the Status Quo in Colorectal Cancer" Congress

Authors: Amalya Sargsyan et al.

Correspondence: amalyasargsyan@gmail.com

Association: Head of Intelligence Unit, OncoDaily/ Medical Oncologist, Yeolyan Hematology
and Oncology Center/ Clinical Research Physician, Immune Oncology Research Institute,
Armenia

Published: October 15, 2025



DOI: 10.69690/ODMJ-001-1015-5792

Bridging the Global Divide in Colorectal Cancer Care: Findings from the “Global Cancer Movement – Challenging the Status Quo in Colorectal Cancer” Congress

Authors: Amalya Sargsyan^{1*}, Andre Ilbawi^{2*}, Yeva Margaryan³, Jack Yacoubian⁴, Abay Jumanov⁵, Adrian Pogacian⁶, Airazat M. Kazaryan⁷, Ajay Aggarwal⁸, Amil Družić⁹, Amina Suleymanova¹⁰, Andrew Spiegel¹¹, Armen Avagyan¹², Bahar Laderian¹³, Bishal Gyawali¹⁴, Chandler Park¹⁵, Christos Tsagkaris¹⁶, Christine Parseghian¹⁷, Daiming Fan¹⁸, Davit Zohrabyan¹⁹, Dhan Chand²⁰, Erica K. Barnell²¹, Elen Baloyan²², Fedja Djordjevic²³, Filippo Pietrantonio²⁴, Gabrielle H. van Ramshorst²⁵, George Kapetanakis²⁶, Ghassan Abou-Alfa²⁷, Hadi Mohamed Abu Rasheed²⁸, Hovhannes Vardevanyan²⁹, Iga Rawicka³⁰, Jemma Arakelyan³¹, Johanna Rapanarilala³², Julien Taieb³³, Karine Soghomonyan³⁴, Lilit Harutyunyan³⁵, Malar Velli Segarmurthy³⁶, Maria V. Babak³⁷, Manish A. Shah³⁸, Matti Aapro³⁹, Michael Sapienza⁴⁰, Mila Ogalla Toledo⁴¹, Miriam Mutebi⁴², Moy Bracken⁴³, Narine Mnatsakanyan⁴⁴, Natia Jokhadzde⁴⁵, Nazik Hammad⁴⁶, Pashtoon Kasi⁴⁷, Piotr J. Wysocki⁴⁸, Roselle De Guzman⁴⁹, Sabine Tejpar⁵⁰, Samvel Bardakhchyan⁵¹, Sana Al Sukhun⁵², Susanna Greer⁵³, Toufic Kachaamy⁵⁴, Toma Oganezova⁵⁵, Uta Schmidt-Straßburger⁵⁶, Verna Vanderpuye⁵⁷, Vivek Subbiah⁵⁸, Yan Leyfman⁵⁹, Gevorg Tamamyan⁶⁰, Yelena Janjigian⁶¹

* Contributed equally

Corresponding Author: Amalya Sargsyan

Association: Head of Intelligence Unit, OncoDaily/ Medical Oncologist, Yeolyan Hematology and Oncology Center/ Clinical Research Physician, Immune Oncology Research Institute, Armenia

Correspondence: amalyasargsyan@gmail.com

Published: October 15, 2025

ABSTRACT

Colorectal cancer (CRC) is a major and growing global health challenge, marked by stark disparities in incidence, mortality, and access to care between high-income countries (HICs) and low- and middle-income countries (LMICs). The “Global Cancer Movement: Challenging the Status Quo in Colorectal Cancer” Congress, a three-day virtual event, brought together international experts to examine these disparities and develop strategies to improve CRC outcomes worldwide. This paper synthesizes the congress’s key insights, assessing challenges in CRC prevention, diagnosis, and treatment across diverse settings and highlighting priority areas for action.

The rising incidence of early-age onset CRC (EAOCRC) adds further complexity, demanding urgent research and tailored approaches. Addressing the global CRC burden requires investment in data systems, equitable access to screening and early diagnosis, context-specific therapeutic innovation, workforce and infrastructure development, and targeted EAOCRC strategies. Civil-society actors, particularly national NGOs, are instrumental in co-leading early detection and navigation initiatives with primary care and in ensuring uptake and follow-up at the community level. Strengthened global partnerships and cohesive policies are essential to closing the care gap and reducing the toll of this preventable and treatable disease.

INTRODUCTION

Colorectal cancer (CRC) is a major global health challenge, ranking among the most commonly diagnosed cancers and leading causes of cancer-related death¹.

If current trends persist, annual cases may exceed 2.2 million by 2030 and reach 3.2 million by 2040, with deaths projected to rise to 1.1 million and 1.6 million, respectively². These figures underscore the urgent need for strengthened global efforts in prevention, early detection, and treatment^{3,4}.

Table 1. Current Estimates and Future Projections of Global Colorectal Cancer (CRC) Burden According to GLOBOCAN 2020–2040

Metric/Year	GLOBOCAN 2022 ¹	Projected 2030 ²	Projected 2040 ²
Global New Cases	~1.9 million	>2.2 million	~3.2 million
Global Deaths	~930,000	~1.1 million	~1.6 million
Highest Incidence Regions (ASIR)	Europe, Australia/New Zealand	High HDI countries	Predominantly High/Very High HDI countries
Lowest Incidence Regions (ASIR)	African regions, Southern Asia	Low HDI countries	-
Highest Mortality Regions (ASMR)	Eastern Europe	Countries in transition	-
Lowest Mortality Regions (ASMR)	Southern Asia	-	-
Early-Age Onset CRC (<50 years) Trend	Increasing	Expected to increase by >140% by 2030 (US data) ⁸	Continued increase predicted

The “Global Cancer Movement—Challenging the Status Quo in Colorectal Cancer” Congress was convened to address this escalating burden. This three-day virtual event brought together 72 international experts from 36 countries—spanning clinicians, researchers, public health leaders, and patient advocates—to examine the drivers of global disparities in incidence and outcomes and to propose actionable strategies that advance equity in prevention, diagnosis, and treatment.

This report synthesizes the Congress’s key insights, situating them within current scientific and policy contexts. It outlines priority areas to guide research, inform policy, and mobilize coordinated global efforts to reduce CRC’s impact and narrow disparities in care delivery across diverse socioeconomic settings.

NAVIGATING THE GLOBAL LANDSCAPE OF COLORECTAL CANCER

The “Global Cancer Movement: Challenging the Status Quo in Colorectal Cancer” Congress highlighted critical aspects shaping the global colorectal cancer (CRC) landscape, including disparities in burden and outcomes,

barriers to screening and early detection, innovations in diagnostics, evolving treatments, the rise of early-age onset CRC, and the role of advocacy.

Disparities in CRC Burden and Outcomes

CRC is the third most commonly diagnosed cancer and the second leading cause of cancer-related mortality globally. In 2022, CRC accounted for 1.93 million new cases and 935,000 deaths, representing 9.6% of the global cancer incidence and 9.3% of cancer-related mortality. By comparison, lung cancer remained the top cause of cancer death (18.7%), followed by CRC (9.3%), liver (7.8%), breast (6.9%), and stomach (6.8%) cancers. Today, one in every 10 cancer deaths globally is attributable to CRC.

Marked disparities in CRC incidence and mortality persist, driven by differences in development, health infrastructure, and resource allocation. Global cancer incidence varied fivefold in 2022 from 507.9 per 100,000 in Australia/New Zealand to 97.1 per 100,000 in Western Africa among men, and from 410.5 to 103.3 per 100,000 among women. Similarly, age-standardised CRC mortality rates in Africa in 2022 were 5.6 per 100,000, compared to much higher rates in Eastern Europe^{1,3,5,6}.

While mortality rates from CRC are decreasing in many high-income settings due to screening and specialized care, age-period-cohort modelling projects a sharp increase in deaths from rectal cancer in several countries.

Between 2020 and 2035, the total number of deaths due to rectal cancer is expected to rise by 73.6% in Costa Rica, 59.2% in Australia, 27.8% in the United States, 24.2% in Ireland, and 24.1% in Canada⁷. Overall, the number of deaths from colon and rectal cancers is projected to increase by 60.0% and 71.5%, respectively, by 2035, primarily due to population growth and aging.

These inequities are further compounded by weak cancer registries, limited oncology workforce capacity, insufficient infrastructure, and restricted access to diagnostics and essential therapies. In many low- and middle-income countries (LMICs), including Armenia, survival rates remain substantially lower than in high-income countries (HICs)^{8,9,10}. Closing these gaps requires robust, tailored national cancer control plans that integrate cost strategies for diagnostics and treatment strategies, in alignment with the Lancet Oncology Commission on Medical Imaging and Nuclear Medicine¹¹.

Finally, “data deserts” in LMICs and parts of the Eastern Mediterranean Region remain a critical barrier to both, early detection and timely treatment. Strengthening population-based cancer registries and improving follow-up colonoscopy tracking are essential to accurately assess screening effectiveness, report equity outcomes, and optimize return on investment.

THE DUAL CHALLENGE OF SCREENING AND EARLY DETECTION

Screening remains central to CRC control, enabling early detection and prevention through removal of precancerous polyps. The Congress reaffirmed the efficacy of fecal immunochemical testing (FIT) and colonoscopy, while underscoring persistent global barriers to access, coverage, and follow-up.

FIT demonstrates pooled sensitivity of 93% and specificity of 91% for high-risk individuals, respectively¹². Population-based programs using annual FIT have reduced CRC mortality by up to 40%¹³. Colonoscopy decreases CRC incidence by approximately 31% and mortality by up to 68%¹⁴. Ten-yearly colonoscopy has proven cost-effective in both high- and middle-income settings¹⁵. In the United States, initiating screening at age 40 with FIT or flexible sigmoidoscopy is cost-effective given the rising incidence of early-onset CRC (EAOCRC)¹⁶.

Despite these proven benefits, participation rates vary considerably. In HICs, screening uptake often exceeds 60%, whereas in many LMICs, rates fall below 20%. Completion of follow-up colonoscopy ranges from just 13% to 50%. Contributing factors include inadequate infrastructure, limited endoscopic capacity, workforce shortages, and weak referral systems³. Evidence-based strategies can mitigate these gaps: mailed FIT kits with automated reminders increase participation by 20–30%¹⁷, though for highly mobile and urbanized populations, such

as in the Gulf Cooperation Council, primary care–anchored distribution with SMS reminders and e-referrals may be a more effective delivery model.

Knowledge, attitudes, and practices of healthcare professionals can also hinder CRC screening. A web-based survey (Dec 2018–Mar 2019) among internal medicine physicians at Hamad Medical Corporation found that 90.6% recommend screening for asymptomatic patients, with residents more likely than consultants to choose the correct modality (86.2% vs 40.7%). Yet only 43.4% routinely recommend screening in clinics and 29.4% for inpatients. The main barrier cited was an unclear screening pathway (30.2%), while 54% noted that clear, streamlined pathways would facilitate uptake¹⁸.

Community health worker engagement can further improve adherence by up to 42%, particularly in underserved populations¹⁹. Experts emphasized that improved outcomes require not only test availability but also an integrated continuum of care—from public awareness and test distribution to diagnostic evaluation and linkage to treatment²⁰. Without coordinated delivery and sustained investment, even the most effective tools cannot achieve population-level impact.

Innovations in Diagnostics

Recent advances in CRC detection are reshaping the diagnostic landscape, offering greater precision in tumor visualization, characterization, and treatment planning. While colonoscopy with AI-based computer-aided detection (CADe)²¹ and standard PET-CT imaging are becoming routine in high-resource settings, emerging modalities are pushing the frontier further—though global access remains uneven.

In molecular imaging, gallium-68 fibroblast activation protein inhibitors (68Ga-FAPI) and zirconium-89 labeled monoclonal antibodies such as 89Zr-cetuximab²² for colorectal cancers and 89Zr-trastuzumab²³ GI cancers have demonstrated superior lesion detectability and target specificity than 18F-FDG, particularly in fibrotic or mucinous tumors. ImmunoPET now enables in vivo receptor profiling of EGFR, HER2, and CEA, allowing for patient-specific treatment selection²⁴. Tumor-targeted fluorescent probes like SGM-101 have demonstrated >95% specificity in intraoperative detection of CEA-expressing lesions, highlighting their theranostic potential²⁵.

Novel imaging modalities such as multispectral optoacoustic tomography (MSOT) and endoscopic photoacoustic microscopy provide label-free visualization of vascular and metabolic features, especially in rectal tumors²⁶. Meanwhile, deep learning and radiomics are being integrated into imaging pipelines to enhance lesion detection, margin assessment, and response prediction, leveraging multi-institutional, multimodal datasets²⁷.

However, these high-cost, high-complexity tools remain inaccessible in most LMICs. During the conference,

participants stressed the importance of an “equity test”: prioritizing scalable solutions such as (AI-assisted) interpretation on standard scopes, regional production of novel radiotracers, and deployment of mobile imaging units—before investing in high-cost novel platforms. Expanding access to advanced diagnostics, supported by appropriately applied AI in low-resource settings, is essential to balance innovation with global health equity²⁸.

Bridging the gap between advanced technologies in HICs and the fundamental diagnostic needs of LMICs remains essential to achieving true global equity. Each delayed or missed diagnosis – occurring disproportionately in LMICs – represents preventable harm and reinforces inequities that extend across individuals, families, and communities. Achieving diagnostic equity requires systematic approaches tailored to the realities of LMICs, addressing infrastructure, workforce capacity, financing, and regulatory frameworks in a coordinated manner.

EXPANDING MOLECULARLY TARGETED OPTIONS IN COLORECTAL CANCER

The therapeutic landscape of colorectal cancer has rapidly shifted toward biology-driven, molecularly stratified approaches. Immune checkpoint inhibitors have redefined the treatment of mismatch repair-deficient (dMMR)/microsatellite instability-high (MSI-H) tumors, which account for ~5% of mCRC cases. In the pivotal KEYNOTE-177 trial, pembrolizumab significantly improved progression-free survival (PFS) versus chemotherapy in first-line MSI-H mCRC (median PFS 16.5 vs. 8.2 months; HR 0.60, $p = 0.0002$) with a more favorable safety profile, however OS did not reach statistical significance (HR 0.74), yet with > 60% crossover²⁹. Building on this, the CheckMate-8HW trial reported an unprecedented hazard ratio for PFS of 0.21 ($p < 0.0001$) with first-line nivolumab–ipilimumab versus chemotherapy in the same population, reinforcing dual checkpoint blockade as a preferred strategy³⁰.

A recent phase 2 trial by Cercek et al. demonstrated that neoadjuvant PD-1 blockade with dostarlimab can eliminate the need for surgery in patients with early-stage dMMR rectal and nonrectal tumors. Among 117 patients, 84 (72%) achieved clinical complete response following six months of dostarlimab, and 82 (70%) elected nonoperative management. In rectal cancer specifically, all 49 patients who completed therapy achieved a complete clinical response, with 2-year recurrence-free survival reaching 96%. Across all tumor types, recurrence-free survival at 2 years was 92%. No patients lost the opportunity for curative surgery³¹.

In parallel, Total Neoadjuvant Therapy (TNT) has emerged as standard in locally advanced rectal cancer irrespective of MSI status. The RAPIDO trial showed that TNT (short-course radiotherapy + chemotherapy before surgery) improved disease-related treatment failure (23.7% vs.

30.4%; HR 0.75, $p = 0.019$), and reduced distant metastases, though at the cost of higher locoregional recurrence. TNT also increased rates of pathologic complete response, enabling watch-and-wait strategies and potential avoidance of permanent colostomy in selected patients³².

Despite these advances, the majority of CRCs (~95%) are microsatellite stable (MSS) and immunologically “cold,” continuing to rely on cytotoxic backbones. Molecular targeting has improved outcomes, as in RAS wild-type, left-sided mCRC, anti-EGFR therapy with chemotherapy remains standard. For BRAF V600E-mutated mCRC (~10% of cases), the BEACON CRC trial established encorafenib plus cetuximab as the global standard (median OS 9.3 vs. 5.9 months; HR 0.60, $p < 0.001$)³³. The SEAMARK trial is now testing the addition of pembrolizumab to encorafenib–cetuximab in MSI-H, BRAF-mutant disease³⁴.

Novel immunotherapy combinations are making inroads into MSS CRC. In a phase I/II trial botensilimab (anti–CTLA-4) plus balstilimab (anti–PD-1) achieved an objective response rate of 24% and disease control rate of 74% in refractory MSS CRC³⁵. Median OS exceeded 14.1 months, with a 12-month OS rate of 61% — substantially better than historical controls with regorafenib or trifluridine–tipiracil (~7 months).

In parallel to immunomodulatory strategies, molecularly targeted therapies are reshaping treatment for biomarker-defined MSS subsets. KRAS G12C-targeted therapy is advancing with sotorasib plus panitumumab, which in the phase III CodeBreak 300 trial showed an ORR of 30.2% and an OS HR of 0.70 vs. investigator’s choice, supporting its role in chemorefractory mCRC³⁶. In parallel, the SUNLIGHT trial confirmed FTD/TPI plus bevacizumab as a third-line standard, improving median OS to 10.8 months (HR 0.61; $p < 0.001$) across molecular subtypes³⁷. These data highlight continued gains in precision and late-line management.

Emerging modalities such as adoptive cell therapies, CAR-T cells, and cancer vaccines – are under active investigation, though none are yet approved, underscoring the persistent global burden and therapeutic unmet need in advanced colorectal cancer. The benefits of these novel therapies remain concentrated in HICs, highlighting the urgent need to scale molecular diagnostics, access to biosimilars, and trial infrastructure in LMICs.

Data show that biologics and their biosimilars perform equally across regions when available, with cost savings of up to 20–40% in HICs and up to 92% in LMICs when biosimilars are implemented³⁸. GCC/EMR case studies of pooled procurement and structured formularies can accelerate equitable access to biologics/biosimilars; we need to flag civil-society roles in payer dialogues and patient-reported barriers.

As molecular classification deepens and therapeutics become increasingly personalized, the next era of CRC care must balance innovation with global inclusion. Expanding access to clinical trials, molecular diagnostics,

and targeted therapies is essential to narrow disparities and deliver equitable improvements in outcomes worldwide³⁹.

Precision oncology is accelerating—immunotherapy, EGFR/BRAF targeting, and emerging cell/vaccine strategies—but access remains the rate-limiting step in LMICs. The principal gap is not efficacy, but infrastructure and affordability: limited biomarker testing, fragmented procurement, and out-of-pocket payment models interrupt therapy despite clinical benefit.

Real-world nationwide data from Armenia illustrate this signal—patients with biomarker-selected tumors derive meaningful survival, yet many discontinue early for financial reasons; among documented causes, financial hardship was the leading non-progression driver of interruption, implying underestimation given missing data⁴⁰. Equity requires a pragmatic sequence: scale essential biomarkers, adopt pooled procurement/price negotiation and biosimilars, and align coverage with high-benefit regimens—so that novel, biology-driven advances narrow rather than widen global outcome gaps.

BEYOND MOLECULAR TARGETS: THE ROLE OF INTEGRATIVE MEDICINE

As colorectal cancer (CRC) management advances through molecular stratification and precision therapeutics, there is increasing recognition that optimal care must also address host resilience. Integrative oncology—merging conventional treatments with evidence-based complementary approaches—has gained momentum globally as a strategy to improve treatment tolerance, quality of life, and possibly survival.

China has emerged as a global leader in advancing this approach. The China Anti-Cancer Association (CACA), in collaboration with the World Association for Integrative Oncology (WAIO), has institutionalized integrative oncology within its national cancer framework. The 2024 Chinese Congress on Holistic Integrative Oncology drew over 60,000 onsite participants and 72 million virtual attendees, reflecting wide-scale clinical and scientific engagement. Chinese integrative protocols incorporate Traditional Chinese Medicine (TCM), individualized nutrition, mind-body practices, and exercise-based rehabilitation alongside chemotherapy and surgery⁴¹.

In CRC, this approach targets chemotherapy-induced gastrointestinal toxicity, supports immune modulation, and promotes gut microbiota balance—an emerging determinant of treatment response. TCM is now offered in over 60% of tertiary oncology centers in China, with select herbal formulations under active investigation in randomized trials for symptom relief and adjunctive efficacy⁴².

Exercise has gained recognition as a therapeutic modality

in its own right. At the 2025 ASCO Annual Meeting, the CHALLENGE phase 3 trial (n = 889) demonstrated that a 3-year structured aerobic exercise program initiated after adjuvant chemotherapy for colon cancer significantly improved disease-free and overall survival. At a median follow-up of 7.9 years, the exercise group showed a 28% reduction in recurrence or death (HR = 0.72, 95% CI 0.55–0.94) and a 37% reduction in overall mortality (HR = 0.63, 95% CI 0.43–0.94) compared to controls. Five-year disease-free survival was 80.3% versus 73.9%, and 8-year overall survival reached 90.3% versus 83.2% compared with controls⁴³.

These survival gains are comparable in magnitude to certain systemic therapies, underscoring the biological relevance of physical conditioning in oncologic outcomes. Mechanistically, exercise is thought to modulate inflammation, immune surveillance, insulin signaling, and tumor microenvironment composition. Notably, patients in the CHALLENGE trial achieved a sustained increase of 5–7 MET-hours/week in moderate-to-vigorous physical activity, equivalent to 1.5 to 2 hours of brisk walking per week.

China's national efforts in exercise oncology parallels these findings. Major cancer centers report >80% adherence to structured rehabilitation during chemotherapy, with associated improvements in fatigue, treatment completion, and physical functioning⁴⁴. As China continues to produce high-quality clinical evidence and expand standardized integrative oncology pathways, its model offers a replicable framework for improving supportive care, particularly in low- and middle-income countries where symptom burden is high and palliative resources are limited.

The evidence now positions integrative modalities not as adjunctive measures but as essential components of modern CRC care, reinforcing the need for their integration into global cancer control strategies.

In resource-constrained settings, community- and primary-care-delivered programmes—often co-implemented with civil-society partners—that pair brief exercise prescriptions with group physical activity and culturally tailored nutrition counselling offer low-cost, scalable interventions to improve treatment tolerance, quality of life, and survivorship outcomes in the near term.

THE RISING TREND OF EARLY-AGE ONSET COLORECTAL CANCER

A significant global concern is the rising incidence of early-onset colorectal cancer (EAOCRC), defined as diagnosis before age 50. EAOCRC now accounts for nearly 10% of all new CRC cases worldwide. In the United States, CRC is the leading cause of cancer death in men under 50 and the second in women, with incidence rates increasing by 1.4–4.4% annually since the 1990s, depending on age group⁴⁵. Projections suggest that by 2030, EAOCRC will comprise

11% of colon cancers and 23% of rectal cancers, with the steepest increases in the 20–34 age group, where rates are expected to rise by 90–124%⁴⁶.

This pattern is mirrored globally. Rates have more than doubled in South Korea⁴⁷ and Japan⁴⁸ over two decades, risen ~50% in Canada⁴⁹ and the UK⁴⁹, and grown in Australia⁵⁰ from 6% to over 12% of all CRC cases within 15 years. In Canada, the current incidence is 13.5 per 100,000 person-years.

Despite rising incidence, early diagnosis remains rare. More than 55–61% of EACRC cases are diagnosed at stage III or IV, compared to 40–45% in older adults, largely due to diagnostic delays and lack of screening⁵¹. Symptoms such as rectal bleeding and abdominal pain are often misattributed to benign causes, contributing to late-stage presentation. While younger patients have slightly better stage-specific outcomes (5-year CRC-specific survival 74–80%)^{52, 53, 54}, the psychosocial and economic burdens are profound, affecting fertility, employment, caregiving, and long-term quality of life. Survivors frequently face chronic toxicities, including neuropathy, bowel dysfunction, and mental health challenges.

Most EACRC cases are sporadic, not linked to hereditary syndromes. Lifestyle factors, such as obesity, sedentary behavior, processed/Western diets, sugary drinks, and microbiome disruption, are implicated, though etiology remains unclear⁵⁵. Genomic and epigenetic profiling reveals EACRC as a biologically distinct subtype with unique mutational and methylation signatures. International consortia, such as PROSPECT, and advocacy groups are prioritizing research into risk factors, biomarkers, and interventions⁵⁶. Major cancer centers—including Memorial Sloan Kettering⁵⁷, MD Anderson, Dana-Farber⁵⁸, and Cleveland Clinic⁵⁹—have now established dedicated EACRC programs to address the unique clinical and psychosocial needs of younger patients.

Recent genomic profiling studies indicate that, among microsatellite stable (MSS) tumors, EACRC is broadly similar to average-onset CRC in histopathology, chemotherapy response, and survival, once tumor sidedness and molecular alterations are accounted for. However, germline pathogenic variants are more common in younger patients: 23.3% in those ≤35 years versus 14.1% in older adults ($P = .01$), supporting the case for routine germline testing even without family history⁶⁰.

This epidemiological shift challenges age-based screening. Current guidelines now recommend initiating average-risk screening at age 45, but a risk-adapted, personalized model incorporating family history, germline testing, lifestyle, and potentially microbiome/molecular markers is urgently needed⁶¹.

In patients diagnosed under age 50, care pathways should explicitly integrate pre-treatment fertility-preservation counselling, structured return-to-work support, and mental-health navigation, co-delivered by multidisciplinary

oncology services and national NGOs to enhance access, adherence, and survivorship outcomes.

Co-implementation of community ‘red-flag’ symptom campaigns, such as persistent rectal bleeding, unexplained change in bowel habit with expedited, protocolized primary-care referral pathways to colonoscopy; civil-society organizations, working with ministries of health and PHC, can operationalize these measures to shorten diagnostic delays and downstage presentation.

Palliative Care Considerations

Despite the fact that palliative care is an essential part of universal health coverage (UHC), between 80% and 90% of the world’s palliative care needs are still unmet. Around the world, 32% of nations provide isolated hospice and palliative care services, whereas 32% do not. Globally, fewer than 10% of nations offer sophisticated, integrated palliative care. Surprisingly, low- and middle-income countries (LMIC) account for the bulk of unmet palliative care needs⁶².

Premature death and decreased productivity resulting from EOCRC have higher indirect costs than direct ones. Delays in diagnosis caused by patient awareness, the system, and physicians should be strategically reduced. Younger cancer patients have different survivorship issues than older patients⁶³. This indicates that these patients need a personalized care plan tailored to meet their needs.

Despite growing awareness, the term “palliative care” is perceived as a lack of hope and causing suffering to patients and their families, it may act as a barrier to early referral. Introduction of palliative care in this context is aimed to improve quality of life and is somewhat warranted that physicians discuss the introduction of palliative care for younger patients in the early phase of the disease trajectory. More work is required to incorporate palliative care in young cancer patients’ treatment plans at an early stage⁶⁴.

THE ROLE OF PATIENT ADVOCACY AND GLOBAL ALLIANCES IN DRIVING CHANGE

Patient advocacy organizations and global alliances are essential to advancing CRC care. By connecting patients, clinicians, and policymakers, they ensure that lived experiences shape policy, research, and care delivery. Their work has accelerated screening implementation, expanded biomarker access, and advanced equity-driven reform across diverse settings.

In the United States, Fight Colorectal Cancer (Fight CRC)⁶⁵ has advanced national policies through initiatives like Call-on Congress, United in Blue, and the Colorectal

Cancer Care Initiative. Their advocacy efforts helped to lower the CRC screening age to 45, set national goals to improve care for CRC patients, and boost federal investment in prevention. The Colorectal Cancer Alliance⁶⁶ serves over 1.5 million individuals annually via BlueHQ, offering navigation, psychosocial support, and biomarker education. The GI Cancer Alliance⁶⁷, a coalition of over 40 groups, and COLONTOWN⁶⁸, a digital patient community with 9,000+ members, provide disease-specific education and peer mentorship.

Globally, the Global Colon Cancer Association (GCCA)⁶⁹ connects over 100 member organizations across 56 countries, serving more than 6 million patients. Its #KnowYourBiomarker campaign and Health Equity Grants support testing access and advocacy in LMICs including Kenya, Mexico, and Brazil. In Europe, Digestive Cancers Europe (DiCE)⁷⁰ unites 40+ national groups across 30 countries. Its public campaigns (Screening Saves Lives, My Survival Story) and engagement with the EU's Beating Cancer Plan have shaped CRC policy across the continent.

In the Asia-Pacific region, the Asia-Pacific Colorectal Cancer Alliance (APCRC)⁷¹ and national societies in Japan, South Korea, India, and China drive culturally tailored awareness and screening programs. Japan's national fecal occult blood testing program now achieves >60% participation among eligible adults. The UICC Patient Group Mentoring Program supports advocacy development across 11 South and Southeast Asian countries⁷². Across Africa, the African Organization for Research and Training in Cancer (AORTIC) developed the African Cancer Advocates Consortium (ACAC)⁷³, with 51 member groups, to advance policy, research, and education.

An AORTIC advocacy special interest group has now emerged from this that is training civil societies to engage in political and research advocacy. In Kenya, partnerships between GCCA and the national oncology society, KESHO, have expanded patient-centered quality initiatives. Partnerships between AORTIC, KESHO and the local surgical society, SSK has led to expansion of surgical training and multidisciplinary approaches to cancer management. In Latin America, GCCA-backed mentorship programs are growing, while Colorectal Cancer Canada continues to lead public awareness and policy engagement nationally.

Multilateral platforms further amplify these efforts. The IAEA–Lancet Oncology Commission convenes global stakeholders to address disparities in imaging access, while ASCO's Global Oncology, NCCP National Control Plans⁷⁴ and WHO-led frameworks increasingly embed patient voices in guideline development. Grassroots leadership remains vital: in Armenia, civil society has driven early detection efforts, while in Ghana, regional initiatives have expanded awareness and screening in rural areas. These examples demonstrate a shared imperative of equity in CRC care that needs to be both locally led and

globally reinforced⁷⁵.

In Europe, the EU Cancer Mission takes a comprehensive, multidisciplinary approach to cancer control, aiming to improve prevention, early detection, treatment, and quality of life for people affected by cancer, including those with CRC. This approach envisions saving more than 3 million lives by 2030 through better public health interventions, innovation, and patient-centered care^{76,77}. It emphasizes personalized and risk-based screening strategies, advancing the use of novel, non-invasive technologies and artificial intelligence for improved accuracy and efficiency, specifically in CRC. The mission supports multi-country projects like ONCOSCREEN and DIOPTRA that develop risk models, awareness campaigns, and digital solutions to increase screening uptake and empower citizens⁷⁸.

There's a strong focus on primary prevention through lifestyle interventions, education, and structured follow-up to reduce cancer incidence, supported by research consortia like ONCODIR that apply AI and social science to prevention programs⁷⁹. Although this approach stems from the European Union (EU), its benefits extend beyond the Union's member states given that neighboring countries associated with the Horizon Europe funding framework can participate in the development and implementation of relevant proposals. Overall, the EU Cancer Mission sets a tangible paradigm of institutions defining cancer policy in direct communication and exchange with all involved parties to ensure that the entire trajectory from research question to practice is aligned with real-world needs.

LMICs can pragmatically adapt the EU model by implementing risk-stratified screening protocols, embedding low-cost digital reminder/recall systems, such as SMS/WhatsApp, and deploying community-based navigation through primary care and NGOs—achieving measurable gains without replicating full EU-level infrastructure.

As a MENA/GCC exemplar, the Qatar Cancer Society partners with primary-care clinics and tertiary hospitals to co-deliver population awareness campaigns, screening navigation, and psychosocial/financial support—illustrating a civil-society–health-system model that improves screening uptake and timeliness of diagnosis in resource-diverse settings⁸⁰.

As colorectal cancer becomes more biologically stratified and demographically diverse, partnerships with advocacy groups are essential to ensuring that innovations reach all populations, and that care remains inclusive, responsive, and humane.

CONCLUSION AND STRATEGIC PRIORITIES

The Global Cancer Movement: Challenging the Status Quo in Colorectal Cancer Congress underscored the

widening global divide in CRC outcomes. The escalating burden—particularly the alarming rise of EAOCRC—alongside persistent disparities in prevention, diagnosis, and treatment demands urgent, coordinated global action. To move beyond incremental progress and truly challenge the status quo, the congress emphasized that progress must be grounded in equity, patient partnership, and shared accountability. This requires embedding patient expertise not only in advocacy but in research design, policy development, and program implementation, ensuring that those most affected are co-creators of solutions, not end-users of them.

The following interconnected priorities form the foundation for a patient-centered, globally inclusive CRC movement:

1. Strengthening global data systems and research equity – Expanding cancer registries, building data infrastructure (particularly in LMICs), and ensuring equitable participation in international research.
2. Expanding equitable screening and early detection – Scaling cost-effective, population-based screening programs; guaranteeing diagnostic follow-up; and leveraging AI-assisted tools and outreach innovations.
3. Ensuring broader access to essential medicines and trials – Facilitating pooled procurement and local production of biosimilars and immunotherapies, adapting multidisciplinary models for LMICs, and increasing clinical trial availability to generate regionally relevant evidence.
4. Accelerating innovation through regulatory pathways – Advancing global regulatory convergence, adaptive trial designs, conditional approvals, and real-world data integration to enable earlier access to therapies targeting molecular subtypes and immunologically distinct CRC populations.
5. Building workforce and infrastructure capacity – Investing in oncology training, diagnostics, treatment facilities, and palliative care services.
6. Addressing early-age onset CRC – Expanding research, increasing awareness to reduce diagnostic delays, considering earlier screening, and creating tailored survivorship pathways.
7. Embedding patient advocacy and alliances –Elevate grassroots and coalition leadership by embedding patient seats with real power in every decision-making forum.
8. Integrating CRC control into health agendas – Embedding CRC within NCD strategies, UHC benefit packages, and policies targeting modifiable risks.
9. Prioritizing integrative approaches – Recognizing exercise, nutrition, mind-body practices, and supportive care as essential components of modern CRC management.
10. Expanding early access to palliative care – Ensuring holistic, quality-of-life-focused care for patients and caregivers across the disease trajectory.
11. Sustaining the Global CRC Movement – Establishing ongoing platforms for accountability, annual convenings, and shared learning to track progress and maintain momentum.

12. Tracking implementation and accountability – Establishing country-level KPIs on screening participation, diagnostic follow-up, stage-at-diagnosis, biomarker testing, time-to-treatment, and patient-reported outcomes, co-owned by ministries, primary care, and civil society.

Above all, achieving equity in CRC care requires more than scientific knowledge—it demands collective commitment and global solidarity. The lived experiences of patients and survivors must remain at the center of every policy and innovation.

The next decade represents a pivotal window: by acting now, we can prevent more disease, detect it earlier, and ensure that every individual—regardless of birthplace or income—benefits from the promise of modern science, integrative care, and coordinated global action.

This report reflects the urgency and vision captured during the Global Cancer Movement: Challenging the Status Quo in Colorectal Cancer, convened by OncoDaily. The Congress marked not an endpoint, but the beginning of a sustained global effort. Through cross-sector partnerships, country-level implementation, and annual collaboration, the momentum generated here must translate into measurable progress. By continuing to challenge the status quo—boldly and collectively—we can transform the future of colorectal cancer worldwide.

CONTRIBUTORS

This report reflects an independent synthesis of Global Cancer Movement: Challenging the Status Quo in Colorectal Cancer Congress proceedings and does not represent formal recommendations or guidelines. All authors contributed to interpreting the proceedings, drafting the manuscript, and critically revising it for accuracy and clarity. All authors approved the final version for publication.

CONFLICT OF INTEREST DISCLOSURES

Pogacian A is the Founder of INCKA Psycho-Oncology Center.

Aggarwal A reports institutional funding from the National Institute for Health and Care Research (NIHR) and the National Institutes of Health (NIH).

Spiegel A is the Chief Executive Officer of the Global Colon Cancer Association.

Chand D is Vice President of Research at Agenus Inc.

Barnell EK is an employee, owner, and inventor of

intellectual property at Geneoscopy.

Gyawali B has received consulting fees from Vivio Health unrelated to the manuscript.

Pietrantonio F reports research funding (to institution) from Lilly, Bristol Myers Squibb, Incyte, AstraZeneca, Amgen, Agenus, Rottapharm, Johnson & Johnson, GlaxoSmithKline, Tempus, and others. He has received personal honoraria as an invited speaker from BeOne, Daiichi Sankyo, Seagen, Astellas, Ipsen, AstraZeneca, Servier, Bayer, Takeda, Johnson & Johnson, Bristol Myers Squibb, Merck Serono, Pierre Fabre, Incyte, and others. He has served in advisory or consultancy roles for Bristol Myers Squibb, MSD, Amgen, Pierre Fabre, Johnson & Johnson, Servier, Bayer, Takeda, Astellas, GlaxoSmithKline, Daiichi Sankyo, Pfizer, BeOne, Jazz Pharmaceuticals, Incyte, Rottapharm, Merck Serono, Italfarmaco, Gilead, AstraZeneca, Agenus, and Revolution Medicine. He has also received travel and accommodation support from Amgen, Merck Serono, Pierre Fabre, Servier, Astellas, Incyte, and Johnson & Johnson.

Abou-Alfa G reports research support from Abbvie, Agenus, Arcus, AstraZeneca, Atara, Beigene, BioNTech, Bristol Myers Squibb, Coherus, Digestive Care, Elicio, Genentech/Roche, Helsinn, J-Pharma, Parker Institute, Pertyze, and Yiviva.

He reports consulting and advisory roles with Abbvie, Ability Pharma, Agenus, Alligator Biosciences, Astellas, Arcus, AstraZeneca, Autem, Berry Genomics, BioNTech, Bristol Myers Squibb, Boehringer Ingelheim, Fibrogen, Genentech/Roche, Ipsen, J-Pharma, Merck, Merus, Moma Therapeutics, Neogene, Novartis, Regeneron, Revolution Medicines, Servier, Syros, Tango, Tempus, Vector, and Yiviva.

Aapro M reports consulting and honoraria for Accord Pharmaceuticals, Amgen, Bristol Myers Squibb, Celgene, Clinigen Group, Daiichi Sankyo, Eisai, Eli Lilly, Genomic Health (Exact Sciences), G1 Therapeutics, GlaxoSmithKline, Helsinn, Hospira (Pfizer), Johnson & Johnson, Merck, Merck Serono (Merck KGaA), Mundipharma, Novartis, Pfizer, Pierre Fabre, Roche, Sandoz, Tesaro (GSK), Teva, and Vifor Pharma. He has received honoraria for lectures at symposia organized by Accord, Amgen, Astellas, Bayer, Biocon, Boehringer Ingelheim, Cephalon, Chugai, Daiichi Sankyo, Eisai, Dr Reddy's, Genomic Health (Exact Sciences), Glenmark, GlaxoSmithKline, Helsinn, Hospira (Pfizer), Ipsen, Janssen, Kyowa Kirin, Merck, Merck Serono, Mundipharma, Novartis, Pfizer, Pierre Fabre, Roche, Sandoz, Sanofi, Tesaro (GSK), Taiho, Teva, and Vifor. He reports institutional research support from Amgen, Eisai, Genomic Health (Exact Sciences), Helsinn, Hospira, Novartis, Merck, Mundipharma, Pfizer, Roche, Sandoz, Tesaro, Teva, and Vifor.

Kasi P reports consulting and advisory roles with Taiho Pharmaceutical (inst), Ipsen (inst), Natera, Foundation

Medicine, MSD Oncology, Tempus, Bayer, Lilly, Delcath Systems, Inflection Point Biomedical Advisors, QED Therapeutics, Boston Healthcare Associates, Servier, Taiho Oncology, Exact Sciences, Daiichi Sankyo/AstraZeneca, and Eisai. He reports research funding from Advanced Accelerator Applications (inst), Tersera (inst), and Boston Scientific (inst), and has received travel, accommodation, and expense reimbursement from AstraZeneca.

Kachaamy T reports consultancy for Microtech, Olympus, Steris, Pentax, and Cook, and travel reimbursement from Medtronic and Boston Scientific.

Subbiah V reports consulting and advisory roles with Loxo/Lilly, Relay Therapeutics (inst), Pfizer (inst), Roche (inst), Bayer (inst), Incyte (inst), Novartis (inst), Pheon Therapeutics (inst), Abbvie (inst), Illumina, AADi, Foundation Medicine, and others. He reports research funding from Novartis (inst), GlaxoSmithKline (inst), NanoCarrier (inst), Northwest Biotherapeutics (inst), Genentech/Roche (inst), Berg Pharma (inst), Bayer (inst), Incyte (inst), Fujifilm (inst), PharmaMar (inst), D3 Oncology Solutions (inst), Pfizer (inst), Amgen (inst), Abbvie (inst), Multivir (inst), Blueprint Medicines (inst), LOXO (inst), Vegenics (inst), Takeda (inst), Alfasigma (inst), Agensys (inst), Idera (inst), Boston Biomedical (inst), Inhibrx (inst), Exelixis (inst), Turning Point Therapeutics (inst), Relay Therapeutics (inst), and others.

Tamamyan G is the Chief Executive Officer of the Immune Oncology Research Institute (IMMONC) and reports ownership interest in p53.

Janjigian Y reports consulting, advisory, research, and speaking engagements with AbbVie, AmerisourceBergen, Arcus Biosciences, AskGene Pharma, Astellas Pharma, AstraZeneca, Basilea Pharmaceutica, Bayer, BeiGene, Boehringer Ingelheim, Bristol Myers Squibb, Daiichi Sankyo, Eisai, Eli Lilly, Geneos Therapeutics, GlaxoSmithKline, Guardant Health, Imedex, Imugene, Inspira, Lynx Health, Merck, Merck Serono, Mersana Therapeutics, Pfizer, Sanofi Genzyme, Seagen, Silverback Therapeutics, Zymeworks, and others. She reports research funding to her institution or herself from Arcus Biosciences, Astellas Pharma, AstraZeneca, Bayer, Bristol Myers Squibb, Cycle for Survival, Eli Lilly, Fred's Team, Genentech, Inspira, Merck, the National Cancer Institute, Stand Up To Cancer, Transcenta, and the U.S. Department of Defense, and institutional support through the NCI Cancer Center Support Grant (P30 CA008748) to Memorial Sloan Kettering Cancer Center. She serves on data and safety monitoring or steering committees for Arcus Biosciences, AstraZeneca, Daiichi Sankyo, and Transcenta, has received travel support for speaking from Bristol Myers Squibb (Japan) and Merck (China), and holds equity (stock options) from Inspira.

All other authors declare no competing interests.

REFERENCES

- Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* [Internet]. 2024 May [cited 2025 Jun 23];74(3):229–63.
- Morgan E, Arnold M, Gini A, Lorenzoni V, Cabasag CJ, Laversanne M, et al. Global burden of colorectal cancer in 2020 and 2040: Incidence and mortality estimates from GLOBOCAN. *Gut*. 2023;72(2):338–44.
- Colorectal cancer [Internet]. World Health Organization; [cited 2025 Jun 23].
- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* [Internet]. 2021 May [cited 2025 Jun 23];71(3):209–49.
- Center MM, Jemal A, Smith RA, Ward E. Worldwide variations in colorectal cancer. *CA Cancer J Clin* [Internet]. 2009 Nov–Dec [cited 2025 Oct 14];59(6):366–78.
- Wong MCS, Huang J, Lok V, Wang J, Fung F, Ding H, et al. Differences in Incidence and Mortality Trends of Colorectal Cancer Worldwide Based on Sex, Age, and Anatomic Location. *Clinical Gastroenterology and Hepatology*. 2021 May 1;19(5):955–966.e61.
- Araghi M, Soerjomataram I, Jenkins M, Brierley J, Morris E, Bray F, et al. Global trends in colorectal cancer mortality: projections to the year 2035. *Int J Cancer* [Internet]. 2019 Jun 15 [cited 2025 Jun 23];144(12):2992–3000.
- Zohrabyan D, Karapetyan N, Danielyan S, Saghatelian T, Safaryan L, Bardakhchyan S, et al. Lung Cancer in Armenia. *Journal of Thoracic Oncology* [Internet]. 2023 Apr 1 [cited 2025 Jul 12];18(4):402–9.
- Baloyan E, Zohrabyan D, Safaryan L, Avagyan A, Harutyunyan L, Bardakhchyan V, et al. Treatment and Outcomes of Pancreatic Cancer in Armenia: A Retrospective Study From Resource-Limited Settings. *JCO Glob Oncol* [Internet]. 2025 Jan [cited 2025 Jul 12];(11).
- Bardakhchyan S, Mkhitarian S, Zohrabyan D, Safaryan L, Avagyan A, Harutyunyan L, et al. Treatment and Outcomes of Colorectal Cancer in Armenia: A Real-World Experience From a Developing Country. *JCO Glob Oncol* [Internet]. 2020 Nov [cited 2025 Jul 12];(6):1286–97.
- Lancet Oncology Commission on Medical Imaging and Nuclear Medicine | IAEA [Internet]. [cited 2025 Jun 23].
- Katsoula A, Paschos P, Haidich AB, Tsapas A, Giouleme O. Diagnostic Accuracy of Fecal Immunochemical Test in Patients at Increased Risk for Colorectal Cancer: A Meta-analysis. *JAMA Intern Med* [Internet]. 2017 Aug 1 [cited 2025 Jun 23];177(8):1110–8.
- Doubeni CA, Corley DA, Jensen CD, Levin TR, Ghai NR, Cannavale K, et al. Fecal immunochemical test screening and risk of colorectal cancer death. *JAMA Netw Open* [Internet]. 2024 Jul 1 [cited 2025 Jun 23];7(7):e2423671.
- Zheng S, Schrijvers JJA, Greuter MJW, Kats-Ugurlu G, Lu W, de Bock GH. Effectiveness of colorectal cancer screening on all-cause and CRC-specific mortality reduction: a systematic review and meta-analysis. *Cancers (Basel)* [Internet]. 2023 Apr 1 [cited 2025 Jun 23];15(7):1793.
- Nur AM, Aljunid SM, Tolma EL, Annaka M, Alwotayan R, Elbasmi A, et al. Cost effectiveness analysis of three colorectal cancer screening modalities in Kuwait. *Sci Rep* [Internet]. 2025 Dec 1 [cited 2025 Jun 23];15(1):22219.
- Mahmoud M, Parambil J, Danjuma M, Abubeker I, Najim M, Ghazouani H, et al. Knowledge, attitude and practice of physicians regarding screening of colorectal cancer in Qatar: a cross-sectional survey. *Adv Med Educ Pract* [Internet]. 2020 [cited 2025 Jun 23];11:843–50.
- Deeds S, Schuttner L, Wheat C, Gunnink E, Geyer J, Beste L, et al. Automated reminders enhance mailed fecal immunochemical test completion among veterans: a randomized controlled trial. *J Gen Intern Med* [Internet]. 2024 Jan [cited 2025 Jun 23];39(1):113–9.
- Huang T, Qiu J, Wang C, Ma X, Liu D, Cai J. Trends and projections of early-onset colorectal cancer burden in China, 1990–2036: findings from the global burden of disease 2021 study. *Cancer Control* [Internet]. 2025 Jan 1 [cited 2025 Jun 23];32:10732748251341524.
- Amicizia D, Piazza MF, Grammatico F, Lavieri R, Marchini F, Astengo M, et al. Organizational determinants and outcomes related to participation and adherence to cancer public health screening: a systematic review. *Cancers (Basel)* [Internet]. 2025 [cited 2025 Jun 23];17(11):1775.
- Gupta S, Nodora J. Optimizing the quality of the colorectal cancer screening continuum: a call to action. *J Natl Cancer Inst* [Internet]. 2017 May 1 [cited 2025 Jun 23];109(5):djw271.
- Hassan C, Spadaccini M, Iannone A, Maselli R, Jovani M, Chandrasekar VT, et al. Performance of artificial intelligence in colonoscopy for adenoma and polyp detection: a systematic review and meta-analysis. *Gastrointest Endosc* [Internet]. 2021 Jan 1 [cited 2025 Jun 23];93(1):77–85.e6.
- Menke-van der Houven van Oordt CW, Gootjes EC, Huisman MC, Vugts DJ, Roth C, Luik AM, et al. 89Zr-cetuximab PET imaging in patients with advanced colorectal cancer. *Oncotarget* [Internet]. 2015 [cited 2025 Jun 23];6(30):30384–94.
- Lumish MA, Maron SB, Paroder V, Chou JF, Capanu M, Philemond S, et al. Noninvasive assessment of human epidermal growth factor receptor 2 (HER2) in esophagogastric cancer using 89Zr-trastuzumab PET: a pilot study. *J Nucl Med* [Internet]. 2023 May 1 [cited 2025 Jun 23];64(5):724–30.
- Manafi-Farid R, Ataeinia B, Ranjbar S, Jamshidi Araghi Z, Moradi MM, Pirich C, et al. ImmunoPET: antibody-based PET imaging in solid tumors. *Front Med (Lausanne)* [Internet]. 2022 Jun 28 [cited 2025 Jun 23];9:916693.
- De Valk KS, Deken MM, Schaap DP, Meijer RP, Boogerd LS, Hoogstins CE, et al. Dose-finding study of a CEA-targeting agent, SGM-101, for intraoperative fluorescence imaging of colorectal cancer. *Ann Surg Oncol*

[Internet]. 2021 Mar 1 [cited 2025 Jun 23];28(3):1832–44.

26. Jiang J, Yuan C, Zhang J, Xie Z, Xiao J. Spectroscopic photoacoustic/ultrasound/optical-microscopic multimodal intrarectal endoscopy for detection of centimeter-scale deep lesions. *Front Bioeng Biotechnol* [Internet]. 2023 Jan 26 [cited 2025 Jun 23];11:1136005.

27. Karami P, Elahi R. Radiomics-based artificial intelligence (AI) models in colorectal cancer diagnosis, metastasis detection, prognosis, and treatment response. *arXiv* [Internet]. 2024 Jun 18 [cited 2025 Jun 23].

28. Sargsyan A, Hovsepyan S, Muradyan A. Ubiquitous and powerful artificial intelligence (AI). In: *The Sustainable Development Goals Series* [Internet]. 2024 [cited 2025 Jun 23];Part F3373:255–71.

29. Shiu KK, André T, Kim TW, Vittrup Jensen B, Jensen LH, Punt CJA, et al. Pembrolizumab versus chemotherapy in microsatellite instability-high/mismatch repair-deficient metastatic colorectal cancer: 5-year follow-up of the randomized phase III KEYNOTE-177 study. *Ann Oncol* [Internet]. 2023 Oct [cited 2025 Jun 23];34(Suppl 3):S1271–2.

30. Andre T, Elez E, Van Cutsem E, Jensen LH, Bennouna J, Mendez G, et al. Nivolumab plus ipilimumab vs chemotherapy as first-line treatment for MSI-H/dMMR metastatic colorectal cancer: first results of the CheckMate 8HW study. *J Clin Oncol* [Internet]. 2024 Jan 20 [cited 2025 Jun 23];42(3 suppl):LBA768.

31. Cercek A, Foote MB, Rousseau B, Smith JJ, Shia J, Sinopoli J, et al. Nonoperative management of mismatch repair-deficient tumors. *N Engl J Med* [Internet]. 2025 Apr 27 [cited 2025 Jun 23].

32. Dijkstra EA, Nilsson PJ, Hospers GAP, Bahadoer RR, Meershoek-Klein Kranenbarg E, Roodvoets AGH, et al. Locoregional failure during and after short-course radiotherapy followed by chemotherapy and surgery compared with long-course chemoradiotherapy and surgery: a 5-year follow-up of the RAPIDO trial. *Ann Surg* [Internet]. 2023 Oct 1 [cited 2025 Jun 23];278(4):E766–72.

33. Tabernero J, Grothey A, Van Cutsem E, Yaeger R, Wasan H, Yoshino T, et al. Encorafenib plus cetuximab as a new standard of care for previously treated BRAF V600E-mutant metastatic colorectal cancer: updated survival results and subgroup analyses from the BEACON study. *J Clin Oncol* [Internet]. 2021 [cited 2025 Jun 23];39(4):273–84.

34. Kopetz S, Bekaii-Saab TS, Yoshino T, Chung CH, Zhang X, Tabernero J. SEAMARK: randomized phase 2 study of pembrolizumab plus encorafenib plus cetuximab versus pembrolizumab alone for first-line treatment of BRAF V600E-mutant and MSI-H/dMMR metastatic colorectal cancer. *J Clin Oncol* [Internet]. 2022 Jun 1 [cited 2025 Jun 23];40(16 suppl):TPS3634.

35. Bullock AJ, Schlechter BL, Fakih MG, Tsimberidou AM, Grossman JE, Gordon MS, et al. Botenslimab plus balstilimab in relapsed/refractory microsatellite-stable metastatic colorectal cancer: a phase 1 trial. *Nat Med* [Internet]. 2024 Sep 1 [cited 2025 Jun 23];30(9):2558–67.

36. Pietrantonio F, Salvatore L, Esaki T, Modest DP, Lopez-

Bravo DP, Taieb J, et al. Overall survival analysis of the phase III CodeBreak 300 study of sotorasib plus panitumumab versus investigator's choice in chemorefractory KRAS G12C colorectal cancer. *J Clin Oncol* [Internet]. 2025 Apr 11 [cited 2025 Jun 23].

37. André T, Van Cutsem E, Taieb J, Fakih M, Prager GW, Ciardiello F, et al. Clinical trial data review of the combination FTD/TPI plus bevacizumab in the treatment landscape of unresectable metastatic colorectal cancer. *Curr Treat Options Oncol* [Internet]. 2024 Oct 1 [cited 2025 Jun 23];25(10):1009–22.

38. Huang HY, Liu CC, Yu Y, Wang L, Wu DW, Guo LW, et al. Pharmacoeconomic evaluation of cancer biosimilars worldwide: a systematic review. *Front Pharmacol* [Internet]. 2020 Nov 12 [cited 2025 Jun 23];11:572569.

39. Eldridge L, Goodman NR, Chtourou A, Galassi A, Monge C, Cira K, et al. Barriers and opportunities for cancer clinical trials in low- and middle-income countries. *JAMA Netw Open* [Internet]. 2025 Apr 1 [cited 2025 Jun 23];8(4):e257733.

40. Sargsyan A, Tamamyan G, Oganisian A, Zohrabyan D, Safaryan L, Avagyan A, et al. Nationwide insights on immunotherapy in a low- and middle-income country: Armenia's struggle for equitable cancer care in an out-of-pocket system. *JCO Glob Oncol* [Internet]. 2025 [cited 2025 Jun 23];11:1–10.

41. Xu W, Towers AD, Li P, Collet JP. Traditional Chinese medicine in cancer care: perspectives and experiences of patients and professionals in China. *Eur J Cancer Care (Engl)* [Internet]. 2006 Sep [cited 2025 Jun 23];15(4):397–403.

42. Sun Q, He M, Zhang M, Zeng S, Chen L, Zhao H, et al. Traditional Chinese medicine and colorectal cancer: implications for drug discovery. *Front Pharmacol* [Internet]. 2021 Jul 1 [cited 2025 Jun 23];12:685002.

43. Courneya KS, Vardy JL, O'Callaghan CJ, Gill S, Friedenreich CM, Wong RKS, et al. Structured exercise after adjuvant chemotherapy for colon cancer. *N Engl J Med* [Internet]. 2025 Jun 1 [cited 2025 Jun 23].

44. China's integrative medicine approach key to increased cancer survival – China Daily [Internet]. [cited 2025 Jun 23]

45. Van Blarigan E, McKinley MA, Finster LJ, Cheng I, Gomez SL, Haile R. Incidence trends of early-onset colorectal cancer in the United States by age, sex, race and ethnicity, and urbanicity (2000–2021). *J Clin Oncol* [Internet]. 2025 Feb [cited 2025 Jun 23];43(4 suppl):26.

46. Mauri G, Patelli G, Crisafulli G, Siena S, Bardelli A. Tumor “age” in early-onset colorectal cancer. *Cell* [Internet]. 2025 Feb 6 [cited 2025 Jun 23];188(3):589–93.

47. Shin A, Jung KW, Jeong SY. Right then, wrong now: early-onset colorectal cancer in Korea. *Cancer Res Treat* [Internet]. 2023 Jul 1 [cited 2025 Jun 23];55(3):1058–60.

48. Akimoto N, Ugai T, Zhong R, Hamada T, Fujiyoshi K, Giannakis M, et al. Rising incidence of early-onset colorectal cancer: a call for action. *Nat Rev Clin Oncol* [Internet]. 2020 Apr 1 [cited 2025 Jun 23];18(4):230–44.

49. Raphael MJ. Early age onset colorectal

cancer: a Canadian perspective. *Can Oncol Today* [Internet]. 2024 Mar 13 [cited 2025 Jun 23];1:22–9.

50. Young JP, Win AK, Rosty C, Flight I, Roder D, Young GP, et al. Rising incidence of early-onset colorectal cancer in Australia over two decades: report and review. *J Gastroenterol Hepatol* [Internet]. 2015 Jan 1 [cited 2025 Jun 23];30(1):6–13.

51. Saraiva MR, Rosa I, Claro I. Early-onset colorectal cancer: a review of current knowledge. *World J Gastroenterol* [Internet]. 2023 Mar 28 [cited 2025 Jun 23];29(8):1289–305.

52. Mannucci A, Hernández G, Uetake H, Yamada Y, Balaguer F, Baba H, et al. Prediction of long-term recurrence-free and overall survival in early-onset colorectal cancer: the ENCORE multicentre study. *NPJ Precis Oncol* [Internet]. 2025 Jun 21 [cited 2025 Jun 23];9(1):1–11.

53. Song J, Han T, Qian L, Zhu J, Qiao Y, Liu S, et al. A decade-long study on pathological distinctions of resectable early versus late onset colorectal cancer and optimal screening age determination. *Sci Rep* [Internet]. 2024 Dec 1 [cited 2025 Jun 23];14(1):27335.

54. Kang JHE, Jensen CD, Udaltsova N, Badalov JM, Fireman BH, Sakoda L, et al. Early-onset colorectal cancer survival by race and ethnicity in a large community-based insured population. *Gastro Hep Adv* [Internet]. 2025 Jan 1 [cited 2025 Jun 23];4(8):788–99.

55. Hua H, Jiang Q, Sun P, Xu X. Risk factors for early-onset colorectal cancer: systematic review and meta-analysis. *Front Oncol* [Internet]. 2023 [cited 2025 Jun 23];13:1132306.

56. Shiels MS, Haque AT, Berrington de González A, Camargo MC, Clarke MA, Davis Lynn BC, et al. Trends in cancer incidence and mortality rates in early-onset and older-onset age groups in the United States, 2010–2019. *Cancer Discov* [Internet]. 2025 May 8 [cited 2025 Jun 23];OF1–14.

57. Memorial Sloan Kettering Cancer Center. MSK's Center for Young Onset Colorectal and Gastrointestinal Cancer [Internet]. [cited 2025 Jun 23].

58. Dana-Farber Cancer Institute. Young-Onset Colorectal Cancer Center [Internet]. [cited 2025 Jun 23].

59. Bolwell J, Butler R, Burke CA, Liska D, Macaron C. Risk factors associated with advanced colorectal neoplasia in adults younger than age 45. *J Clin Gastroenterol* [Internet]. 2024 Jan 15 [cited 2025 Jun 23];58(9):882–8.

60. Cercek A, Chatila WK, Yaeger R, Walch H, Fernandes GDS, Krishnan A, et al. A comprehensive comparison of early-onset and average-onset colorectal cancers. *J Natl Cancer Inst* [Internet]. 2021 Dec 1 [cited 2025 Jun 23];113(12):1683–92.

61. Burnett-Hartman AN, Lee JK, Demb J, Gupta S. An update on the epidemiology, molecular characterization, diagnosis, and screening strategies for early-onset colorectal cancer. *Gastroenterology* [Internet]. 2021 Mar 1 [cited 2025 Jun 23];160(4):1041–9.

62. Segarmurthy MV, Lim RBL, Yeat CL, Ong YX, Othman S, Taher SW, et al. Mapping palliative care availability and accessibility: a first step to eradicating access deserts in low- and middle-income settings. *J Palliat Care*

[Internet]. 2024 Jul [cited 2025 Jun 23];39(4):255–63.

63. AlZaabi A, AlHarrasi A, AlMusalami A, AlMahyijari N, Al Hinai K, AlAdawi H, et al. Early onset colorectal cancer: challenges across the cancer care continuum. *Ann Med Surg (Lond)* [Internet]. 2022 [cited 2025 Jun 23];82:104689.

64. Baskar S, Lee B, Midha R, Grewal U. Impact of inpatient palliative care on end-of-life care among patients with early-onset colorectal cancer. *J Clin Oncol* [Internet]. 2025 [cited 2025 Jun 23];43(4 suppl):305.

65. Fight Colorectal Cancer. Home | Fight CRC [Internet]. [cited 2025 Jun 23].

66. Colorectal Cancer Alliance. Prevention, support & research for colorectal cancer [Internet]. [cited 2025 Jun 23].

67. GI Cancers Alliance. Fight against gastrointestinal cancers [Internet]. [cited 2025 Jun 23].

68. COLONTOWN. About – COLONTOWN [Internet]. [cited 2025 Jun 23].

69. Global Colon Cancer Association. About Global Colon Cancer Association | GCCA [Internet]. [cited 2025 Jun 23].

70. Digestive Cancers Europe. Members – Digestive Cancers Europe [Internet]. [cited 2025 Jun 23].

71. Asia-Pacific Oncology Alliance. Asia-Pacific Oncology Alliance – e cancer [Internet]. [cited 2025 Jun 23].

72. Union for International Cancer Control (UICC). Patient group mentoring programme [Internet]. [cited 2025 Jun 23].

73. Segarmurthy MV, Lim RBL, Yeat CL, Ong YX, Othman S, Taher SW, et al. Mapping palliative care availability and accessibility: a first step to eradicating access deserts in low- and middle-income settings. *J Palliat Care* [Internet]. 2024 Jul [cited 2025 Jun 23];39(4):255–63.

74. Romero Y, Tittenbrun Z, Trapani D, Given L, Hohman K, Cira MK, et al. The changing global landscape of national cancer control plans. *Lancet Oncol* [Internet]. 2025 Jan 1 [cited 2025 Jun 23];26(1):e46–54.

75. Ghebreyesus TA, Mired D, Sullivan R, Mueller A, Charalambous A, Kacharian A, et al. A manifesto on improving cancer care in conflict-impacted populations. *Lancet* [Internet]. 2024 Aug 3 [cited 2025 Jun 23];404(10451):427–9.

76. Fight Colorectal Cancer. Home | Fight CRC [Internet]. [cited 2025 Jun 23].

77. Al-Dahshan A, Abushaikh S, Chehab M, Bala M, Kehyayan V, Omer M, et al. Perceived barriers to colorectal cancer screening among eligible adults in Qatar and associated factors: a cross-sectional study. *Asian Pac J Cancer Prev* [Internet]. 2021 [cited 2025 Sep 19];22(1):45–52.

78. European Regions Research and Innovation Network (ERRIN). ONCODIR: survey on primary prevention of colorectal cancer [Internet]. [cited 2025 Sep 19].

79. OncoScreen Project. Press release: On a mission to revolutionise CRC prevention and early detection – DIOPTRA and ONCOSCREEN Mission Cancer projects join forces [Internet]. [cited 2025 Sep 19].

80. ECHoS Cancer Mission Hubs. Why missions? A mission in health: the EU Cancer Mission [Internet]. [cited 2025 Sep 19].

Affiliations

1. Amalya Sargsyan

Association: Head of Intelligence Unit, OncoDaily/ Medical Oncologist, Yeolyan Hematology and Oncology Center/ Clinical Research Physician, Immune Oncology Research Institute, Armenia

2. Andre Ilbawi

Association: Team lead, Cancer Control, Department of Noncommunicable Diseases and Mental Health, World Health Organization, Switzerland

3. Yeva Margaryan

Association: Managing Editor, CancerWorld

4. Jack Yacoubian

Association: Yerevan State Medical University

5. Abay Jumanov

Association: Team lead, Cancer Control, Department of Noncommunicable Diseases and Mental Health, World Health Organization, Switzerland

6. Adrian Pogacian

Association: CEO, Global Colon Cancer Association, USA

7. Airazat M. Kazaryan

Association: Consultant Surgeon, Department of Gastrointestinal Surgery, Østfold Hospital Trust/ Honorary Researcher, Interventional Centre, Oslo University Hospital/ Visiting Professor, Yerevan State Medical University, Armenia

8. Ajay Aggarwal

Association: Professor of Cancer Services and Systems Research, King's College London/ Consultant Clinical Oncologist, Guy's and St Thomas' NHS Trust/ Co-chair, HERO Group, ESTRO, UK

9. Amil Družić

Association: Oncology and Radiotherapy Resident, Clinical Centre University of Sarajevo - Oncology Clinic/ Young Cancer Professional, European Cancer Organisation, Bosnia and Herzegovina

10. Amina Suleymanova

Association: Pediatric Oncologist and Senior Scientist, Research Institute of Pediatric Oncology and Hematology of N.N. Blokhin National Medical Research Center of Oncology

11. Andrew Spiegel

Association: CEO, Global Colon Cancer Association, USA

12. Armen Avagyan

Association: Medical Oncologist, Mikayelyan Institute of Surgery, Armenia

13. Bahar Laderian

Association: Director, Neuroendocrine Tumors Program, Montefiore Einstein Comprehensive Cancer Center/ Assistant Professor of Medicine and

Oncology, Albert Einstein College of Medicine, USA

14. Bishal Gyawali

Association: Associate Professor in Medical Oncology and Public Health Sciences, Division of Cancer Care and Epidemiology, Queen's University/ Co-Leader, Common Sense Oncology Movement, Canada

15. Chandler Park

Association: Advisory Dean, Clinical Professor, University of Louisville School of Medicine/ Norton Cancer Institute/ ASCO State Society

16. Christos Tsagkaris

Association: Member, EU Cancer Mission Board, Horizon Europe, Brussels, Belgium/ Institute of Cancer and Crisis, Yerevan, Armenia/ Aristotle University of Thessaloniki, Faculty of Medicine, Thessaloniki, Greece

17. Christine Parseghian

Association: Associate Professor of Gastrointestinal Medical Oncology, Division of Cancer Medicine, MD Anderson Cancer Center, USA

18. Daiming Fan

Association: President, China Anti-Cancer Association; President, Asian Oncology Society/ Director and Professor, Xijing Hospital of Digestive Diseases, China

19. Davit Zohrabyan

Association: PChief, Clinic of Chemotherapy, Yeolyan Hematology and Oncology Clinic/ ESMO National Representative to Armenia, Armenia

20. Dhan Chand

Association: Vice President, Research, Agenus Inc., USA

21. Erica K. Barnell

Association: Co-Founder, Chief Medical and Science Officer, Geneoscopy, USA

22. Elen Baloyan

Association: Medical Oncology Resident, Yerevan State Medical University/ Managing Editor, OncoDaily

23. Fedja Djordjevic

Association: Medical Oncologist, Institute for Oncology and Radiology of Serbia, Serbia

24. Filippo Pietrantonio

Association: Head, Gastrointestinal Oncology Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan

25. Gabrielle H. van Ramshorst

Association: Associate Professor, Ghent University/ Consultant Surgical Oncologist, Ghent University Hospital, Ghent, Belgium

26. George Kapetanakis

Association: President, Hellenic Cancer Federation - ELLOK, Greece

Organization, Switzerland

27. Ghassan Abou-Alfa

Association: Professor, Weill Cornell College at Cornell University; Attending, Memorial Sloan Kettering Cancer Center/ Adjunct Professor of Medical Diplomacy, Trinity College Dublin, USA

28. Hadi Mohamed Abu Rasheed

Association: Scientific Adviser, Qatar Cancer Society/ Adjunct Lecturer, University of Doha for Science & Technology, Qatar

29. Hovhannes Vardevanyan

Association: Chief of Radiology Department, Wigmore Hospital/ Chief of Radiology Department, American Wellness Center, Armenia

30. Iga Rawicka

Association: President, EuropaColon Polska Foundation, Polandko

31. Jemma Arakelyan

Association: CEO, Institute of Cancer and Crisis/ Advisor, Immune Oncology Research Institute

32. Johanna Rapanarilala

Association: Medical Oncologist and Head of Oncology Unit, Seychelles Hospital; Ministry of Health, Seychelles

33. Julien Taieb

Association: Professor and Head, Gastroenterology and GI Oncology Department, Georges Pompidou European Hospital, Université de Paris, France

34. Karine Soghomonyan

Association: Medical Oncologist, National Center of Oncology after Fanarjyan, Armenia

35. Lilit Harutyunyan

Association: Chairman, Department of Oncology, Yerevan State Medical University/ Chief, Clinic of Chemotherapy, Mikayelyan Institute of Surgery of YSMU, Armenia

36. Malar Velli Segarmurthy

Association: Public Health Physician, Kuala Langat District Health Office, Ministry of Health, Malaysia

37. Manish A. Shah

Association: Professor of Medicine, Weill Cornell Medical College/ Bartlett Family Professor, Gastrointestinal Oncology, Weill Cornell Medical College/ Chief, Solid Tumor Oncology, Weill Cornell Medical College

38. Maria V. Babak

Association: Head, Drug Discovery Lab, City University of Hong Kong/ Assistant Professor, City University of Hong Kong, China

39. Matti Aapro

Association: President, Sharing Progress in Cancer Care (SPCC)/ Chairman of the Editorial Board, OncoDaily Medical Journal/ Past-President, European Cancer

40. Michael Sapienza

Association: CEO, Colorectal Cancer Alliance, USA

41. Mila Ogalla Toledo

Association: Patient Advocate with a lived CRC Experience/ Board Member and PAC Chair, DiCE/ Member, Youth Cancer Europe, Fight CRC, Inspire 2 Live

42. Miriam Mutebi

Association: Consultant Breast Surgical Oncologist, Clinical Epidemiology, Department of Surgery, Aga Khan University Hospital, Nairobi, Kenya/ President, African Organization for Research and Training in Cancer (AORTIC)/ Past President, Kenya Society of Hematology and Oncology (KESHO)/ Board Member, Board of Directors, Union for International Cancer Control (UICC)/ Co-founder, Pan African Women's Association of Surgeons (PAWAS)

43. Moy Bracken

Association: Research Unit Manager, Access to Medicine Foundation, Netherlands

44. Narine Mnatsakanyan

Association: Patient Advocate, MBA, MSP, Armenia

45. Natia Jokhadzde

Association: Chief of Clinical Oncology Department, American Hospital Tbilisi, Georgia

46. Nazik Hammad

Association: Professor and Medical Oncologist, Division of Hematology-Oncology, St. Michael's Hospital, University of Toronto, Canada

47. Pashtoon Kasi

Association: Medical Director of GI Medical Oncology, City of Hope Orange County/ Associate Clinical Professor, Department of Medical Oncology & Therapeutics Research, USA

48. Piotr J. Wysocki

Association: Professor and Head, Clinical Oncology Department, Jagiellonian University-Medical College/ Past-President, Polish Society of Clinical Oncology, Poland

49. Roselle De Guzman

Association: Medical Oncologist and Associate Professor of Medicine, Manila Central University-FDTMF Hospital, Philippines

50. Sabine Tejpar

Association: Professor of Medicine, KU Leuven/ Head of Digestive Oncology, KU Leuven

51. Samvel Bardakhchyan

Association: Scientific Director, Immune Oncology Research Institute/ Adjunct Associate Professor, Yerevan State Medical University/ Medical Oncologist, Yeolyan

52. Sana Al-Sukhun

Association: Director, Al Hyatt Oncology Practice; Past President, Jordanian Oncology Society/ Professor, University of Jordan

53. Susanna Greer

Association: Chief Scientific Officer, The V Foundation for Cancer Research, USA

54. Toufic Kachaamy

Association: Chief of Medicine and Director of Gastroenterology and Endoscopy, City of Hope, Phoenix, USA

55. Toma Oganezova

Association: Miqayelyan Institute of Surgery, Armenia

56. Uta Schmidt-Straßburger

Association: Scientific Director, Master Online Study Program Advanced Oncology, Ulm University, Germany

57. Verna Vanderpuye

Association: National Center for Radiotherapy, Oncology and Nuclear Medicine, Korlebu Teaching Hospital, Accra, Ghana

58. Vivek Subbiah

Association: Chief, Early-Phase Drug Development, Sarah Cannon Research Institute, USA

59. Yan Leyfman

Association: Department of Hematology Oncology, New York Presbyterian Hospital, USA

60. Gevorg Tamamyan

Association: Editor-in-Chief, OncoDaily/ Chairman and Professor, Department of Hematology and Pediatric Oncology, Yerevan State Medical University/ CEO, Immune Oncology Research Institute, Armenia

61. Yelena Janjigian

Association: Chief, Gastrointestinal Oncology Service, Memorial Sloan Kettering Cancer Center, USA