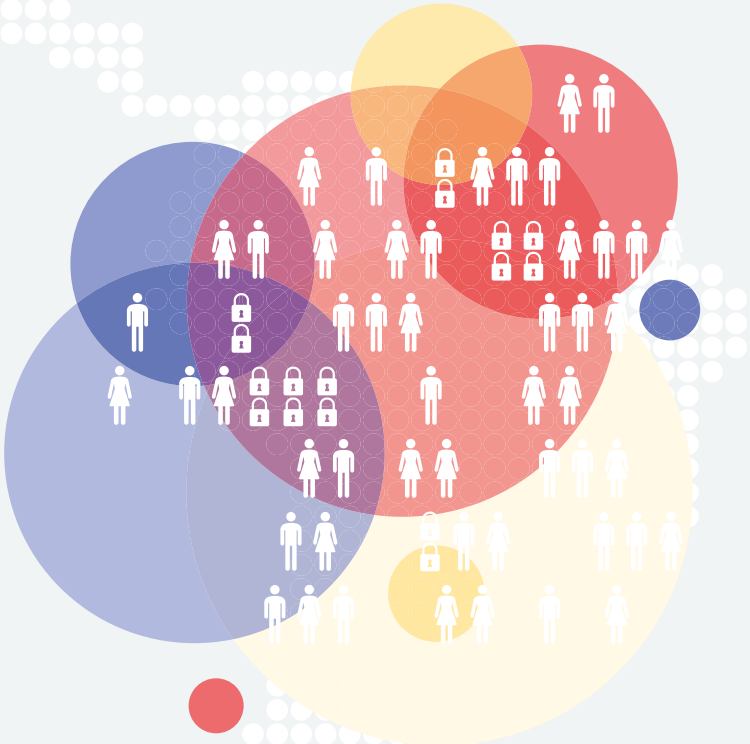
ECONOMIST IMPACT

The future of cancer care: health system sustainability in Latin America



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About this report

The future of cancer care: health system sustainability in Latin America is an Economist Impact white paper, commissioned by BeiGene. The report provides an independent analysis of the growing cancer burden in the Latin American region and the challenges this presents to oncology care and the wider health system. It aims to identify the limiting factors for sustainability in cancer care and suggest potential actions to close gaps in systemic sustainability across the patient pathway. The insights in this report are based on an extensive literature review and in-depth interviews with relevant clinical experts, scientific leaders, policy stakeholders and patient advocates. We've developed three country snapshots to provide an overview of the future of cancer care and health system sustainability in Argentina, Brazil and Colombia, along with opportunities for improvement. The editorial team at Economist Impact would like to thank the following individuals (listed alphabetically) for generously contributing their time and expertise, which have been critical to the creation of this report:

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Executive summary

Cancer is a leading cause of death globally - contributing to more than one in six deaths.[1] The health and economic burden posed by cancer is set to increase, with the World Health Organization (WHO) projecting that cancer incidence will increase by 50% by 2040 when compared to 2020 levels.[2] Of the ten most populous nations in Latin America, nine will see at least a 64% rise in the number of people diagnosed with cancer annually by 2040.[3] In Brazil alone, this increase would mean about 1m newly diagnosed cancer patients needing care each year – which would significantly impact its health system.[3] This huge influx of additional patients will force countries to reconsider how they prioritise resources in order to sustainably deliver high-quality cancer treatment, while maintaining care across their wider health systems.

While the obstacles to sustainable cancer care are many, they are far from insurmountable. Given the heterogeneity of countries in the region, a one-size-fits-all approach to cancer care is unlikely to deliver optimal outcomes. However, a number of common integrated policy actions and interventions have been identified in this report to help countries in Latin America achieve greater access to, and sustainability of, oncology care.

Bridge the equity gap in the private and public health sectors – Health systems in Latin America have complex and fragmented structures that lead to inefficient delivery of care and unequal distributions of resources. A lack of equitable access to healthcare, particularly oncology care, is evident throughout the region, where socioeconomic status plays a central role in determining health outcomes. Therefore, keeping such health and healthcare inequities in mind, building a sustainable health system for oncology should begin with investing in preventive care by strengthening primary care services, expanding screening and promoting integrated care. Countries in the region also need to tackle broader societal inequities that can exacerbate cancer risk factors in order to ensure the sustainability of oncology care.

Invest in health workforce capacity-building The region is experiencing a shortage of oncology specialists, and health systems are unable to meet current demand. From radiation oncologists to palliative care specialists, creating training programs that increase the number and skills of healthcare professionals should be prioritised. Unless there is targeted investment in the capacity-building of a specialised oncology workforce, Latin America will not meet the projected increase in demand caused by the burden of cancer in the next decade. Beyond the oncology workforce, developing teams of public health workers and health personnel who deliver health-promoting activities and education will also help reduce the cancer burden and positively affect other non-communicable diseases.

Sustain and amplify innovation and technology – Data is at the core of the digital transformation sweeping the region. As many health systems digitalise, stakeholders must consider breaking down information silos created by fragmented health systems; instead data should follow patients seamlessly across the care continuum. This includes integrating, expanding and improving data collection in cancer registries. Only then will decision-makers be able to leverage data to appropriately allocate resources and formulate evidence-based policies. Stakeholders must champion the integration of evidence-based technologies and take action to update outdated policies that may hinder technological progress. Furthermore, stakeholders should also identify sustainable financing sources to support clinical trials and research involving such technologies. However, it should be noted that success in leveraging data for better health is also contingent on the regulatory environment, the quality of data security and privacy measures, and the willingness of patients and healthcare professionals to adopt technologies.

Diversity in collaboration –The primary goal of healthcare systems is to save lives and improve well-being. As such, patients should be at the centre of policy and the forefront of decisions made by both healthcare professionals and political decision-makers. Engaging patients, advocacy and patient support groups, healthcare professionals, and community members will help provide a diverse range of perspectives and experiences, which enable the development of more effective policies by policymakers or Health Technology Assessment (HTA) committees. Furthermore, the sustainability of oncology care specifically, and healthcare as a whole, cannot be achieved by health systems alone. Health is a multidimensional concept with several determinants, including social determinants. Therefore, it requires a "Whole-of-Government" approach to improve the population's health and lower the demand for healthcare. Keeping this in mind, countries must take a multisectoral and multi-ministerial collaborative approach to ensure the sustainability of oncology care, which has implications not just for the health of the population but for productivity and economic growth as well.

Develop a multifaceted value framework that meets local challenges and champions fairness and transparency – Establishing a systematic process to assess value comprehensively is essential to ensuring the long-term sustainability of innovations in healthcare. As systems strive to allocate resources more efficiently and move towards evidence-based decision-making, HTAs offer a systematic approach to achieving these goals. HTAs are an under-utilised approach to healthcare decision-making in Latin America. Countries must take the first step towards developing and implementing assessment frameworks through HTAs that provide more comprehensive and transparent assessments of value that extend beyond just clinical and safety data in an effort to drive greater equity and sustainability within cancer care.

Introduction

In 2015, at the United Nations General Assembly, world leaders came together to adopt 17 goals that would eradicate poverty, improve the lives of people, and secure the future of the planet. These sustainable development goals (SDGs) are more important than ever as the world faces several ongoing crises, including the climate crisis, military conflicts, poverty and growing wealth inequality, and a tenuous post-pandemic economy. One of these goals is to "ensure healthy lives and promote well-being for all at all ages". To make this happen, a strategic target identified by the United Nations is a reduction in the premature mortality of non-communicable diseases (NCDs) by one-third.[1] To make any progress in this matter, health systems must target cancer – a leading cause of death worldwide, contributing to more than one in every six deaths globally.[1] Unfortunately, cancer incidence is expected to grow. The WHO projects that cancer incidence will increase by 50% by 2040 when compared to 2020 levels.[2] The rising burden of cancer will force countries to re-strategise and re-prioritise health system resources to manage the significant increase in demand. Therefore, the construction of more sustainable health systems for oncological care must start now.

The role of health system sustainability in oncology

Several international groups and organisations have been trying to shed light on the critical components of sustainability in health systems. Yet, there is no universally agreed-upon definition of "health system sustainability" (*see Table 1*).[4,5] Academic literature often takes a piecemeal approach to the concept that does not account for how local, national and international factors interact to influence the dynamics of sustainability within health systems. However, sustainability is central to ensuring our long-term commitment to improving population health.[6]

Table 1: What is health system sustainability?

Author	Definitions or Characteristics
WHO, 2023[7]	"...a broad term to describe policies, projects and investments that provide benefits today without sacrificing environmental, social and personal health in the future."
Gorman & Horn, 2022[8]	"...the ability to be maintained at a certain rate or level."
Lehoux et al., 2022[9]	"...1) a healthy population, 2) superior care ("effective, safe, timely, patient-centred, equitable, and efficient"), and (3) fairness, which implies that services are provided "without discrimination or disparities."
Müller et al., 2021[10]	"...health care funding mechanism(s), infrastructure and human resources development as well as funding levels of health research."
Urquhart et al., 2020[11]	"Continued capacity to deliver the innovation, continued delivery of the innovation and continued benefits for the patient, provider, or health system."
Mortimer et al., 2018[12]	"...refers to the capacity of a health service to deliver healthcare over time, with consideration to future generations."
Ferrelli et al., 2017[13]	"...the capacity to endure and can also be defined as a process characterised by the pursuit of a common ideal."

Maria Fernanda Navarro, Regional Director Latin America at the City Cancer Challenge Foundation, shares her thoughts on sustainability in cancer care, "The cornerstone of sustainable solutions is thinking in the long term. Rather than injecting costs to solve a problem, we need longer commitments to truly embed change." As the burden of cancer is set to increase in the coming years, restructuring and re-prioritising resources and personnel, as well as formulating policies that keep sustainability in mind, are critical to ensuring the ability of the international community to reduce the impact of cancer on populations.

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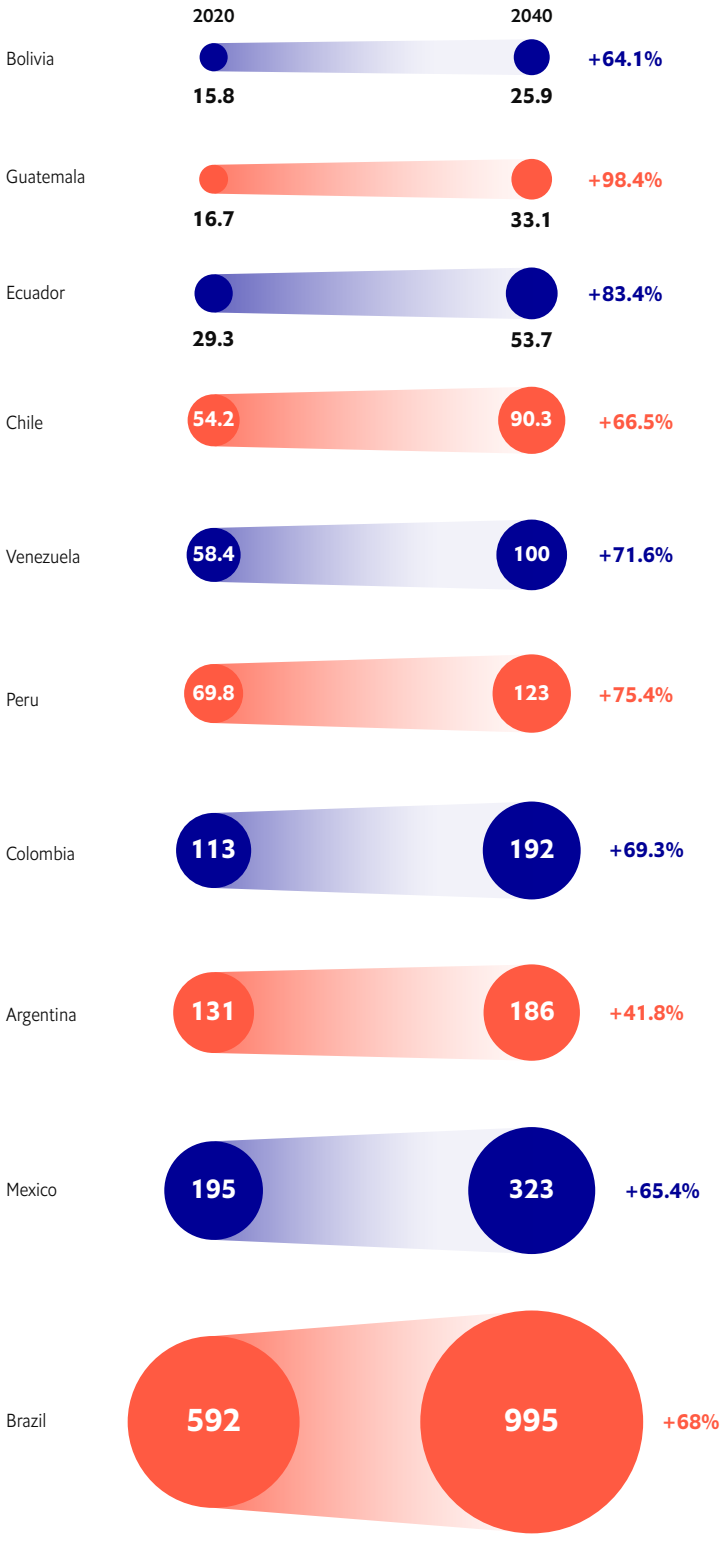
The growing burden of cancer in Latin America

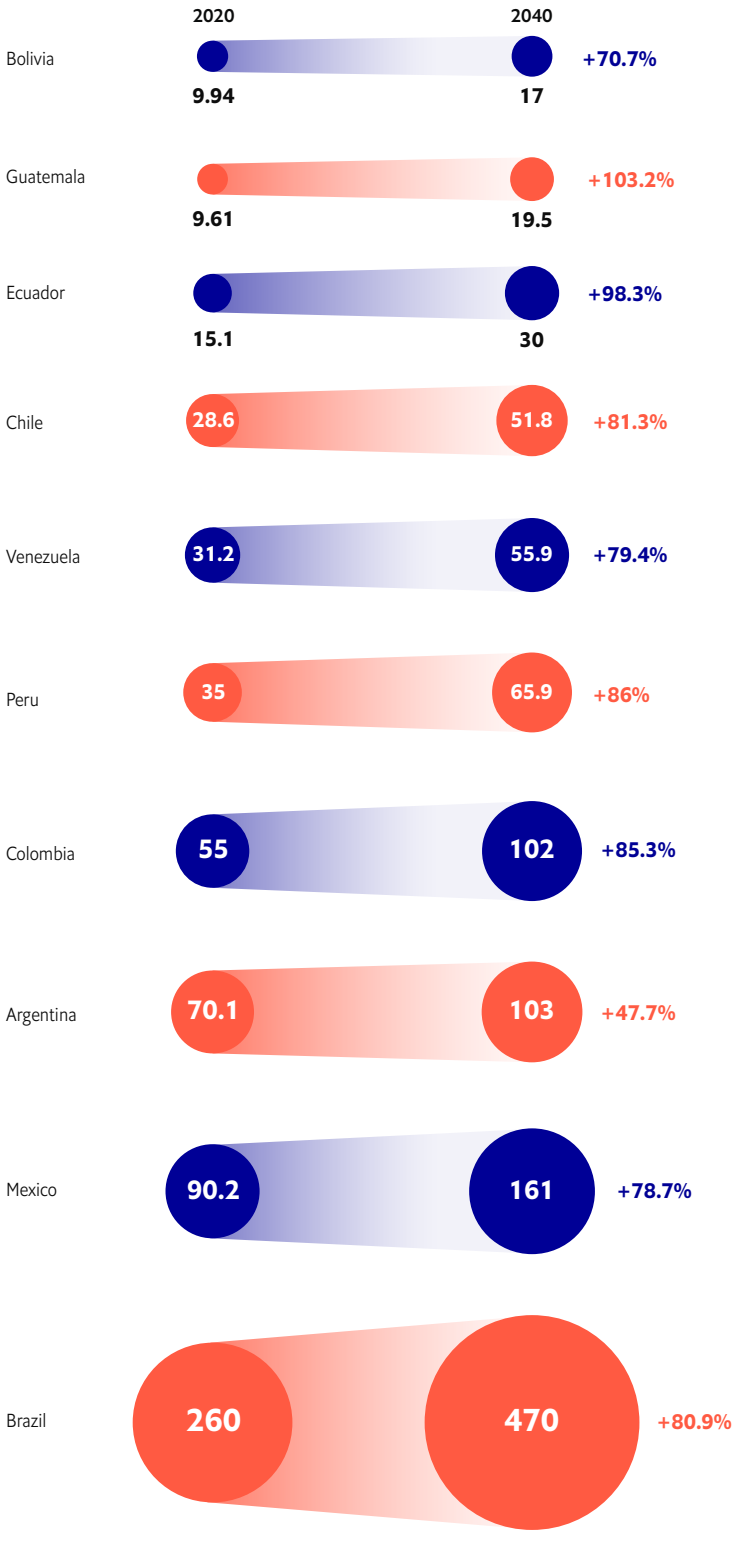
Cancer disproportionately affects older adults. The Latin American region, like many others, is undergoing a demographic shift that will see its share of the population aged 65 years and above more than double by 2050.[14] Such a significant demographic change will mean greater demand and need for efficient and high-quality cancer care. In Guatemala, for example, the number of new cancer cases is expected to rise from 16,700 in 2020 to 31,000 in 2040, a 98% rise. In fact, nine of the ten most populous countries in Latin America will see increases in new cases of cancer in excess of 64%, over the same 20-year period (*see Figure 1*). More worryingly, mortality rates will see even steeper growth (*see Figure 2*). In Brazil, the most populous country in the region, the number of people projected to die from cancer in 2040 is 470,000, an increase of 81% compared to 2020.[3]

Figure 1: Estimated number of new cases from 2020 to 2040 (in thousands)
Both sexes, age [0-85+], All cancers



Sources: Global Cancer Observatory, 2020[3]

Figure 2: Estimated number of deaths from 2020 to 2040 (in thousands)
Both sexes, age [0-85+], All cancers



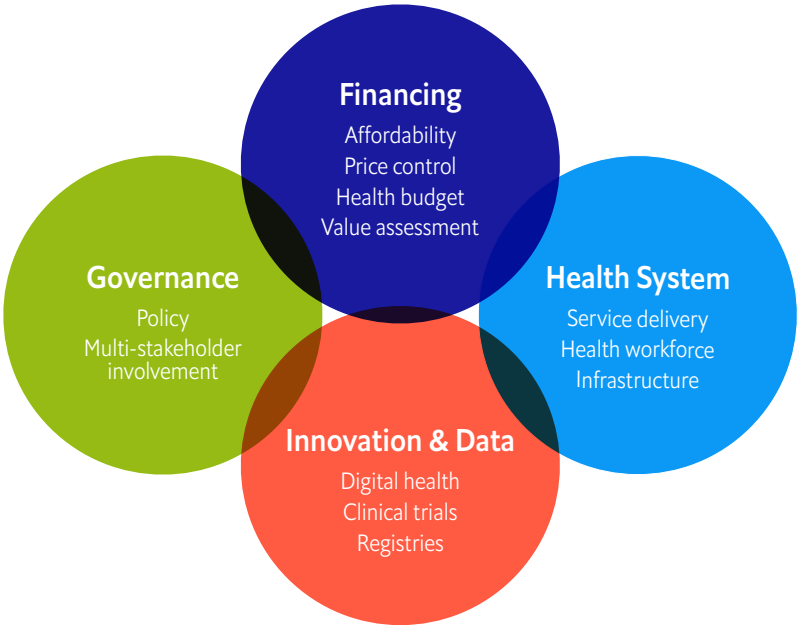
Sources: Global Cancer Observatory, 2020[3]

While the projected increase in cancer incidence and mortality is attributed mainly to population growth and ageing, a higher exposure to risk factors, including tobacco use, air pollution, unhealthy diet and physical inactivity, also plays a significant role.[15] More than 50% of adults in Latin America are overweight.[16] In Mexico, for example, one in four adults is overweight or obese.[16,17] A high body mass index (BMI) increases the risk of several common cancers, including breast, colorectal, oesophageal, kidney, gallbladder, uterine, pancreatic and liver cancer.[18] Lifestyle-related risk factors for cancer are also associated with several other NCDs, including coronary heart disease, stroke, diabetes mellitus and dementia, which are themselves leading causes of mortality and morbidity. Therefore, interventions aimed at addressing risk factors for cancer would have multiplicative benefits across a range of consequential diseases.[15]

A conceptual framework

For stakeholders to develop a more comprehensive understanding of the dynamics of sustainable oncology care, it is vital for research to offer an integrated, multi-level method to identify which factors are impactful and useful targets for intervention and which are not, given a particular local context. Our research deployed a mixed-methods approach by engaging world-renowned experts and an in-depth systematic analysis to understand how each internal, external and multi-level factor influences the development of a sustainable health system in oncology. Following this analysis, our team created a conceptual framework that illustrates the influential factors contributing to sustainability in oncology care (*see Figure 3*). In the subsequent chapters, we will discuss in detail each pillar of sustainability in oncology care and offer insights on what countries need to prioritise in order to enable them efficiently.

Figure 3: Pillars of sustainability in oncology care



Health system

Health systems in Latin America were established in the first half of the 20th century. They all followed a common model, what we call segmented health systems, such that several organisational niches serve different population groups, segregated by labour and socioeconomic status, with varying rules and unequal benefit packages.[19] This model needs to be updated on several fronts to ensure sustainable oncology care.

Service delivery

Sustainability in oncology care requires robust health systems. Due to their deeply segmented and fragmented nature, the region's health systems face significant challenges in providing quality care and equitable access to oncology care specifically, and health and healthcare as a whole. These issues stem from complex historical, political and economic factors, which are specific to individual countries and even subregions within them.[20]

"The big problem we have in Latin America is that, although most countries today have a universal health system, each country has many different systems within it."

Gilberto Lopes, Chief of the Division of Medical Oncology at the University of Miami's Sylvester Comprehensive Cancer Center

"The big problem we have in Latin America is that, although most countries today have a universal health system, each country has many different systems within it. In Mexico, you have a system for those who work for the government, a system for those who are salaried, a system for those who do not have financial means. Therefore, this ends up creating a fragmentation of healthcare as a whole, which ends up creating more issues. Several other countries in Latin America have it too," affirms Gilberto Lopes, Chief of the Division of Medical Oncology at the University of Miami's Sylvester Comprehensive Cancer Center.

Fragmentation, particularly stark divisions between public and private health systems, can significantly impact access, quality of care, and patient outcomes, while also increasing the cost of care via duplication of services, greater waste and several other inefficiencies.[21] "When you have a very fragmented system, where the public system does not talk to the private system, and patients have a very fragmented care journey, management is needed that sees the patient from the moment of diagnosis and can follow up all the time," affirms Stephen Stefani, Oncologist and Professor at Fundação Unimed, and President of the Brazilian Chapter of the International Society for Pharmacoeconomics and Outcomes Research.

A study examining the relationship between the stage of breast cancer diagnosis and health insurance coverage in Brazil reported that patients going through the public healthcare system (Sistema Único de Saúde – SUS) were more than twice as likely to be diagnosed with stage III cancer, as compared to patients treated in the private sector (34% vs. 15%). A study of all cancer types in Brazil found that SUS patients were almost twice as likely to die of cancer than those using the private healthcare system.[22] While many factors contributed to this outcome, access to diagnosis and treatment played a fundamental role in the inequality of cancer care in Brazil.[22] "If there is no equity in one way or another, which is a huge challenge that must be addressed at some point, there will be a huge tension between the medicine applied in the private system and that of the public system," argues Dr Stefani.

Many countries in the region have taken steps to mitigate structural and financial inequalities. Recognising the structural disparities between social security, public and private health systems, Argentina implemented the "redistribution fund" (Fondo Solidario de Redistribución – FSR) in 1995, which transfers 10-15% of each compulsory payroll for the social security sector from higher-income to lower-income households.[23] Mexico and Uruguay have also taken steps to minimise the financial impact on uninsured people by formulating protections against catastrophic healthcare expenses.[24] In February 2023, the new administration in Colombia presented a draft bill that aimed to radically reform how healthcare is provided. The proposal has divided opinion in the country, sparking protests from those for and against the reform.[25] Proposed changes include reducing the role of the private sector, management and spending of healthcare funding, prioritisation of preventative care, and expanding access to care in rural areas. As it is still in its draft form, it is unclear what impact the finalised health reform bill will have on the sustainability of the broader health system and cancer care in Colombia.

Besides system fragmentation, place of residence is a critical factor that determines access to services. Dr Lopes argues that "There are considerable differences within the country [Brazil].

For example, if you are in São Paulo, Porto Alegre or Curitiba, you generally have much more access than in a city in the north-east. There are geographic and resource challenges that interact, which impact access to care and patient outcomes." One study examining over 12m cancer treatments in Brazil reported that more than half of patients had to travel from the municipality where they lived to access treatment. On average, patients in the mid-western region of Brazil travelled 319km to receive chemotherapy treatment, and patients in the north of the country travelled 612km for cancer surgery.[26] Similarly, untimely access to cancer care in Colombia is due to the disproportionate concentration of services in urban areas.[27] Overall, countries in the region will need to find ways to break down the systemic obstacles that cause inequalities in access to healthcare, and thereby lead to delayed or under-diagnosis of cancer.

There was clear agreement among the experts interviewed on at least one element of health system sustainability – it requires service delivery to focus more on primary and secondary cancer prevention. Dr Stephen Stefani opines, "If you are going to think in the long term, you have to have a more effective campaign for prevention and early detection. You need to be much more effective. It is not enough to make a poster ordering a mammogram or campaigns to do a pap smear and then not knowing what to do with the result." Julia Ismael, Associate Editor of Cancer Medicine and Former Director of the National Cancer Institute in Argentina, shares how the focus of healthcare needs to shift from a medical model to a more holistic, health-promoting approach, "Traditionally, medical education has been focused on treating the disease. Doctors, health personnel and the wider health system should really be focused on preserving the person's state of health. It is a totally different approach, but it is what we need if we're talking about sustainability."

Health workforce

Health workers are the backbone of robust health systems. The World Bank reported that the Latin America and Caribbean region have 2.4 physicians per 1,000 population, which is slightly under the WHO recommendation of 2.5 physicians per 1,000 population.[28,29] While there is generally a lack of information on the number of practising cancer specialists in the region, the data that is available illustrates the variability in the availability of haematologists and medical and radiation oncologists (*see Table 2*).[30] Unless we see a rise in the number of qualified professionals offering high-quality cancer care in Latin America, we can expect severe difficulties in managing the region's projected disease burden. Furthermore, given the equity gap in cancer care, any increase in the healthcare workforce must be appropriately distributed within each country to ensure greater access in rural and disadvantaged communities.

Table 2: Cancer care workforce per 1,000 cancer patients in select Latin American countries

Country	Medical oncologists	Haematologists	Radiation oncologists
Brazil	6.5	4.7	1.4
Chile	3.4	5.4	1.9
Mexico	3.2	3.1	1.2
Peru	1.0*	0.7*	0.3*
Uruguay	9.6	10.0	3.0

Source: Barrios et al., 2021
* Specialists from the Ministry of Health and regional governments of Peru; these numbers do not include medical oncologists who are active members of the Peruvian Society of Medical Oncology and mostly work in the private health sector

In Latin America, there are disparities in the distribution of training institutions for health workers, with some countries having more opportunities across the country than others.[31] In countries such as Venezuela, Colombia, Costa Rica and the Dominican Republic, most training institutions are located in the country's capital; in others, such as Brazil, there are training programs across the country. It has been reported that there is a lack of interest in oncology specialities among medical graduates in the region, possibly due to a low number of job opportunities, low salaries, or a perceived lack of prestige within medical societies.[31] A physician interviewed for a *Lancet Oncology* article entitled, "Oncology training in Latin America: are we ready for 2040?", reported that there were only 33 applicants for oncology in the Argentinean National Residency Exam 2018-2019, which was 10-times fewer than applicants for anaesthesiology positions.[31]

A study examining the supply-demand gap of cancer care specialists in 2020 across 11 Latin American countries estimated a deficit of 41% of radiation oncologists, 40% of physicists, and 73% of radiation therapists.[32] To meet the projected demand from patients with cancer in 2030, the number of radiation oncologists, physicists, and radiation therapists needs to increase by 95%, 93% and 139%, respectively.[32] In addition, there is a shortage of palliative care specialists.

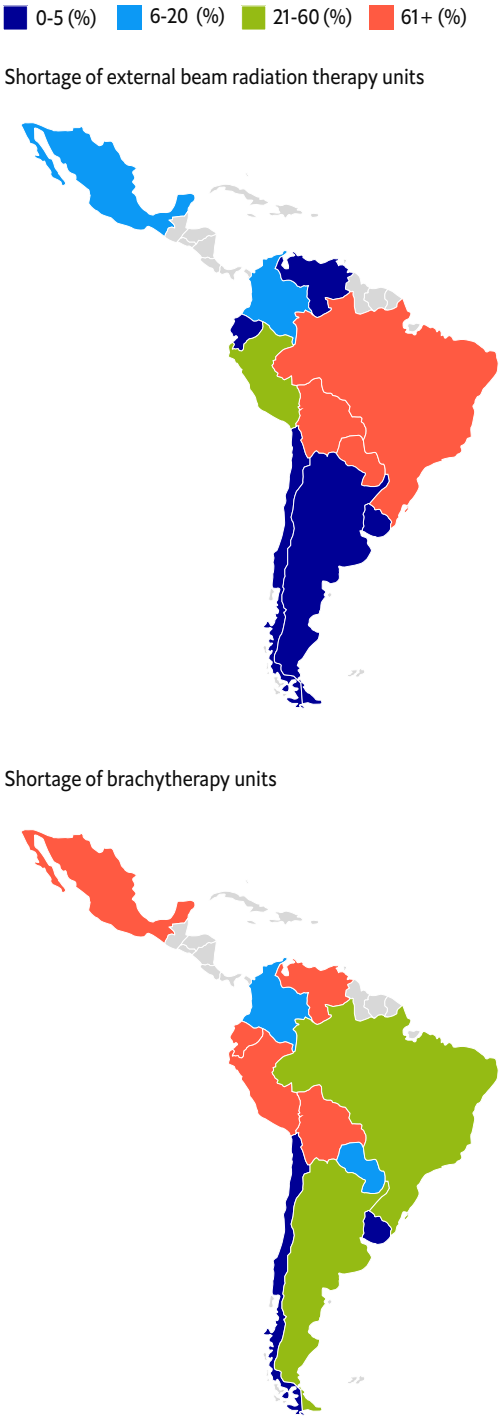
Only 7% of patients in the region who need palliative care services receive it, and services tend to be centralised in urban areas.[33]

Infrastructure

The robust and reliable infrastructure of healthcare services is foundational to the efficient delivery of high-quality care, and critical for the successful implementation of new technologies and medical treatments in oncological care. The increasing burden of cancer in the region will inevitably require an upgrade of infrastructure and equipment, as well as careful planning to scale and manage resources for the future.

A recent study quantified the region's shortfall in brachytherapy and external beam radiation therapy units available to treat patients with the ten most common cancers in 2020.[32] Of the 11 countries studied, only Uruguay and Chile had an adequate supply of radiation therapy units available to meet the needs of patients with cancer in their countries. In 2020, Brazil, Bolivia and Paraguay had a shortage in external beam radiation therapy units of 61%, 85% and 202%, respectively. While Peru, Venezuela, Ecuador and Bolivia each had a shortage above 150% when it came to brachytherapy units needed.

Figure 4: Supply-demand gap of radiation therapy equipment across Latin America



Country	Supply-demand gap of EBRT (%)	Supply-demand gap of BT (%)
Brazil	61	39
Mexico	9	144
Argentina	0	57
Colombia	17	12
Peru	49	158
Venezuela	0	158
Chile	0	0
Ecuador	0	195
Uruguay	0	0
Bolivia	85	291
Paraguay	202	17

Source: Sarria et al., 2022[32]
EBRT (external beam radiotherapy units), BT (brachytherapy units)

Well-developed infrastructure is necessary to ensure the sustainability of cancer care by providing patients with access to screening, earlier diagnosis and more timely treatment.[34]

Health financing

Affordability

Health financing is essential to healthcare delivery, particularly in oncology, where cancer drugs and treatments can be expensive. Given the persistent disparities in access and outcomes, making cancer treatment more affordable is all the more crucial for promoting equity in healthcare. Disparities that arise from high out-of-pocket (OOP) payments for cancer medication are a real problem for a region where poverty has increased noticeably during the covid-19 pandemic.[35] The median annual cost of cancer medication in Latin America rose more than tenfold from US$12,000 before 2000 to over US$120,000 by 2015, far exceeding the minimum wage and the per capita Gross Domestic Product (GDP) of any country in the region.[36] This is the case with Colombia. "In Colombia, our unit cost per person or our annual premium to cover all healthcare for a Colombian is in the order of US$250 per year. This means that if there is no adequate sharing of risks, if there is no management of the consumption of health services, if there are not truly cost-effective interventions, then the probability that this will be unsustainable is very high," argues Luis Pino, CEO and Founder of OxLER, Institutional Hematology and Oncology at Fundacion Santafe de Bogotá, and Professor at the Universidad De Los Andes.

As we have seen, socioeconomic and geographical factors also play a role in affordable access to care. For example, patients can incur indirect costs by missing work during treatment. In Brazil, gender, age at initial treatment, and place of residence, and other such demographic factors, have been found to predict the high cost of cancer treatment.[37] Access to public versus private health systems is also a determining factor of affordable accessibility. "In Brazil, we know that patients treated in the private system have access to medication much earlier, sometimes even two decades earlier than patients in the public system," affirms Dr Lopes. He also asserts that the reimbursement process for medications in the public system is a significant challenge to accessibility. "We have an average wait of at least 15 to 20 years from when drugs are approved in Brazil to when they are incorporated into the SUS, mainly due to the high cost."

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Price control

The high costs of cancer medications can arise for a number of reasons. Panama, for example, experienced an increase in cancer medication prices because drugs were purchased from distributors, not manufacturers. As prices climbed, the Panamanian government mandated a 30% price decrease for 170 medicines in August 2022.[38] In Argentina, inflation and consumer prices skyrocketed, leading to a 62% increase in the cost of cancer drugs in the first nine months of 2022.[38]

Mexico has struggled with shortages of cancer medications, while Colombia has also experienced such shortages due cost of raw materials and a weakening in the Colombia peso vs the US dollar.[38] Controlling prices in Latin America is essential to provide affordable and sustainable access to cancer patients.

Various price control mechanisms could be implemented by policies and regulations, or through market forces, such as manufacturing innovations, streamlining of procurement mechanisms, and supply chain improvements.[39] Several countries in Latin America have implemented measures with the goal of making cancer treatments affordable and sustainable. While Peru and Chile have no price control on medications, Colombia does.[40] In 2013, the Colombian government enacted a policy to regulate the prices of medications, including cancer drugs.[41] Brazil requires the compulsory publication of the prices for pharmaceuticals and medical supplies purchased by hospitals that receive federal funding.[42]

Seeking more affordable access to medications, countries in the region are expanding access to biosimilars. One study reported that 44 biosimilars had been approved for use in Latin America as of 2020.[43] While Argentina, Brazil and Mexico have led the way in developing regulatory processes for biosimilars, Chile, Colombia, Peru, Ecuador and Guatemala are falling behind.[43] As market access expands, biosimilars may help increase access to drugs for low-income populations.

To move towards more sustainable drug pricing, countries in the region should consider following WHO recommendations on pharmaceutical pricing policies. WHO published eight principles designed to guide policymakers and decision-makers to improve the management of prices with a suite of pricing control mechanisms, ranging from value-based pricing to promoting biosimilars (*see Figure 5*).[39]

Figure 5: WHO's principles for formulating and implementing pharmaceutical pricing policies

1. Clear purpose: focus on achieving affordable and equitable access

2. Specificity to context: apply contextual factors of the local health system

3. Policy coherence: use in combination with wider policies and principles

4. Integrated framework: integrate with the legislative framework of health and other sectors

5. Transparency: communicate transparently with relevant stakeholders

6. Policy relevance through monitoring and review: monitor and review regularly

7. Compliance and enforcement: manage and enforce through incentives and data collection

8. Collaboration: collaborate with health systems in other countries and stakeholders

Adapted from WHO, 2020

Health budget

High-quality cancer care necessitates adequate funding and investment. However, in many Latin American countries, health budgets are insufficient. On average, the Latin America and Caribbean region spent less than 8% of GDP on healthcare in 2019, which is sizeably lower than the average spent by OECD countries (10%).[44] In addition to low levels of health spending, only 54% comes directly from mandatory health insurance and government spending.[45] The remaining is financed by OOP payments (representing 32% of health spending) and supplemental private insurance (*see Table 3*).[46] In other words, in Latin America, spending on health significantly depends on people paying for their own care, and costs can be prohibitively high.

How and where budgets and resources are allocated affects the cost of care and patient outcomes. The stage of cancer diagnosis is a predictor of cost and resource utilisation, as patients at more advanced stages require more intensive treatment. A recent systematic review examined the direct medical costs for women with breast cancer in Latin America and the Caribbean.[47] The review included 63 studies from the region and reported on the economic burden of different stages of breast cancer. The average cost of treating breast cancer increased from approximately US$13,179 per patient in stage I to over US$28,910 per patient in stage IV.

In Brazil, the SUS funding model presents a significant challenge regarding equity of access for all cancer patients. The Authorization for High Complexity Procedures (APAC) sets a monthly limit on reimbursement for each line of therapy a cancer patient receives via SUS. As the APAC value may only cover a fraction of the treatment cost, patients face high OOP costs that render some treatment options considered "available" through SUS, out of reach and unaffordable.[48] A proposal by the Brazilian Society of Clinical Oncology to address the inequity and delay in the effective access of patients to chemotherapy treatments available through SUS highlighted that the APAC reimbursement values for cancer treatments require more timely updates to support greater patient access.[48] Additionally, since SUS allows hospitals to develop their own treatment protocols, the diversity of formularies and treatments can lead to higher costs. The increase in cost can also be attributed to the fact that the Brazilian Ministry of Health only conducts centralised purchasing on rare occasions, leaving hospitals to incur higher prices through direct purchasing.[48] A shift to more centralised purchasing may help to undercut the predatory competition, increase equity of access to new technologies, improve the transparency of purchasing, and standardise formularies.

Mandatory government funding and budget allocation is a strategy used by countries to secure resources for the public health system.[49] In Brazil, municipalities are required by the 2012 Complementary Law no. 141 to direct a minimum of 15% of taxes annually to public health services and states do the same at 12%.[49] The federal government must fund health annually at the same amount as the previous year plus a percentage increase based on the variation of GDP.[49] As such, formulating a steady and reliable funding source is the first step towards designing sustainable financing.[49]

Currently, Brazil is seeking to legislate a dedicated 10% contribution of current Federal gross revenues to public health as a way to ensure consistency of funding by the central government.[49]

Public-private partnerships (PPPs) have also played a critical role in advancing high-quality, cost-effective cancer care solutions in Latin America, particularly in low-income countries.[50] Organisations such as City Cancer Challenge (C/Can) have supported and promoted PPPs, and partnered with the International Finance Corporation of the World Bank Group to offer opportunities for improving cancer care.[50] C/Can's success in multi-stakeholder collaboration is evident in seven projects developed in Porto Alegre, Brazil.[51] C/Can engaged the Instituto de Governança e Controle do Câncer, hospitals, pharmaceutical partners and local health systems to improve diagnosis and access to radiotherapy treatments.[52,53] However, studies also find that PPPs pose various challenges to health systems, ranging from trust to regulatory and implementation challenges.[54,55]

While a number of countries in the region have enacted a sin tax, the tax rates applied fall short of those recommended by the WHO.

As governments strive to find alternative sources of funding, various countries in Latin America have implemented public health taxes, also known as "sin taxes", at different scales. The purpose of sin taxes is to curb the consumption of products that increase the risk of NCDs, such as tobacco and alcohol.[56] Tobacco and alcohol consumption contributes to a significant health burden in the region; 31% of deaths in Peru in 2015, for example, were linked to tobacco. A sin tax simulation conducted in Peru predicted that increasing the price of tobacco products by 50% could prevent 5,361 new cancer cases and 14,000 deaths over a 10-year period.[57] In 2009, Panama introduced a sin tax on tobacco that was earmarked and spent in various ways within the health system, including for patient treatment and facility improvements at the National Cancer Institute, as well as health promotion and anti-smoking campaigns.[58] While a number of countries in the region have enacted a sin tax, the tax rates applied fall short of those recommended by the WHO.[59] Earmarking funds from sin taxes for reinvestment into the public health system is one way to reduce risk factors within the population, while also increasing the financial resources available to the health system.

Table 3: Health expenditure and the burden of OOP payments in Latin America

Countries	CHE as % of GDP	CHE per Capita (US$)	OOP costs as % of CHE	OOP costs per Capita (US$)
Argentina	10%	864	24%	209
Brazil	10%	701	22%	157
Chile	10%	1,278	29%	375
Colombia	9%	477	14%	65
Ecuador	8%	479	34%	162
Mexico	6%	539	39%	209
Peru	6%	389	23%	88
Venezuela	4%	142	26%	37
Average	8%	608	26%	163

Source: WHO, 2023
CHE – Current Health Expenditure; GDP – Gross Domestic Product; OOP – Out-of-pocket

Value assessment

Periodic HTAs are essential to support value-driven decision-making and to enable innovation in a sustainable manner. HTAs play an indispensable role in making informed, evidence-based decisions by weighing the financial costs of a health technology against the expected clinical impact. HTAs serve multiple purposes, including: advising regulatory agencies on technology authorisation and use, horizon scanning to identify new and emerging technologies with the potential to impact health, assisting payers with coverage decisions, guiding clinicians and patients on the appropriate use of health technologies, and determining disinvestment in ineffective treatments. The use of HTAs has grown in prominence over the last decade in the region. HTAs are used to varying degrees across the region in the pre- and post-market authorisation phase for health technologies (*see Table 4*).

Table 4: Role of HTAs in Latin America

Pre-market authorisation	Post-market authorisation
Even before regulatory submission, horizon scanning can be used to identify emerging technologies and anticipate the effects such technologies may have on the health system. While rare within Latin America, Brazil's National Committee for Health Technology Incorporation (CONITEC) is one agency within the region conducting horizon scanning activities.	**HTAs are more common after health technologies have received market authorisation. HTAs are used in this phase across the region, including in Argentina, Brazil, Chile, Ecuador, Mexico and Uruguay to inform decisions on whether to include a health technology in a national formulary. In some countries, HTAs are used to guide reimbursement criteria in terms of eligible populations or line of therapy, as well as the level of reimbursement. HTAs may be used by payers in both the public and private sectors.**

Source: Gilardino et al, 2020

While HTAs are a useful tool to aid decision-making and resource allocation in healthcare, the process is not without its critique. HTAs often take a narrow approach, focusing mainly on clinical outcomes and cost-effectiveness analysis. Debate persists on the concept of "value" of health technologies and the best way to assess this concept, with improved value frameworks sought to enable more transparent and equitable decisions.

With this in mind, a group of experts participating in the 2018 Latin American Health Technology Assessment International (HTAi) Policy Forum produced a list of criteria to include in value frameworks, ordered by prioritisation level (*see Table 5*).[60] The Forum of experts highlighted several challenges to value assessments in the region, which include a scarcity of human resources with the required technical capacity, difficulty in incorporating criteria and values beyond clinical benefits and cost, such as fairness and transparency in the decision-making process, a lack of institutionalisation of HTA processes, lack of continuity in health policies, politicians perceiving the institutionalisation of HTA and the use of value frameworks as a loss of power, lack of education among the public and users to understand and participate in these processes, lack of local data such as epidemiological data, data about costs, or the real-world performance of technologies, lack of time for assessment processes and very short timelines for decision-making, and lack of long-term planning.

Table 5: Prioritisation of criteria for inclusion in value frameworks for Latin America

Essential or core criteria	High priority criteria	Medium or low priority criteria
Effectiveness (magnitude and relevance of clinical benefits)	Patient preferences relative to the technology	Costs to other sectors of society
Safety	Patient accessibility	Innovation
Evidence quality	Impact on equity	Technology cost
Burden of disease	Impact on public health	
Disease severity	Costs to patients and their families	
Budget impact		
Cost-effectiveness		

Source: Pichon-Riviere et al., 2019

While there are several HTA-related challenges in Latin America, such assessments are essential to balance health systems' objectives of accessibility, affordability and innovation. Thus, it is critical that stakeholders in the region overcome the barriers to developing more comprehensive and holistic value assessments within HTAs. Getting it right is a step towards improving health systems' effectiveness, efficiency, sustainability and equity. However, it should also be noted that positive HTA reviews, followed by positive reimbursement decisions, do not always guarantee eligible patients access to treatment as recommendations are not consistently implemented in practice. In Argentina, extensive administrative and bureaucratic processes often delay or deny patients access to approved cancer treatments.[61] In Brazil, on the other hand, hospitals are permitted to develop their own treatment protocols, which means that individual hospitals can stray far from providing treatments included in the Protocol and Treatment Standards established by the Ministry of Health.[62]

Governance

Policy

A National Cancer Control Plan (NCCP) is a document that governments or health ministries produce, which sets out how a country plans to address its cancer burden through prioritising and coordinating a broad range of programmes, including awareness, prevention, early detection and treatment.

A global review of NCCPs from 2000 to 2015 found that there was a statistically significant reduction in the number of male smokers and an uptake in breast cancer screening in countries with an NCCP compared to those without one. Furthermore, countries that implemented governance elements in their NCCPs recorded better cancer survival outcomes.[63]

Table 6: Cancer-related strategies in selected countries in Latin America

Country	Integrated NCDs plan	Up-to-date NCCP	MPOWER measures fully implemented and achieved	Early detection programme/guidelines for 4 cancers (breast, cervix, colon, childhood)
Argentina	Operational	No – latest plan covered 2018 -2022	3	4
Brazil	Operational	Yes – 2020-2023	6	4
Chile	Operational	Yes – 2018-2028	4	3
Colombia	Operational	No – latest plan covered 2012-2021	2	4
Ecuador	Not in effect	Yes – 2017-2023	3	3
Paraguay	Operational	n/a	1	0
Peru	Operational	Yes – 2020-2024	3	3
Uruguay	Operational	n/a	4	4
Venezuela	Operational	n/a	3	4

Note: MPOWER = M: monitor tobacco use and prevention policies; P: protect people from tobacco smoke; O: offer help to quit tobacco smoking; W: warn about the dangers of tobacco; E: enforce bans on tobacco advertising, promotion and sponsorship; and R: raise taxes on tobacco

Among Latin American countries, the policy landscape is characterised by varying levels of commitment and differing strategies to address cancer, with up-to-date NCCPs in place in roughly half the region. The 2017 World Health Assembly resolution on cancer prevention and control endorsed the inclusion of NCCPs for all countries, considering them as essential to managing the cancer burden. Therefore, countries in the region without one have work to do. While up-to-date NCCPs are a step in the right direction, the actual implementation and distribution of resources may differ from national directives at the local level. Hence, monitoring and accountability for the implementation of NCCPs are critical to their success.

Countries in the region would benefit from greater tobacco control. Brazil is regarded as the only country among the nine included in Table 6 to have implemented the full complement of the WHO's MPOWER tobacco control measures. On a more positive note, early detection programmes and guidelines for breast, cervical, colon and childhood cancers are in place in most countries listed in Table 6.

"National Cancer Institutes have clear policies, and importantly, they have multisectoral policies, that involve not only the State, but also the pharmaceutical industry, and non-governmental organisations, which are also very important actors."

Julia Ismael, Associate Editor of Cancer Medicine and Former Director of the National Cancer Institute in Argentina

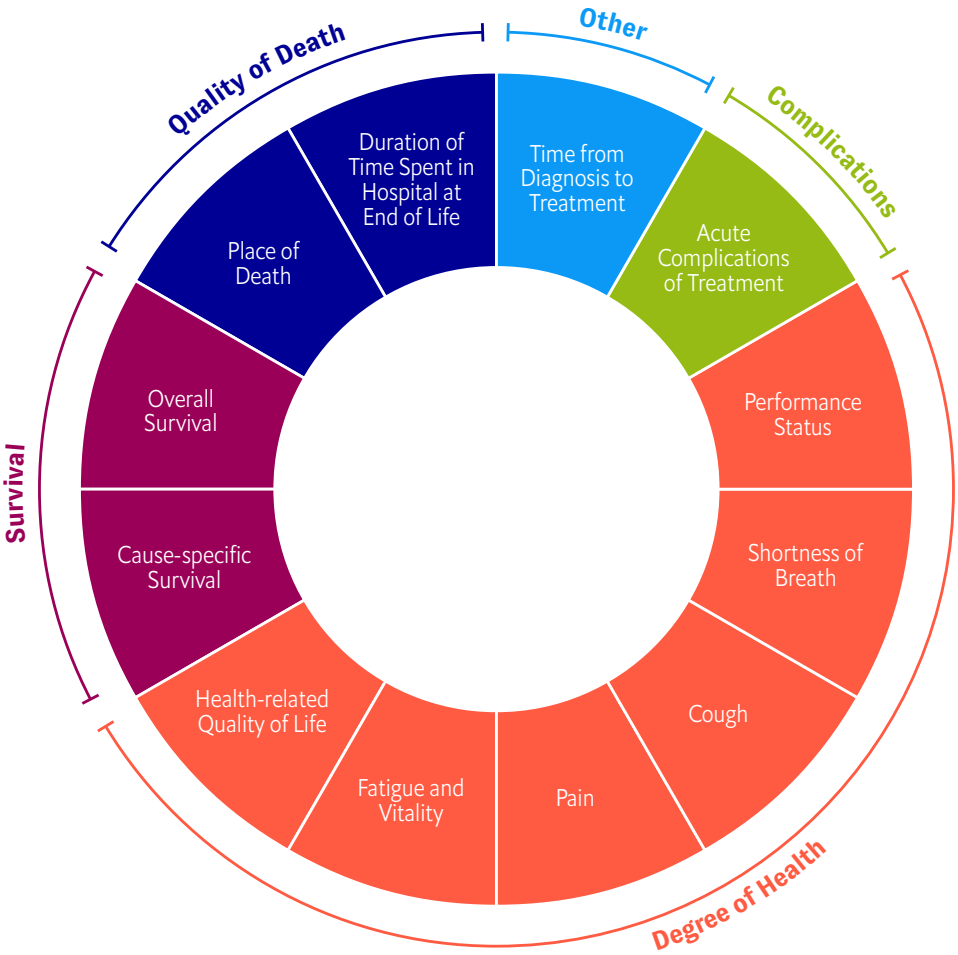
Funding for the public health system can be vulnerable to changes in political leadership in the region. Abrale, the Brazilian Lymphoma and Leukaemia Society, for instance, reported that resources allocated to cancer prevention and control were reduced by 45%, from US$34.6m to US$19.2m in 2023 under the Bolsonaro government.[64] The same government vetoed Bill 6330/19, which required private health plans to cover patient expenses with home and oral medications against cancer, as well as made the coverage of radiotherapy and blood therapy procedures mandatory.[65] Therefore, despite having national policies and guidelines in place, inefficient management of resources and changes to political priorities can hinder the effective implementation of these plans.

A short-term mindset in policymaking can seriously undermine efforts to improve cancer care and population health. Dr Ismael reiterates that sustainability demands greater foresight and longer-term thinking, with collaboration, equity and transparency at its core. "National Cancer Institutes have clear policies, and importantly, they have multisectoral policies, that involve not only the State, but also the pharmaceutical industry, and non-governmental organisations, which are also very important actors." She continues, "Peru and Colombia have long-term policies that are visible and transparent to all stakeholders, also Brazil and Uruguay…with clear rules for all actors." Dr Ismael explains that having transparent processes and clear policies can incentivise the involvement of more stakeholders. "It is not just my recommendation, but the recommendations of WHO that alerted countries in the region to take urgent measures for efficient cancer control policies that are exhaustive, and that consider the whole journey, from primary prevention to palliative care."

The growing popularity of a holistic view of care, ie, beyond treating illness, is leading to greater acceptance of value-based healthcare models. The concept of value-based healthcare, initially developed by Harvard economist, Michael Porter, has been gaining recognition as a way for health systems to rise to the challenge of delivering high-quality care for ageing populations sustainably.[66] Value-based healthcare shifts the focus away from volume to value, where value is defined as the health outcomes achieved per dollar spent.

Traditionally, health systems were only concerned with clinician-reported outcome measures such as glycated haemoglobin (HbA1c), prostate-specific antigen (PSA), and recurrence or complication rates. Often, these outcomes are ambiguous and lack meaning to a patient. In value-based healthcare, value is evaluated based on patient-centered outcome measures, i.e., outcomes that are important to patients rather than clinicians. In 2012, Michael Porter co-founded the International Consortium for Health Outcomes Measurement (ICHOM) with a mission "to unlock the potential of value-based healthcare by defining global sets of Patient-Centered Outcome Measures that matter most to patients and driving adoption and reporting of these measures worldwide to create better value for all stakeholders".[67] Through a multiple-round Delphi process conducted with multidisciplinary and international groups of healthcare providers, patient advocates and researchers, ICHOM has developed sets of patient-centred outcome measures for various cancers. Figure 6 shows ICHOM's set of outcome measures for lung cancer, which illustrates the strong focus placed on patient-reported outcomes measured across the full cycle of care, from diagnosis to the completion of treatment and long-term survival.[68] More expansive use and uptake of standard sets of patient-centred outcome measures by stakeholders across the healthcare ecosystem, including by researchers, industry, regulatory and HTA bodies, has the potential to ensure more informed decisions based on consensus, as well as greater efficiency and value, thereby enhancing the sustainability of the health system.

Figure 6: Standard set of value-based patient-centred outcome measures for lung cancer



Source: International Consortium for Health Outcomes Measurement[69]

Multi-stakeholder collaboration

Cancer advocacy and patient organisations in Latin America are critical to cancer care for their role in raising awareness, encouraging research and defending patient rights. For example, the Argentinian League Against Cancer (LALCEC) works to eliminate cancer by advocating preventive measures and early detection, as well as educating patients regarding their rights and diagnoses. The organisation's main activities include providing medical counselling, training, research, and educating patients on living a healthy life.[70] The Colombian League Against Cancer is another non-profit organisation promoting cancer prevention, early diagnosis and education. It is committed to promoting, preventing and managing cancer through biopsychosocial approaches that focus on patients, families and communities.

Kenji Lopez Cuevas, President and Founder of Cáncer Warriors de México Foundation and Advisor on the Board of Directors of the Union for International Cancer Control, believes that multi-stakeholder collaboration is key to establishing long-lasting policies in Mexico. "This [cancer legislation] is an initiative that we are working on with 14 civil society organisations, among them the Fundación Cáncer Warriors de México, Fundación CIMA, and Casa de la Amistad para Niños con Cáncer." By developing working groups and national commissions, patients, doctors, professors, and key decision-makers can collaborate to find more effective and enduring solutions.

Finally, transitioning from a clinician-centred to a patient-centred approach to healthcare development requires multi-stakeholder collaboration, as well as the inclusion of patient voices in the decision-making process. Patients can provide important information about drug toxicity, preferences influencing their willingness to engage in oncology treatment (oral versus intravenous administration, timing between doses etc.), and factors affecting their quality of life. However, often policymakers, healthcare professionals, and developers of clinical guidelines lack the necessary tools and methodologies to engage patients in decision-making appropriately and effectively. One way to do this is by developing Patient-Reported Outcome Measures (PROMs). These measures enable key decision-makers to create policies and regulations that aid cancer clinical trials, drug approval and reimbursement decisions with patient values at their core. Patients' experiences can help shape policies and guidelines that are more effective, accessible, equitable, and ultimately, more sustainable.[71]

Innovation and data

In recent years, the healthcare landscape has experienced an extraordinary acceleration in technology adoption, radically transforming diagnostics and treatment. Data has emerged as a driving force offering new insights, re-designing cancer care, and ultimately, reshaping health systems. The future of sustainable oncology care will necessarily depend on effectively leveraging data, and, therefore, on making improvements in three key areas: registries, clinical trials and digital health.

Registries

Registries are essential to providing a clear picture of the burden of cancer, helping decision-makers prioritise public health strategies and resources, as well as enabling them to estimate the impact of medical and pharmaceutical interventions on quality of life.[72,73] Only by understanding the extent of the problem can decision-makers take the necessary steps to make cancer care more sustainable.

Progress has been made on this front by bringing together stakeholders to improve regional registries. The International Agency for Research on Cancer's (IARC) Regional Hub for Cancer Registry Development in Latin America is a partnership aiming to improve regional expertise through advocacy and training.[74] Argentina, Brazil, Colombia and Uruguay support the regional hub through its collaborating centres and provide technical support to improve and expand the region's cancer registries.[74] Although cancer registries in Latin America have expanded coverage and improved data quality over the years, much remains to be done.[75]

Studies have shown that cancer registries in Latin America lag behind many other regions of the world. Less than 3% of Central America and 9.2% of South America are covered by high-quality cancer registries, compared to 98% in the United States and Canada.[76] "One of the biggest problems for the region is a lack of data. However, even if we can generate the data, health systems aren't always able to translate this into improving processes," argues Dr Navarro. "We do not have quality data. Very few countries in Latin America have cancer registries, which hinders the countries' capabilities to make informed decisions. Paraguay is currently advancing on a population-based cancer registry to support decision-making at all levels."

Capturing quality data is a significant obstacle hindering cancer control planning and policymakers' ability to allocate available resources efficiently. Despite Brazil having the most cancer registries in the region, the registries continue to encounter issues such as incomplete datasets, duplication of data and lack of information among population-based cancer registries and hospital-based registries.[77,78]

"We are not convinced that our statistics are consistent because there is a clear division between statistics made in the public system and those in the private system. They do not talk very well with each other."

Stephen Stefani, Oncologist and Professor at Fundação Unimed, and President of the Brazilian Chapter of the International Society for Pharmacoeconomics and Outcomes Research

"We are not convinced that our statistics are consistent because there is a clear division between statistics made in the public system and those in the private system," affirms Dr Stefani. "They [health systems] do not talk very well with each other. 20% of the population, for example, has a health plan. But our entire health policy is based on data from INCA (Instituto Nacional de Câncer – National Institute of Cancer), which are from the public system. Moreover, they are patients who arrive at different stages and have different demands, and more common diseases are more frequent in some groups than in others. Therefore, we have inaccurate statistics and that are still the base, the foundation, the support." This challenge of collecting quality data can be compounded by having limited human resources to manage the process. "Records are very labour-intensive and costly to maintain because they require a full-time staff," explains Dr Ismael.

A sustainable future for cancer care will require improving, expanding and integrating cancer registries. Enforcing data standardisation through better governance is a must for such an endeavour. Stakeholders also need to leverage local resources and collaborate with patients, providers, industry and government bodies across disciplines and sectors to ensure that countries in the region can move towards building the next generation of cancer registries. Establishing better and more sustainable registries requires countries to link existing registries, decrease reporting time, and expand the collection to non-traditional datasets that include cancer recurrence, quality of life, treatment modalities and genomic variations.[79,80] However, before embarking on this mammoth endeavour, as pointed out by a study published in *Lancet Oncology*, the primary step is achieving a long-term commitment from Latin American governments to the process.[81]

Clinical trials

Cancer research plays a central role in drug development and cancer care. By facilitating an environment that supports innovation, we can expect to develop more affordable medications that better target the needs of local populations. Regional cancer research can improve treatment by investigating and capturing patient preferences, quality of life, drug toxicity, as well as demographic and genetic factors. The first step in advancing cancer research in the region is finding sustainable funding sources for trials, personnel and publications.

One of the most pressing problems in Latin America is the lack of sustainable financing for research. Foreign sponsors are the primary funding source for research in the region.[82] It is estimated that 83% of studies are sponsored by industry, with 15% sponsored individuals, universities and other institutions.[82] In cases where Latin American governments fund research, grants are often insufficient.[82] In some instances, researchers fund their studies themselves. One study indicated that from 2009-2010, nearly 6.1% of medical oncologists in Latin America reported being the main sponsor of their own research.[82]

Sustainable funding for cancer research is critical. One strategy to consider is diversifying funding sources to reduce financial risk and to improve the stability of and access to funding. Researchers have been investigating various alternative and innovative methods for funding, including sin taxes and the possibility of crowdfunding clinical trials.[83,84,85]

Digital health

As Latin America still experiences limits on access to healthcare facilities, medical professionals and financial resources, digital health technologies could serve as a cost-effective solution, particularly for those living in remote areas.[86,87] Telemedicine, for example, has shown positive results in serving these purposes, especially since its expanded use during the covid-19 pandemic. The use of telemedicine for the management of quality-of-life indicators, such as pain and depression, has proven particularly effective in improving patient outcomes and access to medical care for rural patients.[88]

Innovation in digital health technology goes beyond audio and visual capabilities. Dr Ismael believes that artificial intelligence (AI) in oncology will significantly improve population health. "There are applications that help populations…[who] undergo colon cancer prevention," affirms Dr Ismael. "In Argentina, Uruguay and [it has] now started in Spain… applications of AI are under investigation to improve the use of mammography."

The world has only just begun to experience the large-scale impact of technology on public health. Although technology offers several innovative solutions at lower costs, several technical, political, infrastructural, logistical and economic challenges must be overcome.[86] Improving the digital literacy of the health workforce, for example, is one step toward improving the regional capacity of digital health service delivery in oncology. Similarly, improving digital literacy among patients may increase patient engagement in cancer care and their acceptance of digital health solutions such as telehealth.[89] Empowering patients and the health workforce with the skills necessary to utilise digital technologies is an important move towards more sustainable cancer care.

Conclusion

Nine of Latin America's ten most populous countries are estimated to see increases in new cancer cases by over 64% by 2040. While the obstacles to sustainable cancer care are many, they are not insurmountable. Given the heterogeneity of countries in the region, a one-size-fits-all approach to cancer care is unlikely to deliver optimal outcomes. However, a number of common integrated policy actions and interventions have been identified in this report to help countries in Latin America achieve greater access to, and sustainability of, oncology care.

Bridge the equity gap in the private and public health sectors – Health systems in Latin America have complex and fragmented structures that lead to inefficient delivery of care and unequal distributions of resources. A lack of equitable access to healthcare, particularly oncology care, is evident throughout the region, where socioeconomic status plays a central role in determining health outcomes. Therefore, keeping such health and healthcare inequities in mind, building a sustainable health system for oncology should begin with investing in preventive care by strengthening primary care services, expanding screening and promoting integrated care. Countries in the region also need to tackle broader societal inequities that can exacerbate cancer risk factors in order to ensure the sustainability of oncology care.

Invest in health workforce capacity-building – The region is experiencing a shortage of oncology specialists, and health systems cannot meet current demand. From radiation oncologists to palliative care specialists, creating training programs that increase the number and skills of healthcare professionals should be prioritised. Unless there is targeted investment in the capacity-building of a specialised oncology workforce, Latin America will not meet the projected increase in demand caused by the burden of cancer in the next decade. Beyond the oncology workforce, developing teams of public health workers and health personnel who deliver health-promoting activities and education will also help reduce the cancer burden and positively affect other non-communicable diseases.

Sustain and amplify innovation and technology – Data is at the core of the digital transformation sweeping the region. As many health systems digitalise, stakeholders must consider breaking down information silos created by fragmented health systems; instead data should follow patients seamlessly across the care continuum. This includes integrating, expanding and improving data collection in cancer registries. Only then will decision-makers be able to leverage data to appropriately allocate resources and formulate evidence-based policies. Stakeholders must champion the integration of evidence-based technologies

and take action to update outdated policies that may hinder technological progress. Furthermore, stakeholders should also identify sustainable financing sources to support clinical trials and research involving such technologies. However, it should be noted that success in leveraging data for better health is also contingent on the regulatory environment, the quality of data security and privacy measures, and the willingness of patients and healthcare professionals to adopt technologies.

Diversity in collaboration – The primary goal of healthcare systems is to save lives and improve well-being. As such, patients should be at the centre of policy and at the forefront of decisions made by both healthcare professionals and political decision-makers. Engaging patients, advocacy and patient support groups, healthcare professionals, and community members will help provide a diverse range of perspectives and experiences, which enable the development of more effective policies by policymakers or HTA committees. Furthermore, the sustainability of oncology care specifically, and healthcare as a whole, cannot be achieved by health systems alone. Health is a multidimensional concept with several determinants, including social determinants. Therefore, it requires a "Whole-of-Government" approach to improve the population's health and lower the demand for healthcare. Keeping this in mind, countries must take a multisectoral and multi-ministerial collaborative approach to ensure the sustainability of oncology care, which has implications not just for the health of the population but for productivity and economic growth as well.

Develop a multifaceted value framework that meets local challenges and champions fairness and transparency – Establishing a systematic process to assess value comprehensively is essential to ensuring the long-term sustainability of innovations in healthcare. As systems strive to allocate resources more efficiently and move towards evidence-based decision-making, HTAs offer a systematic approach to achieving these goals. HTAs are an under-utilised approach to healthcare decision-making in Latin America. Countries must take the first step towards developing and implementing assessment frameworks through HTAs that provide more comprehensive and transparent assessments of value that extend beyond just clinical and safety data in an effort to drive greater equity and sustainability within cancer care.

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ECONOMIST IMPACT

The future of cancer care: health system sustainability in Latin America

Argentina

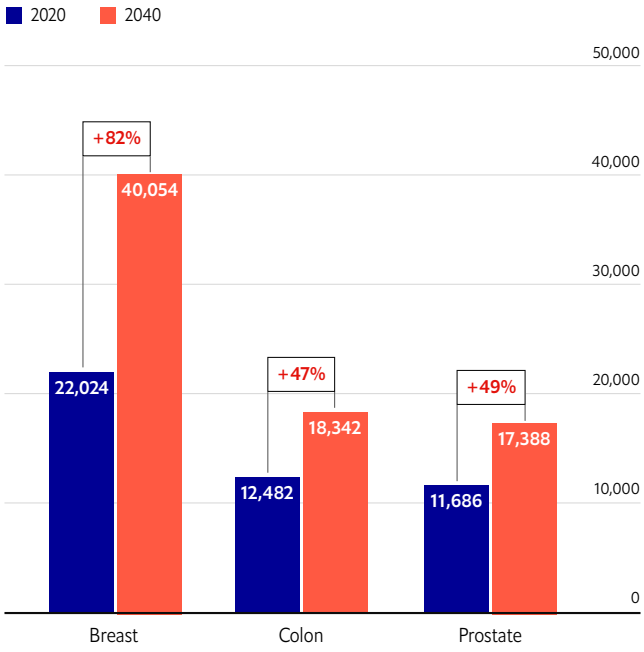
Supported by BeiGene

Key trends

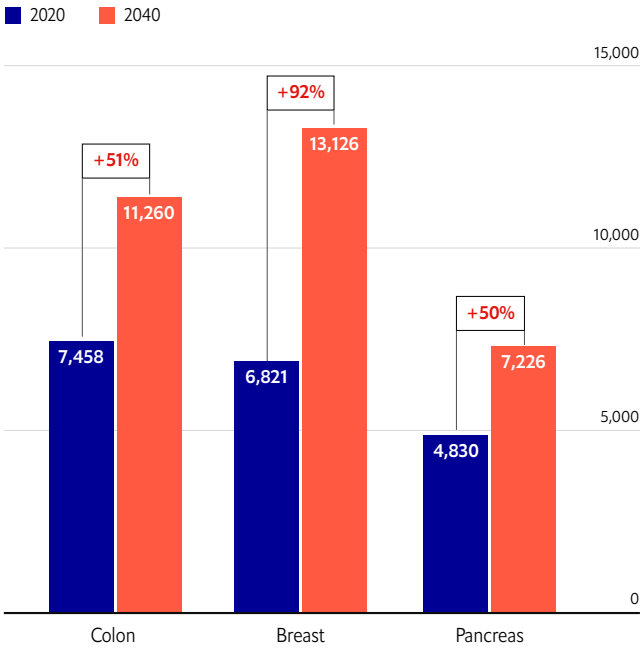
The number of those ≥65 years, a high-risk group for cancer, will increase by 43% by 2040.
The increasing cancer burden will pose a significant challenge to patients, health systems and wider society. Multiple efforts are needed to reduce mortality in line with SDG targets.

Population over 65 years[1]	**5.4m** (2022)	**7.8m** (2040)	↑ **43%**
Total cancer incidence[2]	**131k** (2020)	**186k** (2040)	↑ **42%**
Total cancer mortality[2]	**70k** (2020)	**103k** (2040)	↑ **47%**
Probability of premature death from cancer per year in 2030[3]	**6.5%** (2020)	**5.1%** (SDG target)	Projected to miss SDG target by **51%**

Top 3 Cancers: Incidence Projections estimates 2020 and 2040[4]
(# of people, both sexes, all ages)



Top 3 Cancers: Mortality Projections estimates 2020 and 2040[4]
(# of people, both sexes, all ages)



Policy

Legislation, guidelines and programs offer guidance on the distribution of resources and national priorities. While Argentina's National Cancer Institute instituted the 2018-2022 national cancer control plan, **an updated and more comprehensive control plan is warranted.**[5]

4 **Early detection programme/ guidelines for 4 cancers (breast, cervix, colon, childhood)**[3]

3 **# of MPOWER measures fully implemented and achieved**[3]

- **Integrated NCD plan**[3]
- **National screening program for breast cancer**[3]
- **The latest NCCP covered 2018 - 2022**[3]
- **National screening program for cervical cancer**[3]

* MPOWER: **M**onitor tobacco use and prevention policies, **P**rotect people from tobacco smoke, **O**ffer help to quit tobacco use, **W**arn about the dangers of tobacco, **E**nforce bans on tobacco advertising, promotion and sponsorship, and **R**aise taxes on tobacco.

Health System

Health system capacity is key to meet the rising cancer burden. Health systems require a skilled workforce with access to the right equipment to provide optimal care to patients. **Argentina will need to invest in its health workforce expertise in oncology, increase access to key diagnostic infrastructure and target cancer risk factors.**

Primary prevention & risk factors

HPV vaccination coverage among girls by the age of 15[6]
(2020)
90%
WHO target

25% Prevalence of tobacco use (% of adults)[7] (2020)

9.7 Alcohol consumption per capita^[8] (2018)

32% Prevalence of obesity among adults[9] (2016)

^Total alcohol consumption per capita (liters of pure alcohol, projected estimates, 15+ years of age)

Health workforce

Physicians[10]
4.1 per 1,000 people (2019)
3.6 OECD average

Nurses[11]
2.6 per 1,000 people (2019)
8.8 OECD average

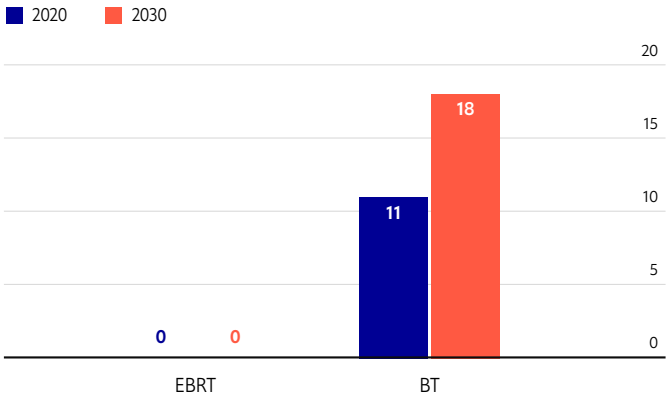
Radiation Oncologists
Data not available

Radiologists
310 per 10,000 people[3] (2020)

Infrastructure[12]

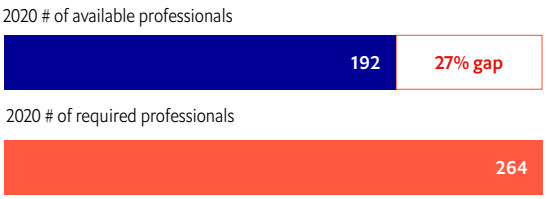
Shortage of external beam radiation therapy (EBRT) and brachytherapy (BT) units to meet demand for cancer patients in 2020 and 2030

(# of units)



Shortage of radiation oncology professionals 2020

(vs #required to meet needs of cancer patients)



Innovation & Data

While many factors influence the uptake and scalability of digital health solutions, internet coverage is a fundamental factor that creates an enabling environment. Approximately 87% of Argentinians have access to the internet. **Argentina should increase coverage and find ways to leverage technology to improve the effectiveness and efficiency of cancer solutions.**

87% Individuals using the Internet[13] (2020)

0.5% Research and development (R&D) expenditure (% of GDP)[15] (2020)

59.1m Number of mobile cellular subscriptions[14] (2021)

7,122 Number of clinical trials[16] (2022)

Health Financing

Resources are finite. Managing resources effectively and efficiently can better prepare countries to move toward a sustainable future. Adequately funding and investing in health is key.

Health Budget[17]

Total Health Expenditure as % of GDP
10% (2020)
10% OECD average

Total Health Expenditure per capita in USD
$864 (2020)
$4,245 OECD average

Government Health Expenditure as % of GDP
7% (2020)
7% OECD average

Government Health Expenditure per capita in USD
$572 (2020)
$3,018 OECD average

Value Assessment[18]

Has a systematic process to support healthcare decision-making? ✓

Is there an existence of a standard methodology or process guideline? ✓

Are there legislative and / or regulatory requirements to consider HTA results in benefit package decisions? ✓

Regulatory body:
Instituto de Efectividad Clínica y Sanitaria - IECS

Accessibility[19]

173 days is the average time between a cancer treatment receiving regulatory approval to the treatment being available to patients through the public health system.

Economic Burden[20]

$106 billion Total macroeconomic cost attributable to cancers between 2020-2050.

Affordability[17]

Out-of-Pocket Expenditure as % of Total Health Expenditure
24% (2023)
18% OECD average

Out-of-Pocket Expenditure per Capita in USD
$209 (2023)
$603 OECD average

Opportunities for Improvement

1 Update the NCCP

Argentina's most current NCCP established strategies and goals covering 2018-2022. The plan needs to be updated. An updated NCCP should include the following elements: discussion of prevention, screening and early detection, clear care pathway, diagnosis, an implementation plan and funding source.

2 Invest in health system strengthening

There is a gap in both the current health system infrastructure and human resources available in Argentina compared to the level needed to meet the demand and needs of patients with cancer. Investment in human resources, diagnostic and treatment equipment and as well as medicines is needed to help mitigate the increasing cancer burden in Argentina.

3 Reduce barriers and streamline care

Patients in the public system would benefit from more efficient cancer care delivery. Extensive administrative and bureaucratic processes delay patients' access to approved cancer treatments in Argentina. Such processes should be minimised to ensure more timely treatment is delivered.

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ECONOMIST IMPACT

The future of cancer care: health system sustainability in Latin America

Brazil

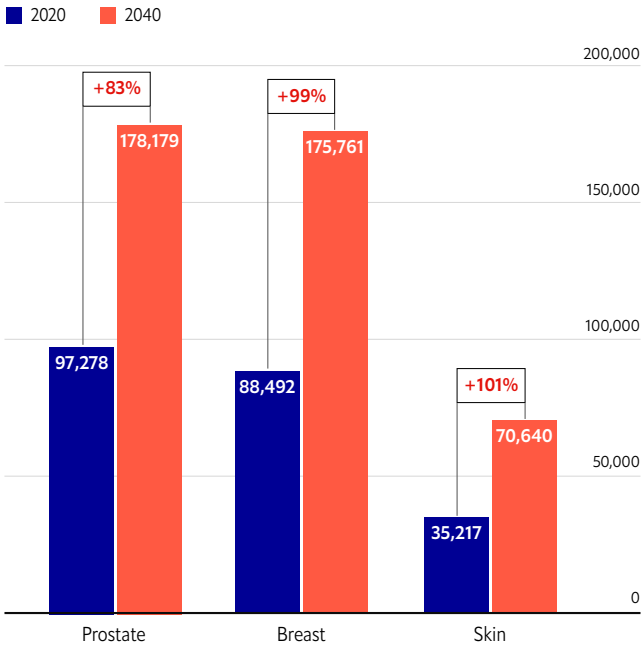
Supported by BeiGene

Key trends

The number of those ≥65 years, a high-risk group for cancer, will increase by 84% by 2040.
The increasing cancer burden will pose a significant challenge to patients, health systems and wider society. Multiple efforts are needed to reduce mortality in line with SDG targets.

Population over 65 years[1]	**21.3m** (2022)	**39.2m** (2040)	↑ **84%**
Total cancer incidence[2]	**592k** (2020)	**995k** (2040)	↑ **68%**
Total cancer mortality[2]	**260k** (2020)	**470k** (2040)	↑ **81%**
Probability of premature death from cancer per year in 2030[3]	**5.5%**	**4.4%** (SDG target)	Projected to miss SDG target by **25%**

Top 3 Cancers: Incidence Projections estimates 2020 and 2040[4]
(# of people, both sexes, all ages)



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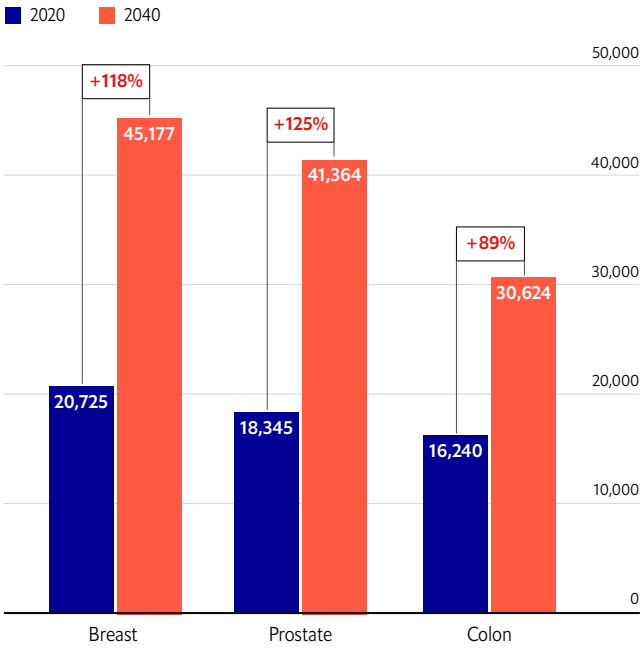
(# of people, both sexes, all ages)



Policy

Legislation, guidelines and programs offer guidance on the distribution of resources and national priorities. **While up-to-date policies are a strength in Brazil's cancer control efforts, the actual implementation and distribution of resources may differ from national directives locally.** Monitoring and accountability for its implementation are key.

4 **Early detection programme/ guidelines for 4 cancers (breast, cervix, colon, childhood)[3]**

6 **# of MPOWER measures fully implemented and achieved[3]**

- **Integrated NCD plan[3]**
- **National screening program for breast cancer[3]**
- **Up-to-date NCCP[3]**
- **National screening program for cervical cancer[3]**

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Health System

Health system capacity is key to meet the rising cancer burden. Health systems require a skilled workforce with access to the right equipment to provide optimal care to patients. **Argentina will need to invest in its health workforce expertise in oncology, increase access to key diagnostic infrastructure and target cancer risk factors.**

Primary prevention & risk factors

HPV vaccination coverage among girls by the age of 15[5] (2020)

90% WHO target

13% Prevalence of tobacco use (% of adults)[6] (2020)

7.4 Alcohol consumption per capita^[7] (2018)

26% Prevalence of obesity among adults[8] (2016)

^Total alcohol consumption per capita (liters of pure alcohol, projected estimates, 15+ years of age)

Health workforce

Physicians[9]
2.3 per 1,000 people (2019)
3.6 OECD average

Nurses[10]
7.4 per 1,000 people (2019)
8.8 OECD average

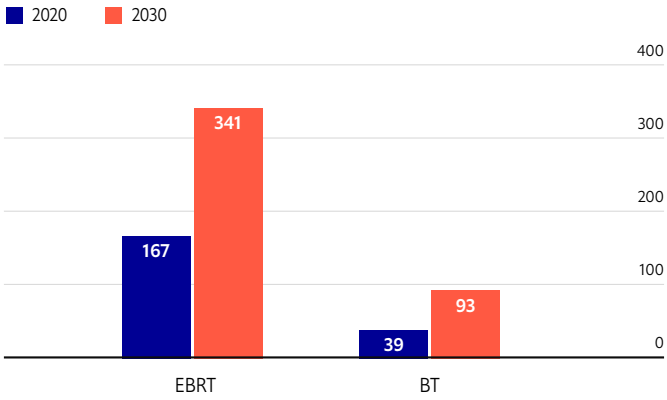
Radiation Oncologists
13.1 per 10,000 people (2020)

Radiologists
230 per 10,000 people[3] (2020)

Infrastructure[11]

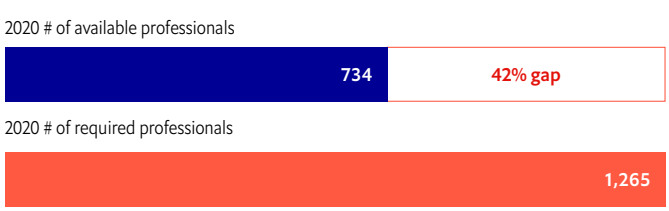
Shortage of external beam radiation therapy (EBRT) and brachytherapy (BT) units to meet demand for cancer patients in 2020 and 2030

(# of units)



Shortage of radiation oncology professionals 2020

(vs #required to meet needs of cancer patients)



Innovation & Data

Advancements in science and technology empower stakeholders to find cost-effective solutions and discover tailored solutions to population health. **Expanding high-quality data collection and increasing coverage will provide a clear picture of the cancer burden, especially as only 22% of its population is covered by regional cancer registries.**

81% Individuals using the Internet[12] (2020)

1.2% Research and development (R&D) expenditure (% of GDP)[14] (2020)

220m Number of mobile cellular subscriptions[13] (2021)

19,104 Number of clinical trials[15] (2022)

Health Financing

Resources are finite. Managing resources effectively and efficiently can better prepare countries to move toward a sustainable future. Adequately funding and investing in health is key. **Brazil must also look at streamlining processes to decrease the delays in access to medicines.**

Health Budget[16]

Total Health Expenditure as % of GDP
10% (2020)
10% OECD average

Total Health Expenditure per capita in USD
$701 (2020)
$4,245 OECD average

Government Health Expenditure as % of GDP
6% (2020)
7% OECD average

Government Health Expenditure per capita in USD
$314 (2020)
$3,018 OECD average

Value Assessment[17]

Has a systematic process to support healthcare decision-making? ✓

Is there an existence of a standard methodology or process guideline? ✓

Are there legislative and / or regulatory requirements to consider HTA results in benefit package decisions? ✓

Regulatory body:
Comissão Nacional de Incorporação de Tecnologias no Sistema Único de Saúde - CONITEC

Accessibility[18]

1,159 days is the average time between a cancer treatment receiving regulatory approval to the treatment being available to patients through the public health system.

Economic Burden[19]

$191 billion Total macroeconomic cost attributable to cancers between 2020-2050.

Affordability[16]

Out-of-Pocket Expenditure as % of Total Health Expenditure
22% (2023)
18% OECD average

Out-of-Pocket Expenditure per Capita in USD
$157 (2023)
$603 OECD average

Opportunities for Improvement

1 Enhance primary prevention

By 2040, there will be almost 1 million new cases of cancer annually in Brazil. Given the high burden of cancer-related risk factors in Brazil, there is significant room for improvement when it comes to public health approaches to cancer prevention in Brazil.

2 Close the public-private gap

The likelihood of death from cancer in Brazil in 2030 is projected to miss the SDG target by 22%. To move towards this, additional effort is needed to bridge the gap in care and outcomes between the public and private systems. Cancer patients utilising SUS are almost twice as likely to die of cancer than those using the private healthcare system. Closing the gap in care and outcomes between the two-tier health systems is a must.

3 Invest in health system strengthening

There is a gap in both the current health system infrastructure and human resources available in Brazil compared to the level needed to meet the demand and needs of patients with cancer. Investment in human resources, diagnostic and treatment equipment and as well as medicines is needed to help mitigate the increasing cancer burden in Brazil.

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ECONOMIST IMPACT

The future of cancer care: health system sustainability in Latin America

Colombia

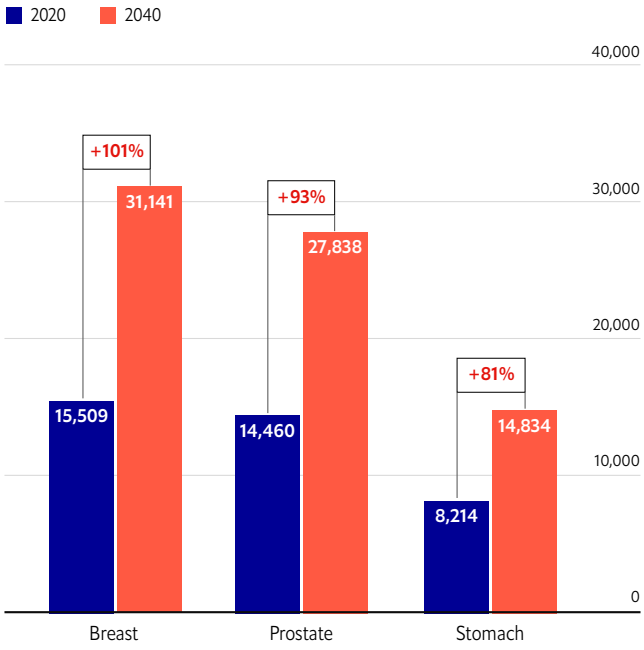
Supported by BeiGene

Key trends

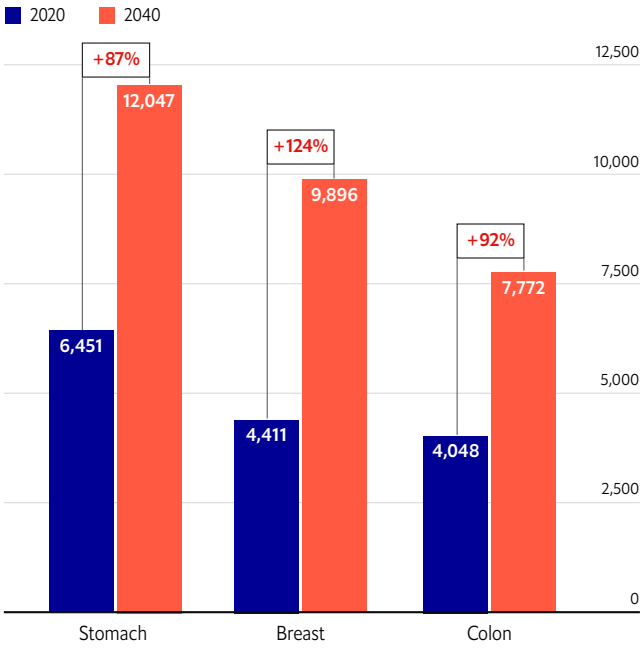
The number of those ≥65 years, a high-risk group for cancer, will increase by 101% by 2040.
The increasing cancer burden will pose a significant challenge to patients, health systems and wider society. Multiple efforts are needed to reduce mortality in line with SDG targets.

Population over 65 years[1]	**4.7m** (2022)	**9.4m** (2040)	↑ **101%**
Total cancer incidence[2]	**113k** (2020)	**192k** (2040)	↑ **69%**
Total cancer mortality[2]	**55k** (2020)	**102k** (2040)	↑ **85%**
Probability of premature death from cancer per year in 2030[3]	**7.5%**	**4.9%** (SDG target)	Projected to miss SDG target by **51%**

Top 3 Cancers: Incidence Projections estimates 2020 and 2040[4]
(# of people, both sexes, all ages)



Top 3 Cancers: Mortality Projections estimates 2020 and 2040[4]
(# of people, both sexes, all ages)



Policy

Legislation, guidelines and programs offer guidance on the distribution of resources and national priorities. **While Colombia's National Cancer Institute instituted the 2012-2021 national cancer control plan, an updated and more comprehensive control plan is warranted.** It should also be noted that the new administration is proposing radical reforms to the health system, which could bring about significant change to the roles played by stakeholders in the public and private sector.[5]

4 **Early detection programme/ guidelines for 4 cancers (breast, cervix, colon, childhood)[3]**

2 **# of MPOWER measures fully implemented and achieved[3]**

- **Integrated NCD plan[3]**
- **National screening program for breast cancer[3]**
- **The latest NCCP covered 2012 - 2021[3]**
- **National screening program for cervical cancer[3]**

* MPOWER: **M**onitor tobacco use and prevention policies, **P**rotect people from tobacco smoke, **O**ffer help to quit tobacco use, **W**arn about the dangers of tobacco, **E**nforce bans on tobacco advertising, promotion and sponsorship, and **R**aise taxes on tobacco.

Health System

Health system capacity is key to meet the rising cancer burden. Health systems require a skilled workforce with access to the right equipment to provide optimal care to patients. **Colombia will need to invest in its health workforce expertise in oncology, increase access to key diagnostic infrastructure and target cancer risk factors.**

Primary prevention & risk factors

HPV vaccination coverage among girls by the age of 15[6] (2020)

90% WHO target

9% Prevalence of tobacco use (% of adults)[7] (2020)

5.7 Alcohol consumption per capita^[8] (2018)

21% Prevalence of obesity among adults[9] (2016)

^Total alcohol consumption per capita (liters of pure alcohol, projected estimates, 15+ years of age)

Health workforce

Physicians[10]
2.3 per 1,000 people (2019)
3.6 OECD average

Nurses[11]
1.5 per 1,000 people (2019)
8.8 OECD average

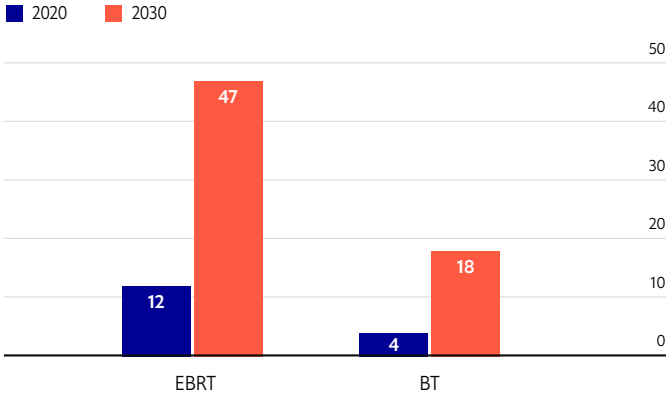
Radiation Oncologists[3]
Data not available

Radiologists
127.6 per 10,000 people[3] (2020)

Infrastructure[12]

Shortage of external beam radiation therapy (EBRT) and brachytherapy (BT) units to meet demand for cancer patients in 2020 and 2030

(# of units)



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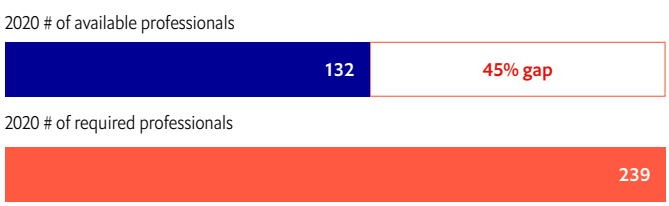

Innovation & Data

Investing in research and development (R&D) is critical to spur innovation, leading to significant medical breakthroughs. **However, Colombia had only allocated 0.2% of its GDP for overall R&D in 2020.**

73% Individuals using the Internet[13] (2020)

75k Number of mobile cellular subscriptions[14] (2021)

0.3% Research and development (R&D) expenditure (% of GDP)[15] (2020)

3,681 Number of clinical trials[16] (2022)

Health Financing

Resources are finite. Managing resources effectively and efficiently can better prepare countries to move toward a sustainable future. Adequately funding and investing in health is key.

Health Budget[17]

Total Health Expenditure as % of GDP
9% (2020)
10% OECD average

Total Health Expenditure per capita in USD
$477 (2020)
$4,245 OECD average

Government Health Expenditure as % of GDP
7% (2020)
7% OECD average

Government Health Expenditure per capita in USD
$347 (2020)
$3,018 OECD average

Value Assessment[18]

Has a systematic process to support healthcare decision-making? ✓

Is there an existence of a standard methodology or process guideline? ✓

Are there legislative and / or regulatory requirements to consider HTA results in benefit package decisions? ✓

Regulatory body:
Instituto de Evaluación Tecnológica en Salud (IETS)

Accessibility[19]

52 days is the average time between a cancer treatment receiving regulatory approval to the treatment being available to patients through the public health system.

Economic Burden[20]

$91 billion Total macroeconomic cost attributable to cancers between 2020-2050.

Affordability[16]

Out-of-Pocket Expenditure as % of Total Health Expenditure
14% (2023)
18% OECD average

Out-of-Pocket Expenditure per Capita in USD
$65 (2023)
$603 OECD average

Opportunities for Improvement

1 Enhance primary prevention

High levels of obesity, low HPV vaccination coverage, and sub-optimal tobacco control legislation highlight the significant room for improvement when it comes to public health approaches to cancer prevention in Colombia.

2 Invest in R&D

Colombia invests very little in research and development as a % of GDP and has low numbers of clinical trials. Increasing resources in R&D is critical to ensure that Colombia does not fall behind in innovation in cancer solutions tailored to its population.

3 Strengthen the patient voice

Incorporate the patient voice and patient engagement in national guideline development, health technology assessment processes and policy-decision making to include recommendations from patients' and carers' perspectives and to help build consensus and drive greater patient centred care.

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