

Care Delivery in Gastrointestinal Malignancies: Disparities, Barriers, and Equity-Focused Solutions

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Abstract

Introduction

Gastrointestinal (GI) malignancies account for 26% of global cancer incidence and 35% of cancer-related mortality, with both projected to double by 2050. Advances in screening, diagnostics, and treatment have not reached patients equally. A substantial gap remains between guideline-concordant care and its real-world delivery. It falls disproportionately along racial, socioeconomic, and geographic lines, and is driven largely by unequal access.

Objective

To characterize barriers to equitable GI cancer care delivery and identify scalable, evidence-based interventions to address them.

Findings

Disparities in GI cancer care are present at every step of the care continuum. Colorectal cancer screening rates remain below 65% among eligible US adults, with the widest gaps among Black, Hispanic, uninsured, and rural populations. Racial disparities in treatment receipt persist after adjustment for insurance status

across every GI tumor type. These are compounded by care fragmentation, concentration of complex surgery and clinical trials at high-volume academic centers, and an unequally distributed oncology workforce. Financial toxicity, limited English proficiency, and low health literacy add further barriers. Patient navigation, multidisciplinary clinic models, digital health, and community-academic partnerships have demonstrated capacity to narrow these gaps, but implementation remains inconsistent and insufficiently scaled.

Conclusions

Equitable GI cancer care delivery requires coordinated investment in oncology workforce development, standardized social determinants of health screening, insurance coverage expansion, and structural interventions that extend guideline-concordant care to the populations carrying the greatest disease burden.

Take Home Messages

1. Disparities in GI cancer care are present at each step of the cancer care continuum, and persist even after controlling for insurance status, indicating that structural barriers to care extend beyond cost and access.
2. Evidence-based interventions such as patient navigation, multidisciplinary clinics, and virtual tumor boards, reduce disparities and improve outcomes, but implementation remains fragmented and is not yet consistently funded.
3. Closing equity gaps requires coordinated structural interventions including standardized screening for social determinants of health, sustained patient navigation funding, workforce diversification, and decentralized clinical trial access.
4. Workforce-efficient models including community health worker programs, telehealth-enabled tumor boards, and task-sharing approaches adapted to local health system capacity can extend equity-focused interventions to low- and middle-income countries.

Introduction

Gastrointestinal (GI) malignancies are a leading contributor to the global cancer burden, accounting for 26% of global cancer incidence and 35% of cancer-related mortality.¹ The lifetime risk of developing and dying from a GI cancer is 8.2% and 6.2%, respectively.² Colorectal cancer (CRC) is the second leading cause of cancer-related mortality worldwide, followed by gastric cancer and esophageal cancer.² Global GI cancer incidence and mortality are projected to double by 2050, with a disproportionate burden in low- and middle-income countries (LMICs).²

Despite advances in screening, diagnostics, and treatment, a gap remains between guideline-concordant care and its real-world delivery. This gap is patterned along racial, socioeconomic, and geographic lines, and persists from screening through survivorship. Unequal access and modifiable risk factors drive many of these disparities, which are therefore amenable to intervention.³

This review characterizes barriers to equitable GI cancer care delivery across the care continuum,

including disparities in screening, diagnosis, and treatment, disease-specific challenges, care center volume, practice-setting variation, clinical trial access, financial toxicity, and language and health literacy. We identify scalable, equity-focused solutions to address these challenges and consider their translation to resource-limited settings globally.

Screening and early-detection disparities

Colorectal

CRC is the only GI malignancy with widely adopted population-level screening guidelines. The United States (US), Australia, Canada, Japan, and most European countries have established national programs, predominantly using stool-based testing. However, there are disparities in uptake. Although the US Preventive Services Task Force lowered the screening age to 45 years, only 65% of eligible adults in the US are up to date.⁴ Screening rates are lowest among uninsured individuals, rural residents, and those with lower income.⁵

In the US, racial and ethnic disparities span the entire CRC care continuum.⁶ Black individuals have higher CRC incidence and stage-adjusted mortality than non-Hispanic White individuals,³ lower screening rates,⁶ and are less likely to undergo follow-up colonoscopy after an abnormal stool-based test.⁷ Hispanic individuals also have lower screening rates compared to non-Hispanic White individuals (56% vs 67%).⁴ The Black-White CRC incidence gap has narrowed from 22% to 11%,⁴ however, Black individuals remain 31% more likely to die from CRC, driven primarily by modifiable factors.³ Systems where care does not depend on insurance status or ability to pay, equal-access health systems,⁸ reduce but do not eliminate racial disparities in CRC screening, indicating that structural barriers extend beyond insurance coverage and cost.

Hepatocellular carcinoma (HCC)

Biannual ultrasound and serum alpha-fetoprotein surveillance is recommended for all individuals at risk for HCC, including patients with cirrhosis or chronic hepatitis B. Many experience structural barriers to surveillance adherence, such as transportation and scheduling challenges, limited specialist access, and lack of insurance.⁹ These barriers

are associated with lower rates of HCC screening, and also decreased overall survival after controlling for sociodemographic factors.¹⁰ Higher rates of ED presentation at HCC diagnosis among Black and Hispanic patients reflect the systematic failure of routine surveillance to reach the populations most affected.¹⁰

Cancers without established screening

No universal population-level screening recommendations exist for pancreatic, gastroesophageal, and hepatobiliary malignancies in the US and most Western countries, leaving early detection dependent on symptom recognition and clinician index of suspicion. In contrast, countries with a high incidence of upper GI cancers such as Japan, South Korea, and Chile have adopted different endoscopic and radiographic screening programs, which have reduced population-level cancer-related mortality.^{11,12}

Socioeconomic deprivation, measured using composite indices like the Area Deprivation Index that combine income, education, employment, and housing data at the neighborhood level, is consistently associated with later stage at diagnosis across GI cancers,¹³ a primary determinant of cancer-specific survival.¹⁴ Black patients have the lowest likelihood of localized-stage at diagnosis and the highest proportion of distant-stage disease across GI cancers.¹⁴

Barriers to diagnosis and treatment

Delays in diagnosis

Where effective screening is unavailable, timely diagnosis depends on symptom recognition. Early symptoms of GI malignancies are non-specific and often initially attributed to benign conditions.¹⁵ Emergency department (ED) presentation at diagnosis is common in GI malignancies and is associated with more advanced stage and worse survival.¹⁶ ED-based diagnoses are more prevalent among non-Hispanic Black patients and residents of high-poverty areas.¹⁷

Barriers operate at patient, clinician, and system levels. Patient-level barriers include work constraints, limited health literacy, and transportation, and are disproportionately prevalent among racial and ethnic minority populations.¹⁸ Patients in the most socioeconomically deprived neighborhoods

have the lowest likelihood of receiving guideline-concordant cancer care.¹⁹ Clinician-level barriers include high-volume workloads and anchoring bias.²⁰ System-level barriers include limited access to diagnostics like endoscopy or specialist consultation, and geographic distance to care.²¹

Treatment access

Curative-intent GI cancer management requires coordinated multimodal therapy across oncology subspecialties. Diagnosis often requires advanced imaging, repeat biopsies, and multiple specialist visits. These steps can be insurmountable for patients with financial constraints, limited social supports, or those travelling significant distances.¹⁹

Privately insured patients are more likely to receive all treatment modalities and have improved overall survival.²² Racial disparities persist even after controlling for insurance status. Black patients wait longer to start treatment and are less likely to receive guideline-concordant surgery, radiation, and systemic therapy.²³ Patients in rural areas face the practical impossibility of daily travel for radiation, and local facilities may lack capacity to optimally deliver guideline-concordant care.²⁴

Molecular testing access reflects similar disparities. Next-generation sequencing (NGS) is now recommended to guide treatment selection and determine clinical trial eligibility in most GI cancers, with HCC the principal exception. However, NGS testing rates are lower in Black patients than in White patients (41.8% vs 51.6%, $p < 0.0001$) in real-world cohorts.²⁵ Older and frail patients also experience reduced testing rates, independent of race.²⁶ Because NGS testing is independently associated with clinical trial enrollment, these disparities compound downstream access inequities.²⁵

Disease-specific care delivery challenges

Beyond these cross-cutting barriers, each GI cancer presents distinct care-delivery challenges.

Colorectal cancer

Rectal cancer requires coordinated multimodality therapy. Care fragmentation, or receiving treatment components at different facilities, is associated with decreased survival and treatment de-

lays.²⁷ Black and Hispanic patients are less likely to receive each modality of multimodal therapy including neoadjuvant treatment, compared with non-Hispanic White patients.²⁸ Black patients also have lower rates of sphincter-preserving surgery, even after adjusting for patient and hospital-specific factors.²⁹

Rising early-onset CRC introduces care delivery challenges around reproductive health, financial toxicity, and survivorship.³⁰ Fertility preservation counseling rates are estimated at 15-25%, despite evidence that counseling improves quality of life independent of whether preservation is pursued.³¹ Dedicated early-onset CRC programs incorporating oncofertility, financial navigation, and psychosocial support, exist only at select academic centers.³²

Esophagogastric cancers

Only 40% of patients with resectable gastric cancer in the US receive guideline-concordant perioperative chemotherapy and surgery.³³ Non-White race, lack of insurance, and lower educational attainment are independently associated with a lower likelihood of receiving perioperative chemotherapy.³⁴ When patients with gastric cancer receive identical treatments, mortality rates among Black and White patients converge, implicating differential access to care rather than tumor biology as the primary driver of the survival difference.³⁵ For esophageal cancer, Black and Hispanic patients are less likely to receive neoadjuvant therapy, surgical resection, or adjuvant treatment, and have worse overall and cancer-specific survival.³⁶ Black patients, uninsured patients, and those residing in areas with lower educational attainment are most likely to receive no treatment.³⁷

Pancreatic cancer

Disparities in access are particularly consequential for pancreatic cancer given the narrow window for curative-intent treatment.³⁸ Black patients are more likely to present with advanced-stage disease, less likely to undergo surgical resection when eligible, and have higher overall mortality.³⁹ Uninsured and Medicaid-insured patients are less likely to undergo resection and have worse survival than privately insured patients.⁴⁰ Medicaid expansion was associated with a 67% increase in pancreatic cancer resection rates,⁴¹ but income-related disparities persisted even after coverage expansion.⁴²

Hepatobiliary cancers

Biliary tract cancers (BTC) share the challenges of late-stage presentation and absence of established screening. Black patients with cholangiocarcinoma are more likely to present with advanced-stage disease and less likely to undergo surgical resection for localized disease compared to White patients (RR 0.62).⁴³ Lower income and lower educational attainment are associated with worse five-year overall survival across BTCs even after adjusting for disease stage.⁴⁴

Surgery and care center volume

Care center volume can shape clinical outcomes. The surgical volume to patient outcome relationship is well-established, with the strongest evidence for pancreaticoduodenectomy and esophagectomy.^{33,45,46} Treatment at a HVC is associated with receipt of standard-of-care therapy and improved survival,⁴⁷ but HVCs treat fewer patients who are non-White, publicly insured, or lower-income.⁴⁸

Black patients with GI cancers undergo surgical resection at substantially lower rates than White patients after adjustment for age, stage, and medical comorbidities, with absolute differences in resection rates ranging from 2% to 21% by tumor site.⁴⁹ Patients in rural areas are less likely to undergo pancreatectomy and have higher one-year mortality than those in metropolitan areas, adjusting for stage at diagnosis and comorbidities.⁵⁰ Centralizing complex GI cancer care at HVCs may narrow outcome disparities for patients who can reach them, but risks widening access gaps for those who cannot.⁵¹

Variation across practice settings

Most patients with cancer in the US are treated at community hospitals and non-academic settings.⁵² Structural differences in access to multidisciplinary tumor boards, clinical trial infrastructure, and supportive care services contribute to variation in delivery of guideline-concordant care and outcomes.⁵²

Within the US, two-thirds of nonmetropolitan counties have no oncologists,⁵³ and 10% of rural counties have no oncologists within or adjacent, compared with 0% of urban counties.⁵⁴ Early-career oncologists are half as likely as later-career peers to practice in rural counties or in counties with

high rates of cancer mortality, social vulnerability, and uninsurance.⁵⁴ The oncology workforce is also poorly representative of the patients it serves. Only 3% of practicing oncologists in the US self-identify as Black and 4.7% as Hispanic.⁵⁵ Greater Black physician representation in a community is independently associated with lower mortality rates among Black patients,⁵⁶ and race-concordant care improves patient trust and communication.⁵⁷

Clinical trial access

Clinical trials advance GI cancer treatment, but access is profoundly unequal. In the US, 70% of counties have no active cancer treatment trials.⁵⁸ One study found that 78 major US cancer trial centers comprise 94% of all US cancer trials and are located in areas with a sociodemographic composition that does not reflect the average US population.⁵⁹ While most patients receive their cancer treatment in community practices, clinical trial enrollment was only 4.1% at community programs compared to 21.6% at National Cancer Institute (NCI) designated programs.⁶⁰ Fewer than half of all US counties had a single phase I-III cancer clinical trial between 2008-2022, and rural, lower-income, and lower educational attainment areas were least likely to have any trials.⁶¹ In GI cancers specifically, Black and Asian/Pacific Islander patients, and those with public insurance were less likely to participate in trials.⁶²

Financial toxicity

Financial toxicity spans every stage of care. It includes both the objective burden of out-of-pocket expenses and the subjective distress that they generate.⁶³ It is associated with delayed medical visits, treatment non-adherence, and early treatment discontinuation.⁶⁴ Over 50% of cancer survivors report financial hardship,⁶⁵ and patients with cancer are more likely to file for bankruptcy, which is associated with higher risk of early mortality.⁶⁶ Among patients undergoing gastrectomy or pancreatectomy for an upper GI malignancy, nearly half experienced financial toxicity,⁶⁷ with younger and non-White patients at greatest risk.⁶⁷

Language barriers and health literacy

Language and health literacy are additional determinants of access to care. More than 25 million

people in the US have limited English proficiency (LEP),⁶⁸ and approximately one-third of adults in the US have limited health literacy, defined as the skills needed to obtain, understand, and process health information to make appropriate health decisions.⁶⁹ LEP and limited health literacy are each associated with diagnostic delays, lower treatment adherence, and decreased access to supportive care services.^{70,71} Among adults with LEP, only 31.6% were up to date with CRC screening compared to 56.8% of English-proficient individuals.⁷² In patients with CRC, lower health literacy is associated with a lower likelihood of receiving chemotherapy,⁷³ suggesting that gaps in patient understanding and ability to navigate complex treatment decisions contribute to undertreatment in this population.

Scalable models to improve equity and outcomes

The most effective interventions are embedded within existing care delivery systems, address structural rather than patient-level barriers, are delivered by a workforce reflecting the communities served, and are sustained through dedicated rather than time-limited funding.

Table 1 summarizes the major barriers to equitable GI cancer care delivery across the continuum and the evidence-based strategies to address them.

Patient navigation

Patient navigation is among the most rigorously evaluated interventions for reducing cancer care disparities. A 2024 systematic review found that 70% of navigation studies reported significant reductions in time to treatment, with the greatest benefit in populations with the highest burden of disparities.⁷⁴ The evidence is most well established in breast cancer, where navigation programs have led to more timely, guideline-concordant treatment among predominantly Black, Hispanic, and LEP patients at safety-net institutions.⁷⁵

For CRC, navigation increases screening uptake by 64% in randomized controlled trials (RCTs) and shows up to a 2.5-fold increase in observational studies.⁷⁶ An RCT in a safety-net setting serving a predominantly minority, uninsured, LEP population demonstrated that patient navigation significantly shortened time to follow-up colonoscopy after an abnormal stool-based screening test, and

Table 1: Barriers and Evidence-Based Strategies to Improve Equity in GI Cancer Care Delivery

Care continuum domain	Key barriers and disparities	Evidence-based strategies	Evidence
Screening and early detection	CRC screening rates lowest among Black, Hispanic, uninsured, rural, and low-income adults; LEP further reduces uptake; no organized screening aside from specific higher-risk populations for most GI cancers outside of CRC	Patient navigation; community health worker led outreach; mailed stool-based testing with navigated colonoscopy follow up; language-concordant patient education materials	4, 5, 6, 72, 74, 76, 77, 91, 92
Diagnosis	Nonspecific early symptoms and diagnostic delays; emergency department diagnosis more common among Black patients and high-poverty residents; clinician anchoring bias	Patient and nurse navigation to shorten time to diagnosis and treatment; multidisciplinary review to expedite workup	15, 17, 74, 78, 82
Treatment access	Insurance status a strong determinant; racial disparities persist after insurance adjustment; rural travel burden for multimodal therapy; care fragmentation	Insurance coverage expansion; multidisciplinary clinics; patient navigation; decentralized and locally delivered care	22, 23, 24, 27, 74, 81
Disease-specific	Lower NGS and biomarker testing in Black patients; underuse of guideline-concordant multimodal therapy	MDC and tumor boards; standardized biomarker testing pathways; virtual (telehealth) tumor boards	25, 28, 81, 82, 83, 85
Center volume	Volume-outcome relationship; centralization may widen access gaps	Balance centralization with access; community-academic partnerships; navigation with travel and financial support	45, 46, 47, 48, 51
Workforce and infrastructure	Shortage of oncologists in rural and underserved communities; workforce not representative of patients served	Loan forgiveness, rural training pipelines, and community-oriented medical education; recruitment, mentorship, and retention of oncologists from underrepresented backgrounds	53, 54, 55
Clinical trial access	Most counties lack active	Decentralized trial	58, 59, 60, 61, 62

increased adherence to follow-up testing.⁷⁷ For pancreatic cancer, the window of optimal response to

	trials; concentration at NCI-designated centers; lower enrollment among Black, Asian/Pacific Islander, and publicly insured patients; underrepresentation of low- and middle-income countries	designs (remote consent, local laboratory and imaging collection, home-based visits); expand NCORP and community sites; fund trial infrastructure in safety-net settings	
Financial toxicity	Out-of-pocket burden and financial distress; treatment non-adherence; bankruptcy and higher mortality; high among younger and non-White surgical patients	Proactive financial screening and navigation embedded in oncology care	63, 66, 67, 79, 80
Language and health literacy	LEP linked to delayed diagnosis and lower screening and adherence; low health literacy associated with undertreatment	Professional interpretation as a clinical standard; validated multilingual, literacy-appropriate materials; CHW's sharing patients' language and culture	70, 71, 72, 73, 91, 92
Digital health	Lower video-visit use among older, LEP, Medicaid, and socially deprived populations; risk of widening the digital divide	Equity-designed telehealth (device loan programs, multilingual support, community access points); virtual equity hub models; remote symptom monitoring and electronic patient-reported outcomes designed for target populations	85, 87, 88, 89, 90

Strategies reflect evidence-based interventions where available and recommended approaches where direct evidence is limited

Abbreviations: CHW = community health worker, CRC = colorectal cancer, LEP = limited English proficiency, MDC = multidisciplinary clinic, NCI = National Cancer Institute, NCORP = NCI Community Oncology Research Program, NGS = next generation sequencing

treatment is narrow and delays can have large impacts on treatment response.³⁸ A single-institution study found that implementation of nurse navigator program reduced time from first provider contact to treatment initiation from 46 to 26 days.⁷⁸

Financial navigation

Proactive financial screening and navigation are not yet standard practice in most oncology settings. A pilot RCT of patients with upper GI cancers found that a proactive financial navigation model was associated with lower rates of financial hardship

and improved quality of life compared with usual care.⁷⁹ A larger RCT found no significant benefit on financial hardship or quality of life, though this study was predominantly composed of patients with breast and prostate cancer.⁸⁰ The evidence in GI-specific populations remains limited and should be further explored.

Multidisciplinary clinics

Multidisciplinary clinic (MDC) models concentrate expertise across oncologic subspecialties in a single care encounter, improving diagnostic accuracy,

treatment planning efficiency, and guideline-concordance.⁸¹ In a large prospective study of patients with GI cancers, MDC review resulted in changes to diagnosis or management in a clinically meaningful proportion of cases, with implications for treatment selection and outcomes.⁸² MDCs have demonstrated equity-modifying effects in GI cancer. For pancreatic cancer, MDC management eliminated socioeconomic disparities in treatment receipt and survival, and increased the likelihood of patients receiving all recommended treatment modalities, including palliative care evaluation and clinical trial participation.⁸³ For HCC, MDC was associated with a reduction in time to treatment initiation (5.3 vs 2.3 months, $P=0.002$) and improvement in median overall survival from 4.8 to 13.2 months.⁸⁴

The MDC model faces scalability challenges, including rural access barriers, inadequate reimbursement, and variability in what constitutes multidisciplinary care across practice settings.

Digital health

Telehealth-enabled virtual MDC tumor boards offer a cost-effective mechanism to extend multidisciplinary expertise to underserved and geographically isolated populations,⁸⁵ and reduce time to treatment decisions across all cancer disciplines.⁸⁶

An equity-focused application, the Virtual Equity Hub pilot, linked a comprehensive cancer center, safety-net hospital, and community health centers in a MDC virtual tumor board which also incorporated social determinants of health (SDOH) screening and community-based participatory principles.⁸⁷ This model was designed to extend specialist expertise while addressing structural barriers to access, and could be adapted to reduce access disparities in GI cancer care.⁸⁷ A similar model was also piloted in South America using the Project ECHO (Project Extension for Community Healthcare Outcomes) framework and showed feasibility and efficacy in reducing care disparities in resource-limited settings.⁸⁵

Telehealth adoption without attention to the digital divide risks widening disparities rather than closing them. Video visit utilization is lower among older patients, patients with LEP, Medicaid beneficiaries, and residents of neighborhoods with higher social deprivation indices.⁸⁸ Realizing the equity potential of telehealth requires addressing

the infrastructure gaps that precondition access. Device loan programs, multilingual support, and community-based access points have been proposed to reduce patient-level barriers.⁸⁹ Digital health tools beyond synchronous video visits, such as remote symptom monitoring and electronic patient-reported outcomes,⁹⁰ can also extend GI cancer care delivery, but require deliberate design and validation in the populations most likely to benefit.

Partnerships with key stakeholders

Most patients with cancer receive care in community settings, yet the evidence base for equitable care delivery has been generated predominantly at academic and NCI-designated cancer centers. Community-academic partnerships can extend multidisciplinary expertise to community sites, support clinical trial expansion, and build shared navigation infrastructure. The NCI Community Oncology Research Program (NCORP) is a national network of community and minority/underserved sites specifically designed to bring cancer clinical trials and care delivery research directly to patients in their communities. It has demonstrated that high-quality trial accrual is achievable outside academic settings when institutional infrastructure and support are provided.⁵³

Community health workers (CHWs) and patient navigators who share the language, culture, and lived experience of the populations they serve are essential to community-engaged care delivery. A 2024 systematic review and meta-analysis found that CHW-led interventions significantly improved CRC screening uptake in racial and ethnic minority populations, with multicomponent interventions demonstrating the greatest benefit.⁹¹ CHWs embedded within community organizations, faith-based institutions, and primary care practices have also demonstrated success in improving follow-up after abnormal screening results and addressing the social determinants that impede access to treatment.⁹²

Policy recommendations and future directions

Translating the evidence reviewed into meaningful improvements in GI cancer care delivery requires coordinated action across health systems, payers, and policymakers. The shortage of oncologists

in rural and underserved communities⁵³ will not resolve without structural intervention, including loan forgiveness programs, rural training pipelines, and community-oriented medical education models. A workforce that reflects the patients it serves improves outcomes and trust,^{56,57} and institutional commitment to actively recruit, mentor, and retain oncologists from underrepresented backgrounds is a measurable equity intervention.

The workforce needs structural supports to connect patients to care. Standardized SDOH screening should be embedded across care settings, with direct linkage to actionable referral pathways such as social work, financial navigation, and transportation support. Sustained, reimbursable funding for navigation programs, rather than grant-dependent support, is another high value structural intervention. Insurance coverage expansion offers a similar population-level lever, as coverage gaps disproportionately affect the populations with the greatest cancer burden. Structural support includes language access. Professional interpretation should be used for all clinical encounters, including informed consent, treatment discussions, and trial enrollment. Patient-facing materials should be developed and validated at appropriate literacy levels in patients' languages.

These gaps also call for rethinking where care and evidence are generated. Clinical trial access must expand beyond academic centers through decentralized trial designs. This includes remote consent and home-based visits to reduce geographic and logistical barriers for patients in rural and underserved communities. Expanding NCORP-affiliated sites and funding trial infrastructure in safety-net settings are concrete policy interventions to address the concentration of trial access at academic centers.^{58,60,61}

Patient advocacy organizations and community members must be active participants in research agenda-setting, program design, and evaluation. Community advisory boards with meaningful representation from populations most affected by GI cancer disparities can improve cultural responsiveness of care delivery programs, build trust, and ensure implementation strategies reflect the realities of the communities served. Research priorities should include trials evaluating scalability and cost-effectiveness of equity-focused interventions, and longitudinal outcomes to assess the population-

level impact of care delivery interventions on GI cancer mortality and survival disparities. These data can inform guideline development and influence payer coverage decisions.

Many of these principles extend globally. A key priority is adapting evidence-based interventions to LMIC health systems through investments in workforce-efficient and scalable models of care. These include expanding FIT-based screening programs linked to affordable diagnostic colonoscopy, strengthening early diagnosis through primary care and streamlined referral pathways, and leveraging task-sharing, community health workers, and tele-oncology networks to address specialist shortages. Global oncology research should also promote meaningful inclusion of LMIC populations and post-trial access to effective therapies. International partnerships should support long-term investments in cancer registries, pathology, endoscopy, workforce training, and implementation science to build sustainable cancer care infrastructure.

Translation to low-and middle-income countries

Many of the interventions described above were developed and evaluated in US health systems. Translating them to LMICs requires confronting a distinct set of structural constraints.

Population-level CRC screening programs are largely absent in LMICs, where resources are directed primarily toward infectious diseases and acute care.⁹³ Limited infrastructure and workforce capacity makes large-scale implementation of cancer screening programs difficult.⁹³ While stool-based testing itself is feasible in LMICs, the cost of follow-up colonoscopy for those who test positive has limited program effectiveness.⁹⁴

LMICs represent 75% of the global population, bear an increasing share of the global cancer burden, but are markedly underrepresented in cancer research.⁹⁵ They account for less than one-third of oncology RCTs, a gap that is most pronounced in South Asia and sub-Saharan Africa, which account for only 5% and 2% of trial participants, respectively.^{95,96} Many LMIC-inclusive trials evaluate therapies unavailable to the local population, raising ethical questions about cancer research obligations.⁹⁷

Diagnostic delays compound these gaps. Patients in LMICs experience a median of 7.4 months from symptom onset to diagnosis and 4.9 months from diagnosis to treatment initiation,⁹⁸ driven by financial barriers, geographic access, and clinician shortages.⁹⁸ Oncology workforce shortages are a major driver, with a median of less than 1 (0.09) oncologists per 100,000 in LMICs compared with 1.6 per 100,000 in high-income countries.⁹⁹ Globally, eight of 93 countries surveyed had no clinical oncologist, and 78% of African countries surveyed had an extreme shortage of oncologists compared to none in Europe or the Americas.¹⁰⁰

Some of the models discussed in this review show early signs of translatability to LMICs. The Project ECHO-based virtual tumor board piloted in South America demonstrates that telehealth-enabled MDC models can extend oncology expertise into resource-limited settings.⁸⁵ Patient navigation and community health worker models are workforce-efficient by design and may be well suited to health systems facing personnel shortages, though dedicated evaluation of these approaches in LMIC settings remains limited and should be a research priority.

Conclusion

GI cancer care delivery is shaped by disparities across socioeconomic, racial, and geographic lines at every step of the care continuum. Evidence-based solutions, including patient navigation, multidisciplinary clinics, telehealth, and academic-community partnerships, exist but implementation is inconsistent and insufficiently scaled. Closing this gap requires sustained investment in workforce development, infrastructure, coverage expansion, and programs that address SDOH.

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