Disparities in Cancer Care

The Landscape of Global Health Equity & The Impact of Access to Cancer Care

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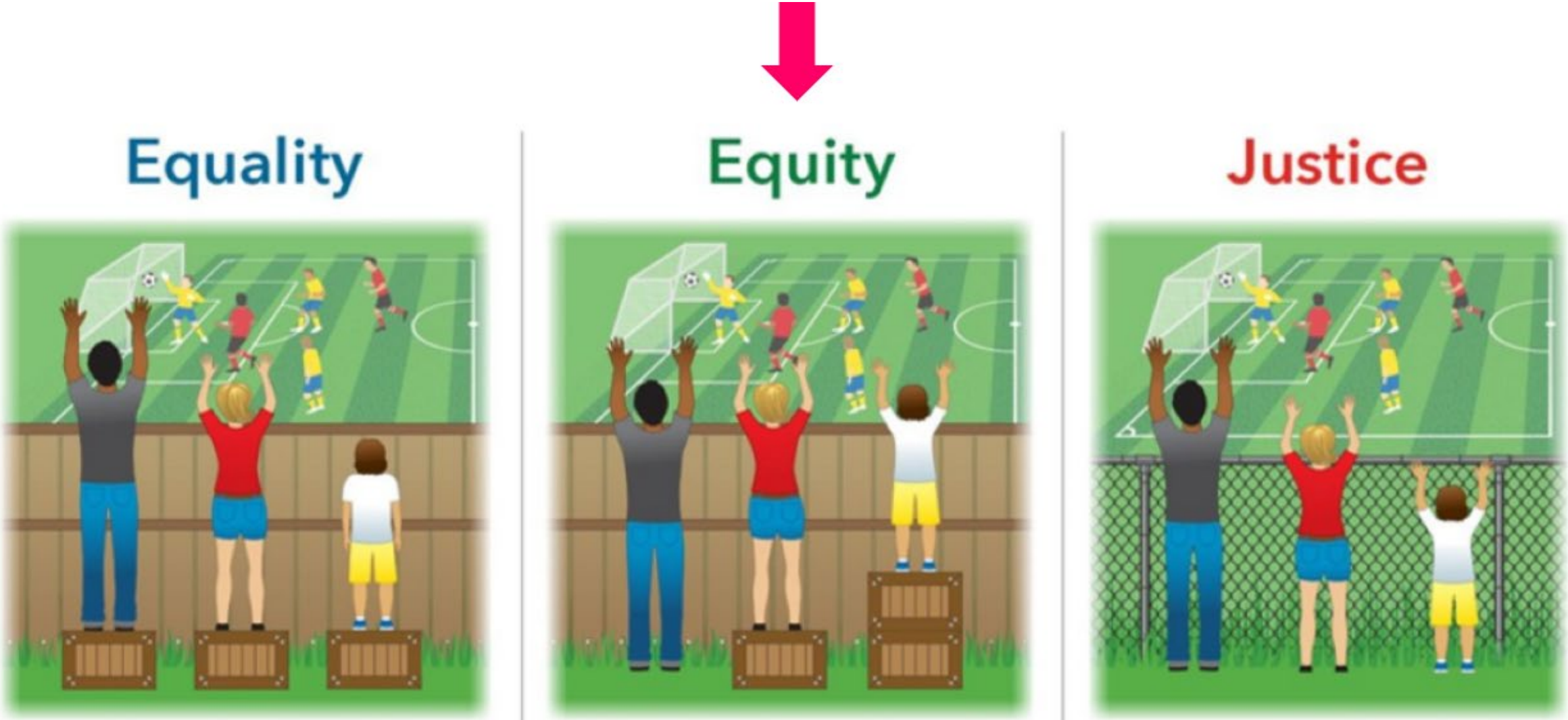
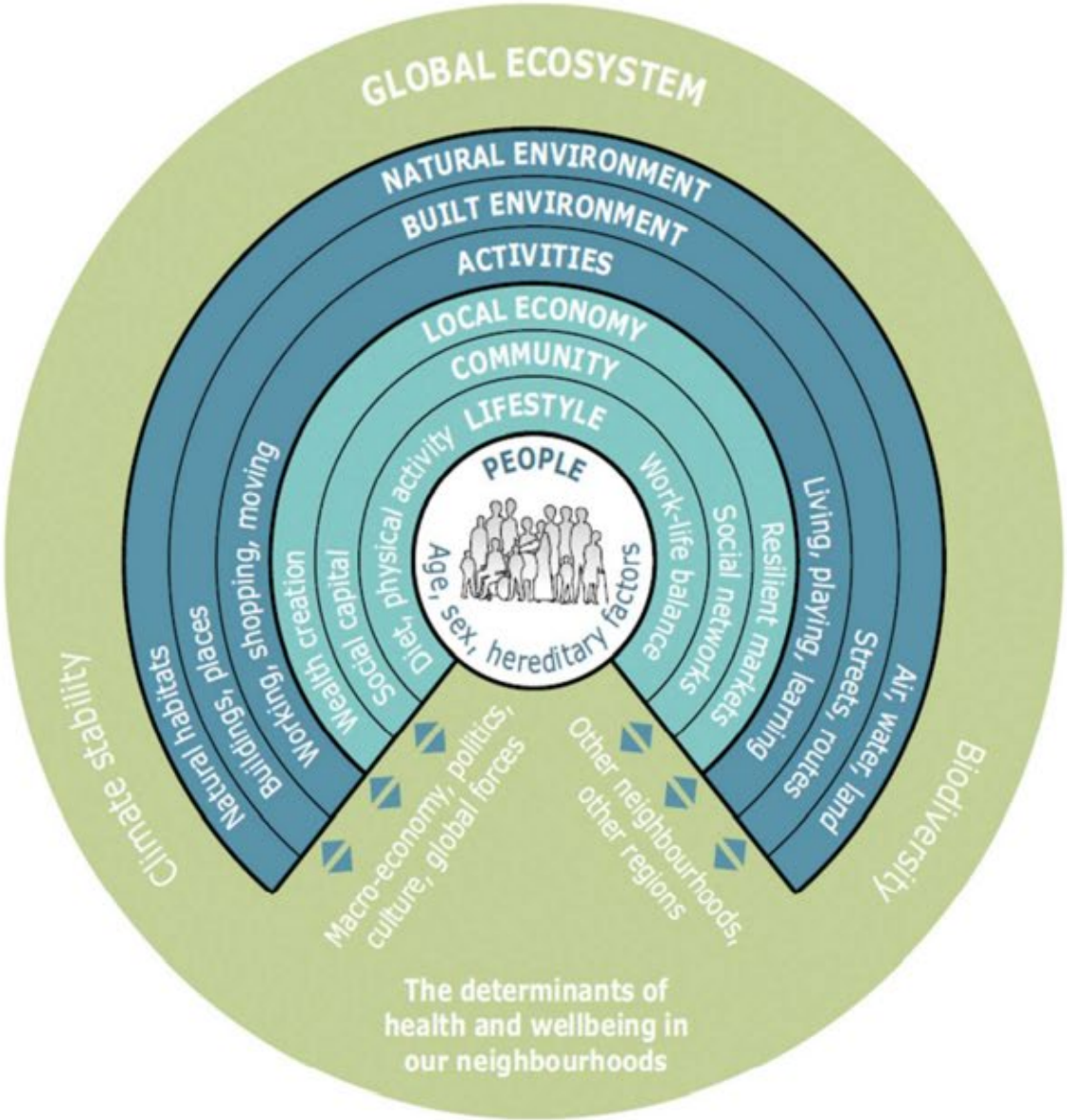


Image credit: http://hd.ingham.org/DepartmentalDirectory/CommunityHealth,Planning,andPartnerships/HealthEquityandSocialJustice.aspx

Healthcare Access and Delivery



Background & Facts:

- Despite progress against cancer in the US→ progress **has not equitably** benefitted all population groups.
- From 1991 to 2016, the overall cancer death rate declined by 27%, yet *socioeconomic disparities* in *cancer mortality widened.*
- Most striking disparities: cancers most amenable to prevention and early detection (eg, cervical cancer).
- **Eliminate cancer-related disparities** in order to continue eradicating the inequitable burden of cancer.
- For cancer control→ a commitment to **health equity** is necessary.
- What is **Health Equity**?
  - Aiming to achieve optimal health for everyone
  - Particular attention to the needs of those most at risk for poor health

de Souza JA et al. Global Health Equity: Cancer Care Outcome Disparities in High-, Middle-, and Low-Income Countries. J Clin Oncol. 2016; 34(1):6-13.

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Cancer Control:

- Defined by the Union for International Cancer Control (UICC) as a *public health approach* aimed at reducing the burden of cancer in a population.
- Cancer control includes the planning of integrated, evidence-based, and cost-effective interventions across the cancer continuum.
- Cancer continuum includes: research, prevention, early detection, treatment, and palliative care.

de Souza JA et al. Global Health Equity: Cancer Care Outcome Disparities in High-, Middle-, and Low-Income Countries. J Clin Oncol. 2016; 34(1):6-13.

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Factors Contributing to Individual Cancer Risk & Survival after Cancer Diagnosis:

- Biological-Genetic
- Environmental
- Behavioral
- Health care
- Social determinants

Contributions of different factors on breast cancer mortality among Latinas

- Socio-economic factors: low SES, lack of insurance or under-insurance, access to screening mammography
- Environmental factors: Obesity, dietary factors (exposure to estrogen-like compounds)
- Biological factors:

Prevalence of inherited mutations in different sub-groups

Genetics effects on environmental factors

Explanation for higher prevalence of triple negative, HER2 positive breast and early onset breast cancers

Gerardo Colon-Otero, MD. Mayo Clinic 2021.

Causes of disparities: a complex interplay of factors

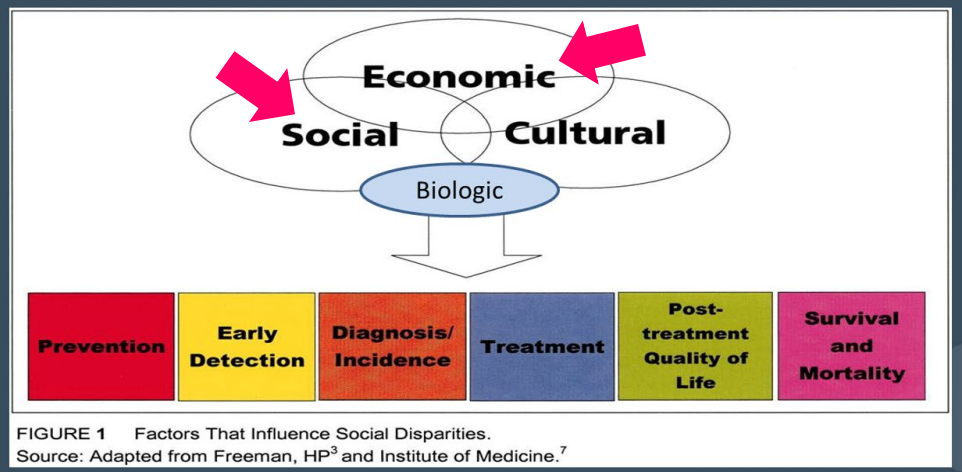


FIGURE 1 Factors That Influence Social Disparities.
Source: Adapted from Freeman, HP[3] and Institute of Medicine.[7]

Ward, E. et al. CA Cancer J Clin 2004;54:78-93

Connections and Consequences Initiated by Socioeconomic Disparities for CRC Risk

Socioeconomic Inequality
- Lower socioeconomic status
- Lower level of education
- Difficult access to healthcare

Downstream Consequences
- Reside in lower-income neighborhoods
- Hold lower paying jobs
- Working several jobs to make ends meet
- Grocery store deserts
- Poor access and affordability of healthy foods
- High fat, high caloric, low fiber diets
- Use of tobacco and alcohol
- Low physical activity
- Lower use of preventive medicine

Metabolic Consequences
- Alterations in gut microbiome
- Increased localized inflammation
- Compromised immunity

Biological Consequences
- Increased colonic crypt proliferation
- Increased and earlier adenoma formation
- Somatic gene mutations

Older Age

Increased Risk for Colorectal Cancer

Carethers JM. *Adv Cancer Res* 2021;**151**:197-229.

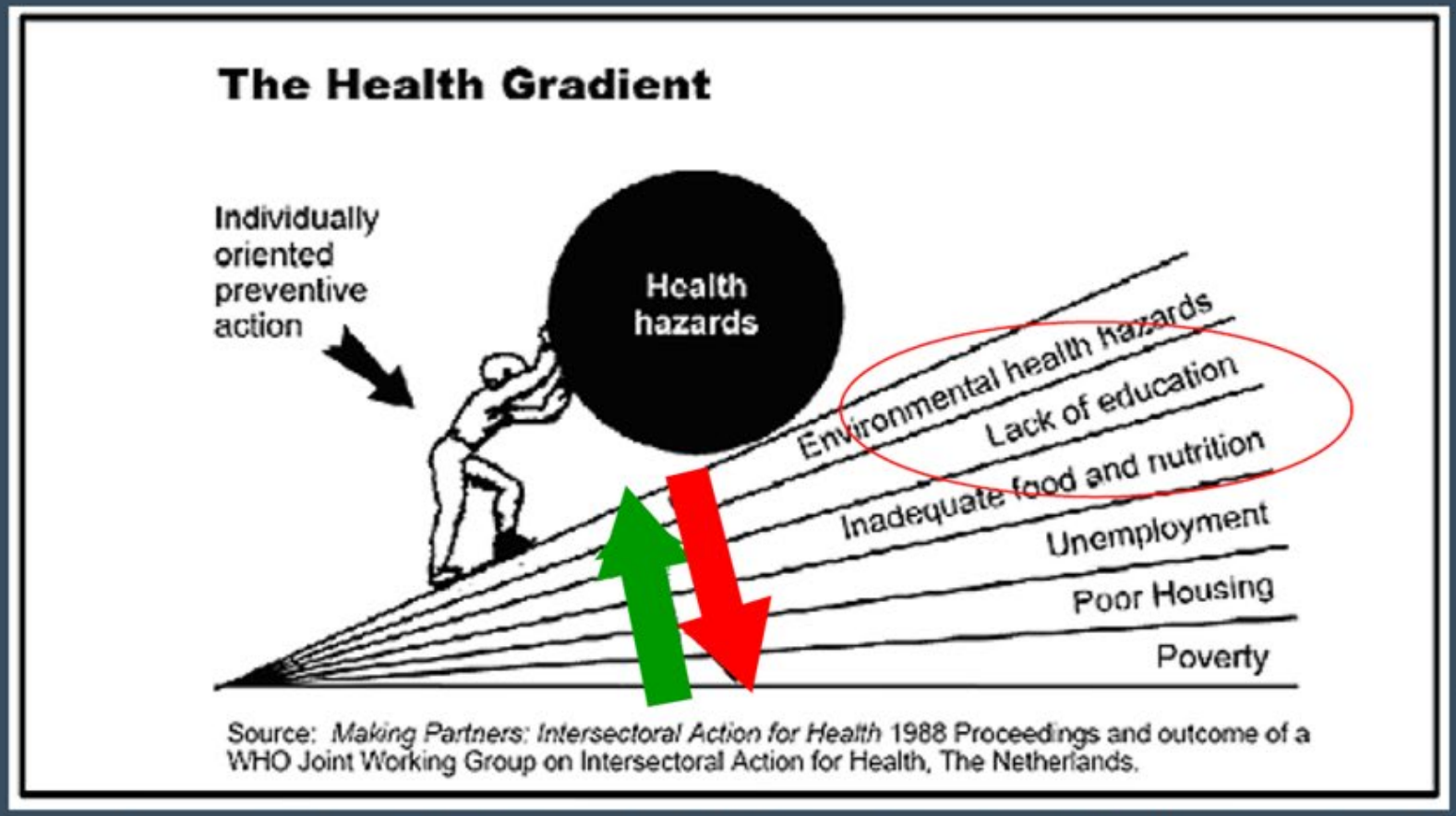
Address External Barriers to Good Health

"Poverty is a carcinogen."

Sam Broder, MD

National Cancer Institute Director

(1989-1995)



Source: Primer to Action: Social Determinants of Health, Toronto 2008

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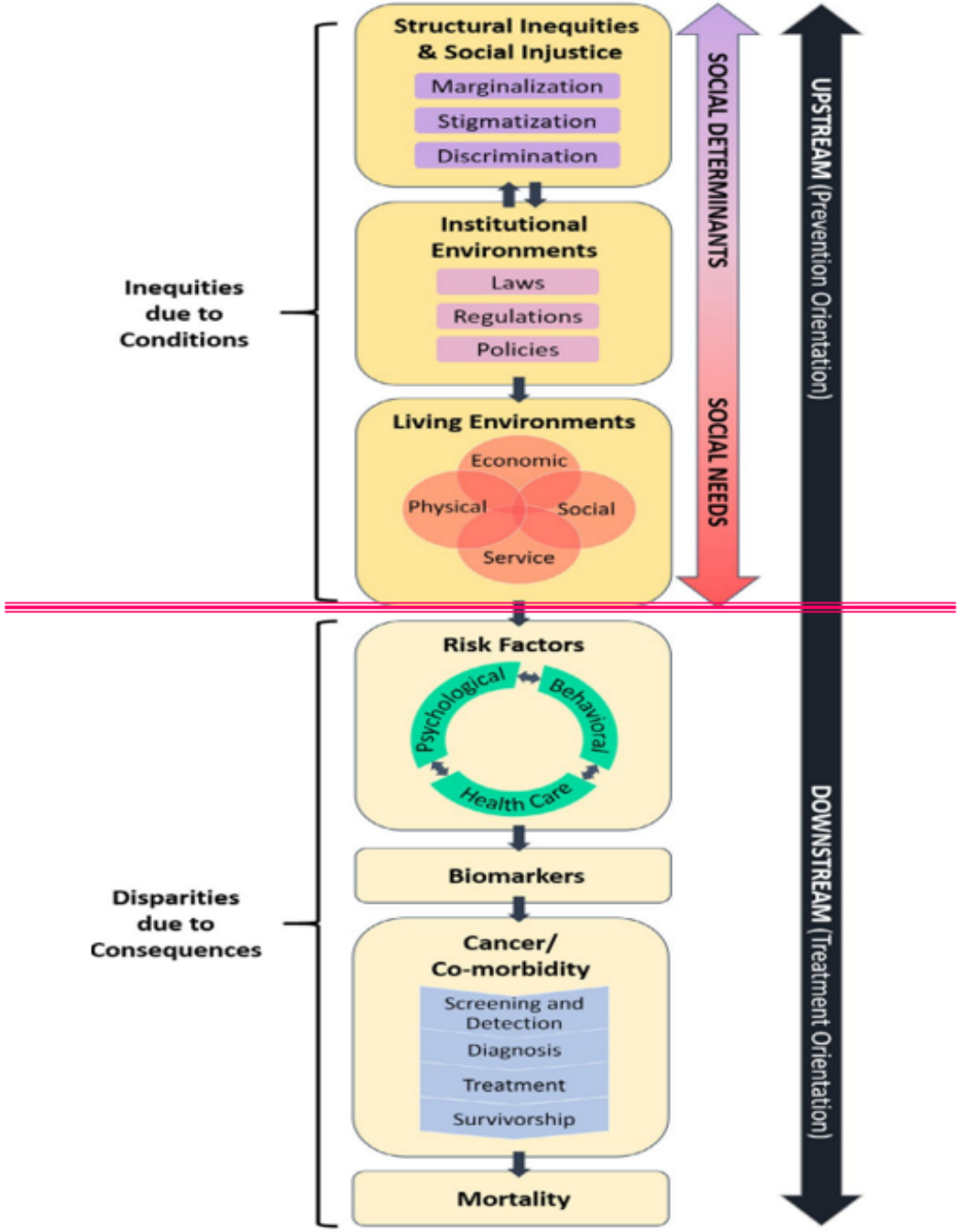
Integrated Conceptual Framework for Understanding and Addressing Social Determinants to Advance Cancer Health Equity



Specific Evidence-informed Priority Recommendations for Cancer Control Practice, Research, and Policy

RECOMMENDATION	KEY DOMAIN(S)		
	PRACTICE	RESEARCH	POLICY
Recommendations to address structural inequities and social injustice			
◦ Address income and wealth inequality			•
◦ Support targeted provisions			•
◦ Support models of care that consider social risk	•		•
◦ Enhance multilevel research		•	
◦ Implement focused training for health care providers	•		
Recommendations to address institutional environments			
◦ Improve access to high-quality care			•
◦ Enhance standards relevant to patients' social circumstances	•	•	
◦ Enhance navigation and service integration	•	•	
Recommendations to address living environments			
◦ Enhance surveillance data and data integration		•	•
◦ Increase cross-sectoral collaboration	•	•	
Cross-cutting recommendations			
◦ At the leadership level, commit to eliminating disparities	•	•	•
◦ Proactively partner with disadvantaged communities/patients	•	•	•
◦ Consistently monitor progress and provide feedback	•	•	•

From the 2014 World Cancer Leaders' Summit:

- It makes economic sense to invest in global cancer control, especially in low- and middle-income countries.

- In 2010, taking into consideration the direct costs related to the prevention and treatment of the disease and the economic value of lives lost and disability caused, cancer had an impact of approximately **US$1.16 trillion** worldwide.

- Taking into consideration the longer term costs of patients and their families, bring the annual global cost of cancer to **US$2.5 trillion**.

- The implementation of prevention, early detection, and treatment strategies could potentially save between 2.4 and 3.7 million lives annually.

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Investing in Cancer Care & Control:

- The vast majority of these lives **would be saved in low-and middle-income countries**, yielding an economic benefit in excess of **US$400 billion**.

- It has been estimated that an investment of **US$11.4 billion** in a set of core prevention strategies in less wealthy regions of the world can lead to savings of up to **US$100 billion** in future cancer treatment costs.8,9

- The measures with **the highest potential** for clinical and economic impact are those geared toward tobacco and obesity control, vaccines, early detection and treatment, palliative care, and health systems planning.

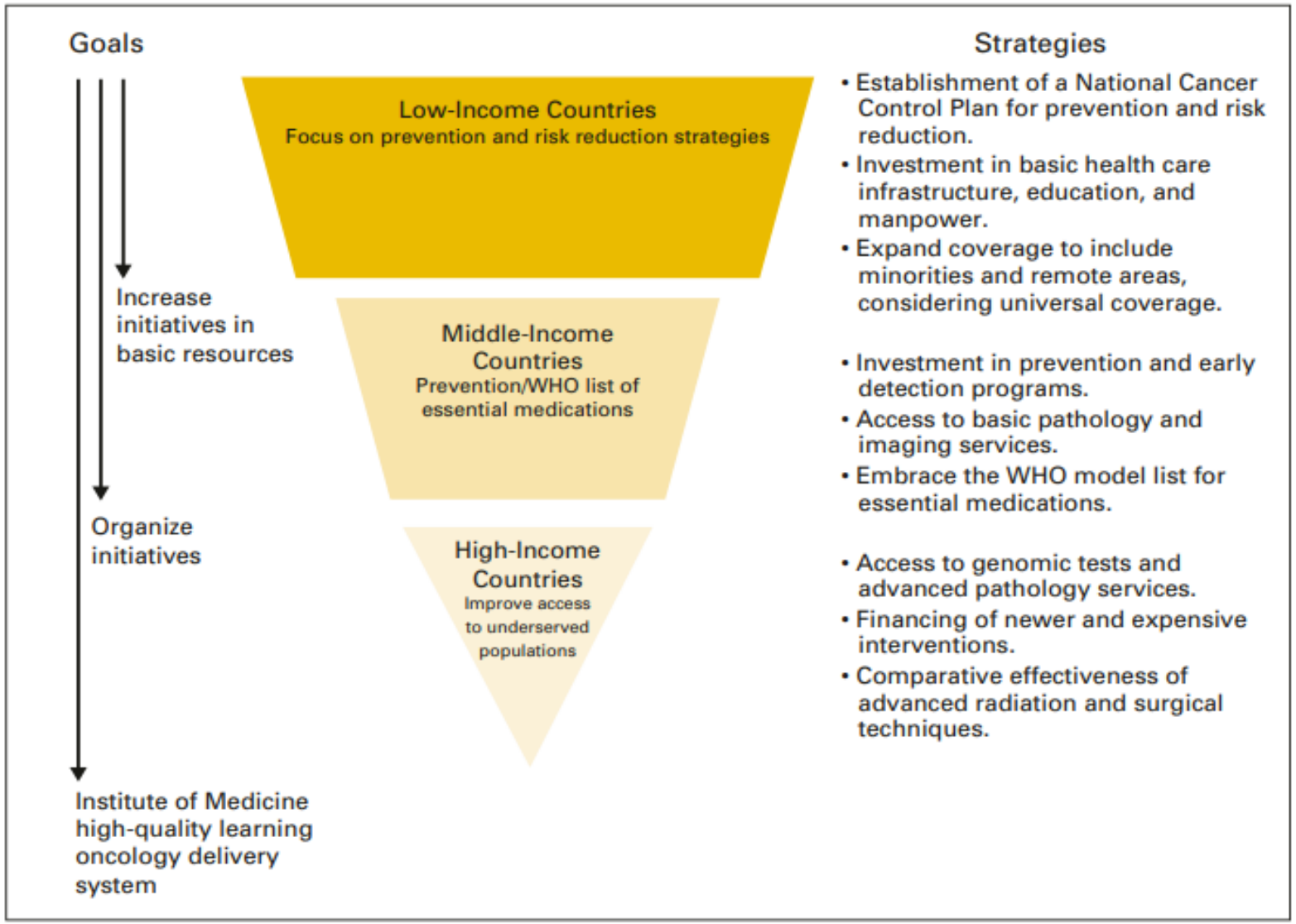
WHO: Country profile: Brazil. http://www. who.int/countries/bra/en/
Knaul FM et al. Investing in cancer care and control, in Knaul FM, Gralow JR, Atun R, et al (eds): Closing the Cancer Divide: An Equity Imperative. Boston, MA, Harvard Global Equity Initiative, 2012

Suggested Priorities to Reduce Cancer Care Disparities Worldwide

Priorities	Facts	Initiatives
Tobacco control	The cost of tobacco-related cancers exceeds US$200 billion a year. The WHO estimates that by increasing tobacco taxes by 50%, there could be a reduction in the number of smokers by 49 million within the next 3 years. It has then been suggested that it would ultimately save 11 million lives, without a decrease in government revenues.	The average low- and middle-income country could, for a cost of approximately US$0.11 per capita, implement the most active control measures, including education campaigns; higher excise taxes on tobacco; smoking bans in public places; and bans on advertising, promotion, and sponsorship.
Obesity, diet, and exercise	Obesity and other diet- and physical activity–related risk factors contribute to approximately 20% of cancer cases globally and will soon be the most common modifiable causes of the disease. The Organization for Economic Cooperation and Development has predicted that the implementation of strategies to improve diets, increase physical activity, and tackle obesity in Europe would lead to gains of > 3 million years of life free of cancer over 10 years, a benefit that could increase to 11.8 million in another decade.	A recent report by McKinsey, a business consultancy, drawing on data from the United Kingdom, showed that a series of interventions to curb overweight and obesity are cost effective, costing society less than the economic benefits they bring. These included public health campaigns, portion control, and limiting media exposure and price promotions.
Vaccines	Chronic infections are responsible for approximately 15% of all cancers around the world, but in some regions, such as in sub-Saharan Africa, nearly a third of all cancers are secondary to infections, compared with < 3% in developed countries. Vaccines to prevent hepatitis B (HBV) and human papillomavirus (HPV) have a significant impact in the prevention of liver and cervical cancer, respectively. The HPV vaccine can prevent up to 70% of cervical cancers, and HBV vaccines have had a significant impact in Asian countries that implemented immunization programs in the 1980s, such as Taiwan and Singapore.	GAVI, a public-private partnership formerly known as the Global Alliance for Vaccines and Immunization, has had a major impact in reducing the price of HBV and HPV vaccines to US$0.20 and US$4.50 per dose, respectively. By providing funding and creating a working market where previously there was none, it has improved access in eligible low-income countries and potentially averted hundreds of thousands of cancer deaths.
Prevention, early detection, and treatment	The prevention, early detection, and treatment of common cancers would have a major impact worldwide. Global investment in cervical cancer prevention could save up to 230 million years of life free of disability, with an economic value of US$1 trillion in 2010. The estimated cost of new breast cancers in the same year was US$26.6 billion. As examples, the treatment of late-stage breast cancer is three times more expensive than the management of early-stage disease. The estimated cost of death and disability caused by colorectal cancer was US$99 billion in 2008, excluding direct treatment costs.	In high-resource settings, colorectal cancer screening has been shown to be a cost-effective or cost-saving measure. Worldwide, there are nearly 300,000 new cases of oral cancer every year. Studies in India, where a third of global cases occur, show that oral cancer screening by visual inspection is cost effective and that early detection can reduce the associated morbidity and mortality. Oral cancer visual inspection by trained health workers can be carried out for < US$6.00 per person. The incremental cost per life-year saved was US$835 for all individuals eligible for screening and US$156 for high-risk individuals.
Palliative care	The WHO defines palliative care as an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness through the prevention and relief of suffering by means of early identification and assessment and treatment of pain and other physical, psychosocial, and spiritual problems.	Several studies have quantified that hospital-based palliative care visits can reduce hospital costs by up to US$7,500 for patients who die during their last admission. Home-based palliative care is also important and can reduce the overall cost of care by up to US$7,500 per cancer patient.
Cancer control planning and registries	Investing in national cancer control planning is vital to plan and deliver cost-effective programs aimed at reducing cancer incidence and mortality, to improve patients' quality of life and well-being, and to decrease the economic impact of cancer globally. Cancer registries cover < 10% of the world's population, and the available ones are predominantly located in high- and middle-income countries. In Africa, < 1% of the population is covered.	The Centers for Disease Control and Prevention, in collaboration with the International Agency for Research on Cancer, is supporting research to test pilot and develop a standardized instrument—the International Cancer Registry Costing tool (InCanRegCosting tool). This project aims to systematically assess the cost of cancer registration in LMICs. Moreover, the Global Initiative for Cancer Registries, a multipartner initiative led by the International Agency for Research in Cancer, estimates that with an investment of US$15 million over 5 years, it can establish four regional capacity building hubs that would significantly improve cancer data collection around the world.
Universal health care	Aiming to improve access to health care, many LMICs in Asia and Latin America have introduced universal coverage, the fundamental element of functional health care systems because it allows pooling of resources and the provision of financial protection from the costs of illness. As an example, not just Brazil, but also Chile, Colombia, Costa Rica, Mexico, Malaysia, South Korea, Taiwan, Thailand, and others have enacted legislation creating comprehensive insurance systems over the last few decades.	A majority of LMICs, many of which are in Africa, however, still lack universal coverage programs. A study of 192 nations revealed that even though 75 of these countries had a mandate for universal access to health care, only 58 of them met stricter criteria of > 90% access of the population to skilled birth attendance (doctors, midwives, or both) and insurance. Universal coverage also brings challenges, because it often increases public expenditure (and therefore taxation) and increases bureaucratic and administrative demands. In China, for instance, public expenditure increased from 35.6% in 2001 to nearly 60% of the total health care spending in 2012. Moreover, in low-resource settings, institutions might be weaker, and problems with corruption as well as management and accountability incentives may result in underfunding and misallocation of expenditures.

de Souza JA et al. Global Health Equity: Cancer Care Outcome Disparities in High-, Middle-, and Low-Income Countries. J Clin Oncol. 2016; 34(1):6-13.

Building blocks for addressing cancer disparities per income settings



A Global Approach to Cancer Equity in the Hispanic/Latinx Population

Sybil R. Green, JD, MHA[1]; Gladys Rodriguez, MD[2]; Enrique Soto-Perez-de-Celis, MD, PhD[3]; and Everett E. Vokes, MD[4]

- In 2021, an estimated 176,600 new cases and 46,500 cancer-related deaths occurred among the Hispanic/Latinx population in the US.
- In 2020, cancer was the **3rd leading cause of death** for the Hispanic/Latinx population, following COVID-19 and heart disease.
- Despite comprising 13% of patients with cancer in the US, Hispanic/Latinx patients represent only 2%-6% of oncology clinical trial subjects.
- An inadequate representation in clinical trials, data and evidence will be incomplete and inconclusive.
- **Disparities/barriers** for accessing oncology clinical trials: patient and clinician lack of awareness about available trials, lack of available trials, poor patient-physician communication, poor readability of informed consent forms, financial issues related to trial participation, and fear of uncertainty over experimental treatment efficacy.

Green SR et al. JCO Oncol Pract. 2022 May;18(5):371-373.

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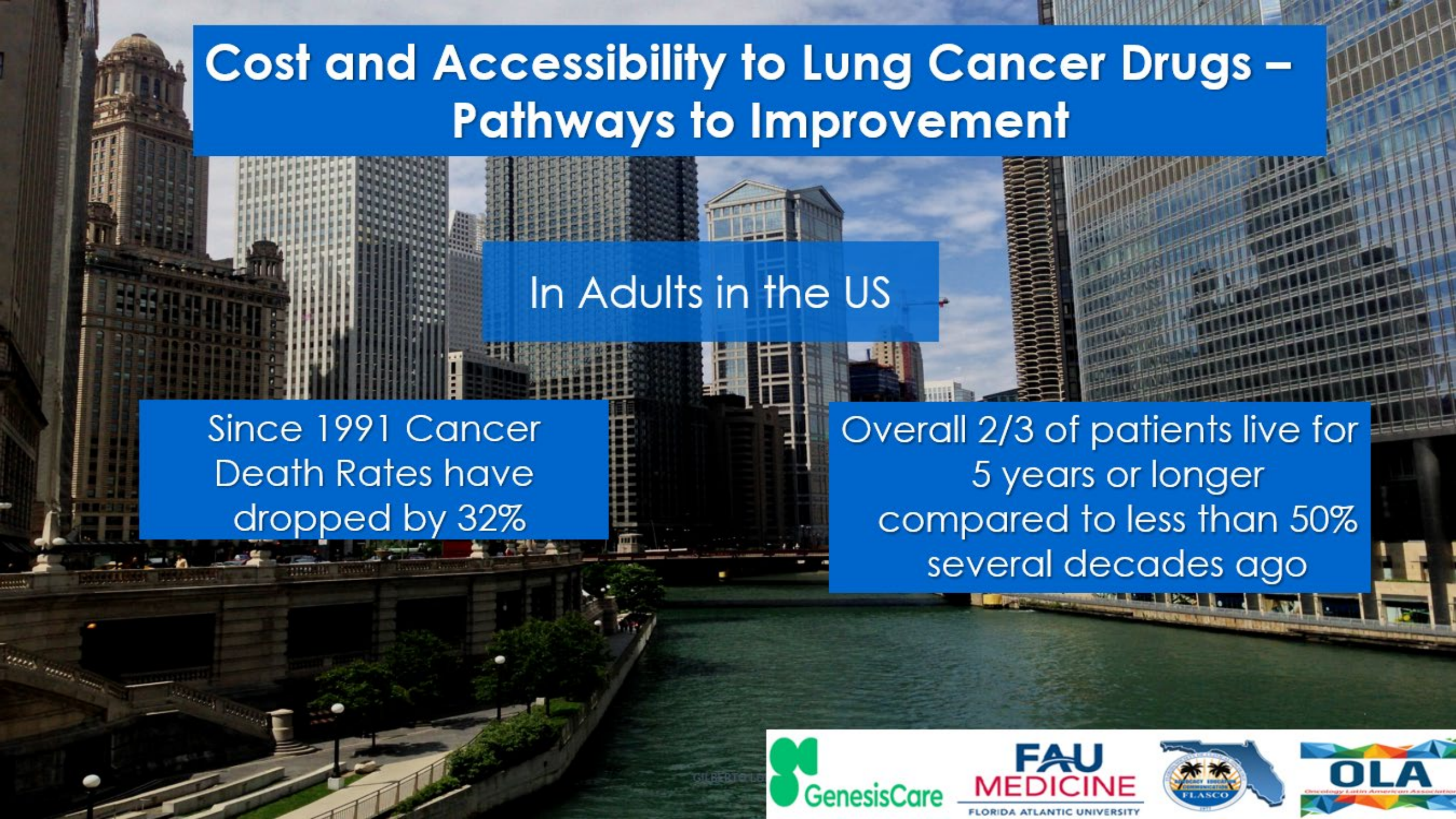
Efforts to Reduce/Minimize Inequity in Cancer Care Delivery (or Access to Cancer Care)

Synchronization of multidisciplinary, team-based cancer care is central to strengthening the effectiveness of and efficiencies in clinical practice

Models should be informed by key framing principles:

- → a **patient-centric and culturally competent** focus to care delivery that is informed by **patient needs and preferences.**
- → frontline work rooted in scientific evidence and guided by data-driven tools
- → agility among practices and providers in responding to patient- and population level needs in real time and with appropriate infrastructure and resources.

Cost and Accessibility to Lung Cancer Drugs – Pathways to Improvement



In Adults in the US

Since 1991 Cancer Death Rates have dropped by 32%

Overall 2/3 of patients live for 5 years or longer compared to less than 50% several decades ago

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For those of us who treat patients in low and middle income countries most of these advances are an inspiration and bring hope for the future...

...but not our current reality

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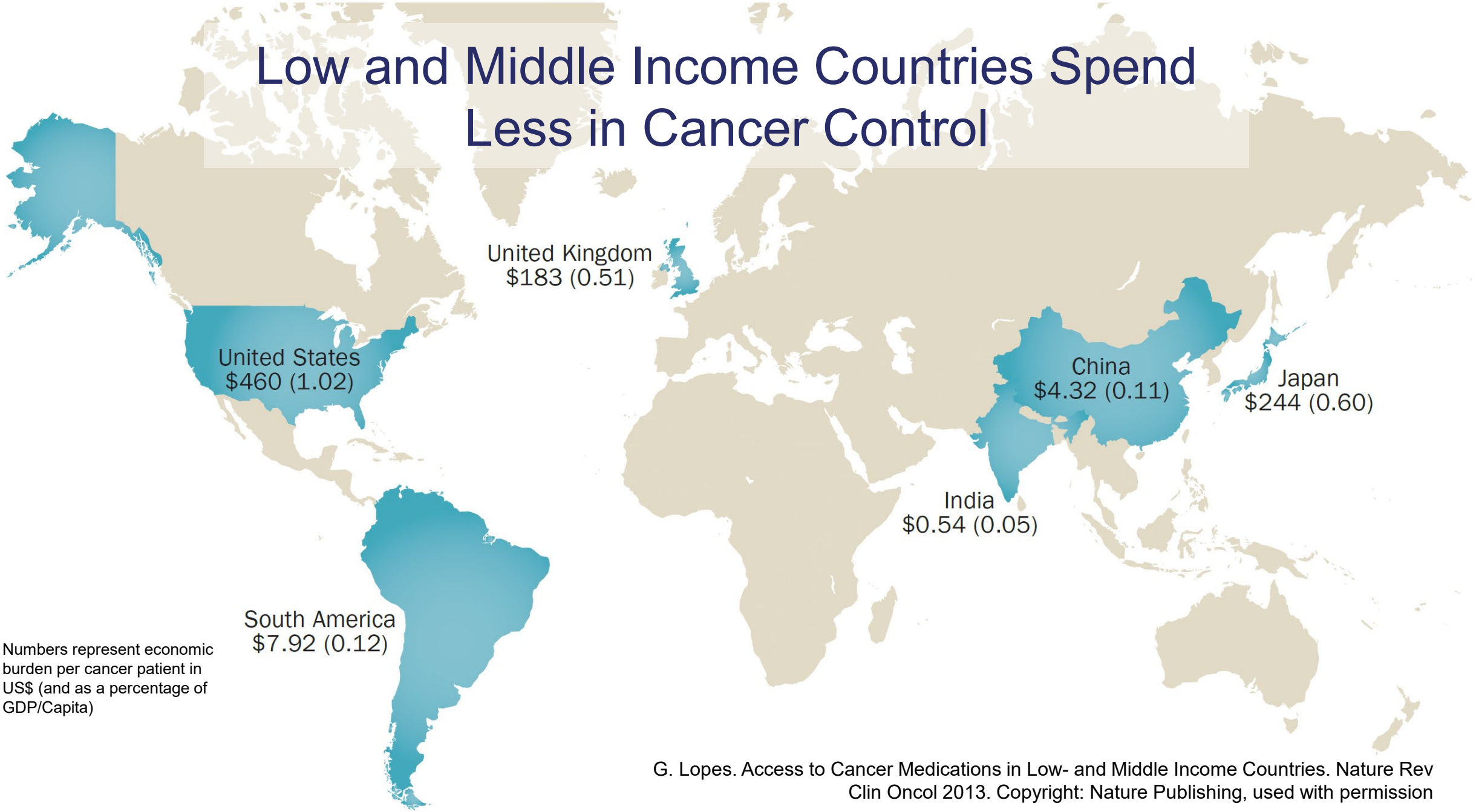
Cancer mortality to incidence ratios:

USA	Europe	LMICs
0.36	0.48	0.68

de Souza JA et al. Global Health Equity: Cancer Care Outcome Disparities in High-, Middle-, and Low-Income Countries. J Clin Oncol. 2016; 34(1):6-13.

Low and Middle Income Countries Spend Less in Cancer Control



Numbers represent economic burden per cancer patient in US$ (and as a percentage of GDP/Capita)

Why Do We Need WHO EML for Cancer Care

- Cancer treatment can be complex, toxic and costly.
- Oncology programs address numeours type of cancer (i.e., solid tumors, hematological maliganancies)
- Systemic therapies (medicines) are one critical component of cancer treatment, in addition to surgery, radiation therapy, and palliative care.
- Many under-resourced countries lack the bandwidth to develop national cancer formularies.

An Example

Cost Implications of Adding Trastuzumab

Regimen: AC-T – Doxorubicin/Cyclophosphamide followed by paclitaxel (4 cycles of each)

	Unit Size and Cost	# of units necessary for a full course of treatment	Total Cost
Doxorubicin	$6.48 per 50mg vial	12 vials	$77.75
Cyclophosphamide	$8.75 per 500mg vial $2.89 per 1g vial	4 500mg vials + 4 1g vials	$46.79
Paclitaxel	$7.42 per 100mg vial	12 vials	$88.27
Tamoxifen	$0.03 per 20 mg tab-cap	1,825 (1 daily for 5 years)	$60.23
Total Cost			**$273.03**

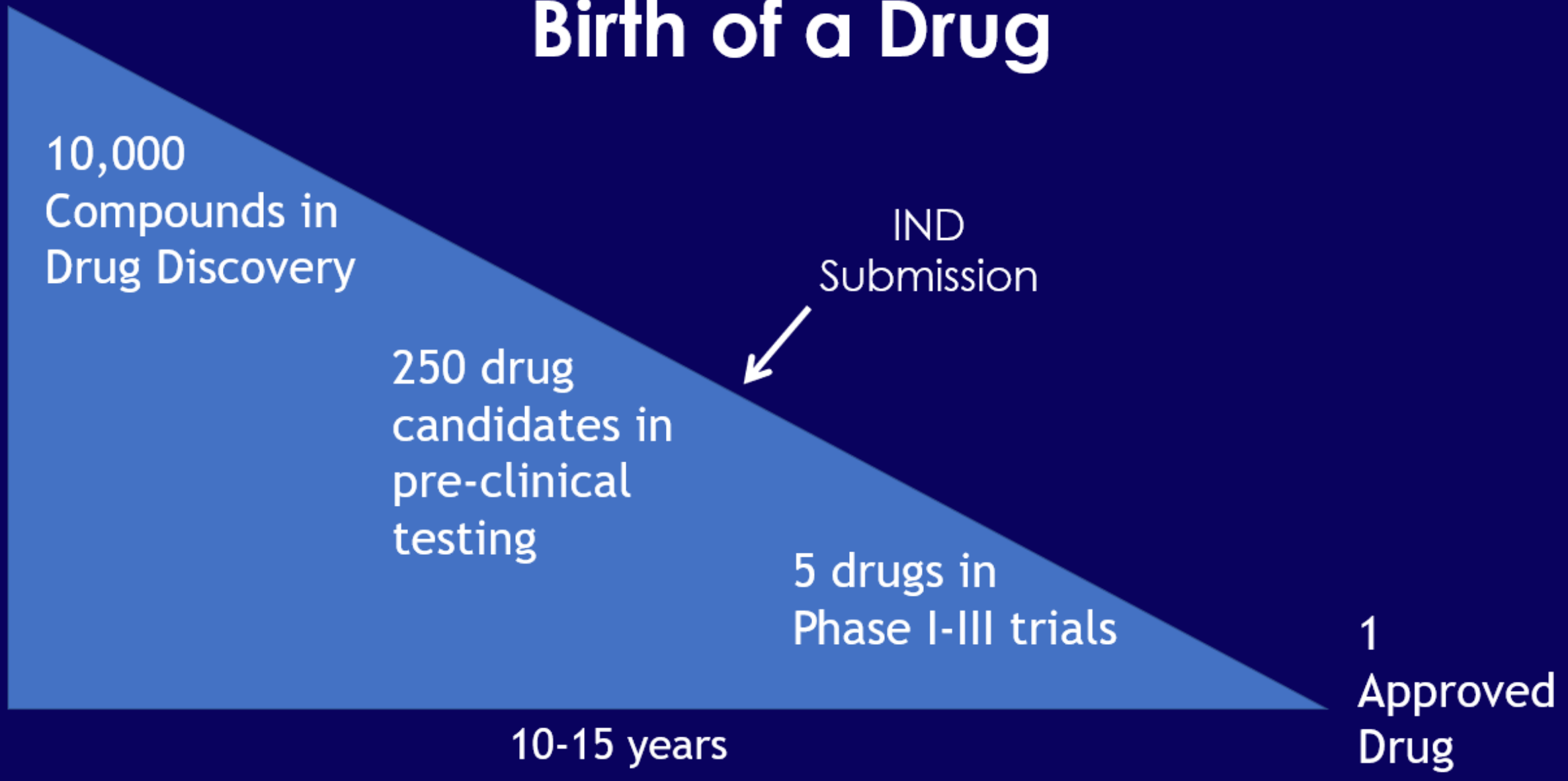
Regimen Including Trastuzumab, for HER2 Positive disease: AC-TH – Doxorubicin/Cyclophosphamide followed by paclitaxel/trastuzumab

	Unit Size and Cost	# of units necessary for a full course of treatment	Total Cost
Doxorubicin	$6.48 per 50mg vial	12 vials	$77.75
Cyclophosphamide	$8.75 per 500mg vial $2.89 per 1g vial	4 500mg vials + 4 1g vials	$46.79
Paclitaxel	$7.42 per 100mg vial	24 vials	$178.03
Tamoxifen	$0.03 per 20 mg tab-cap	1,825 (1 daily for 5 years)	$60.23
Trastuzumab	$6.27 per mg	6,448 mg	$ 40,404.65
Total Cost			**$ 40,767.44**

UICC WHO EML Task Force. http://www.who.int/selection_medicines/committees/expert/20/applications/cancer/en/

Courtesy of Gilberto Lopes, MD

Birth of a Drug



The Cost of Developing New Drugs Has

$ 2.6 billion
2015

US$ 802 Million
2000

US$ 318 Million
1987

US$ 138 Million
1975

DiMasi et al. The Price of Innovation: New Estimates of Drug Development Costs. J Heath Econ 2003 and press release from the Tufts group in 2015

How to Increase Access

Most Important and Effective Options:

- Quality generics and biosimilars (and Compulsory Licensing?)
- Price Discrimination, aka, Affordable Pricing or Price Tiering
- Adequate Healthcare Funding:
  - Universal Coverage
  - Value-Based Insurance Design
  - PPP – **ATOM Coalition**

G. Lopes. Access to Cancer Medications in Low and Middle Income Countries. Nature Rev Clin Oncol 2013.

How to Improve Cost Effectiveness?

- Decreasing Cost and Increasing Value of Cancer Medications.
- Making Drug Development Cheaper and More Effective Using Biomarkers.
- Using Generics, Biosimilars, Price Discrimination and Access Programs.

G. Lopes. Access to Cancer Medications in Low and Middle Income Countries. Nature Rev Clin Oncol 2013.

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Biomarkers Improve Cost-Effectiveness

- Sorafenib in HCC (No biomarker): 1.6 LY at a Cost of US$ 80k/LY
- Trastuzumab (Her2/neu): 1.44 QALY at US$ 19 k/QALY and generates societal income in the adjuvant setting
- Oncotype Dx in Adjuvant Breast: Generates Cost Savings
- EGFR Mutation Testing and EGFR TKI. Generates Cost Savings

G. Lopes, JCO 2007, ASCO GI 2009, BMC Cancer 2010, ASCO and WCLC 2011, Cancer 2012.

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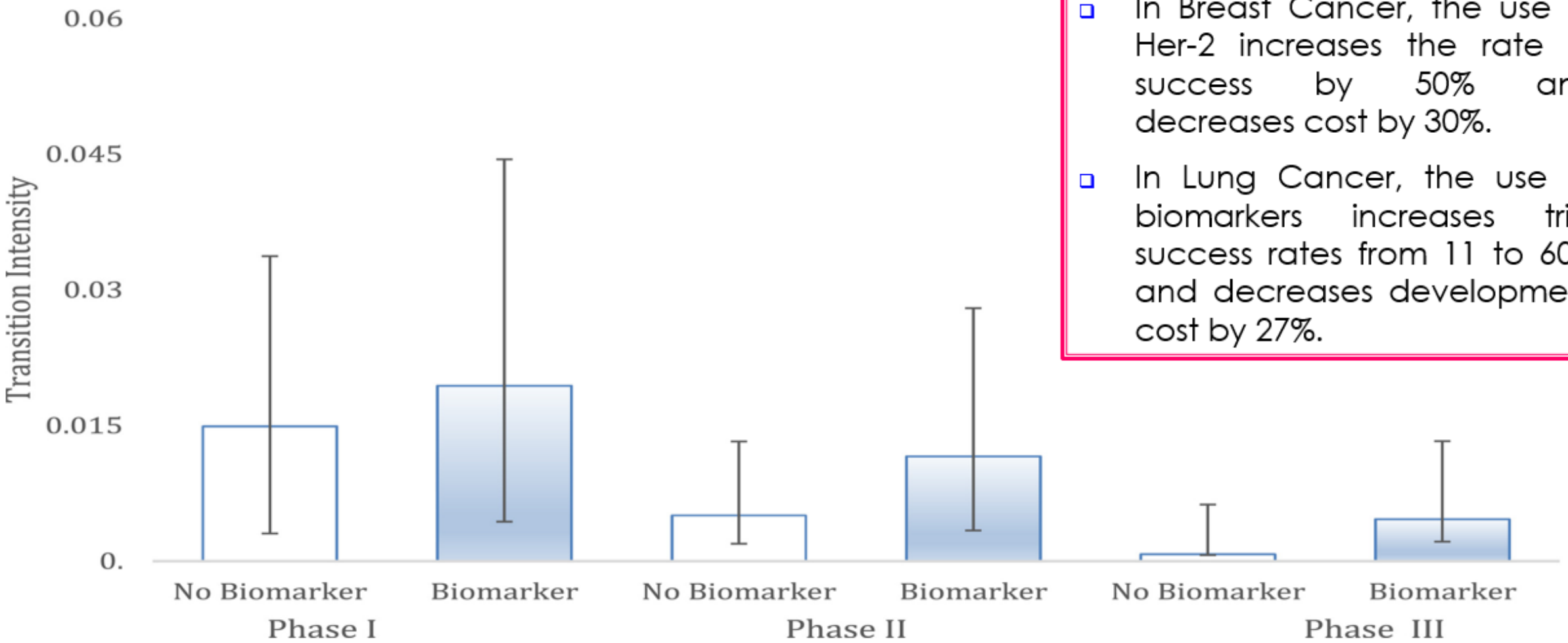
Biomarkers Decrease Clinical Trial Risk and the Cost of Drug Development



- In Breast Cancer, the use of Her-2 increases the rate of success by 50% and decreases cost by 30%.
- In Lung Cancer, the use of biomarkers increases trial success rates from 11 to 60% and decreases development cost by 27%.

Parker, Lopes et al, Breast Cancer Res Treat 2012.
Falconi, Lopes et al, ASCO 2013, WCLC 2013, JTO 2014.

Generic

- Generic medicines account for 90% of all prescriptions dispensed in the United States, yet only 21% of all dollars spent on prescriptions. (source: IQVIA Institute).
- Cost of Medication *may drop by 80%* after introduction of generics.
- In the US the use of generics has saved greater than US$ 1.67 trillion over the decade through 2016.

Potential Savings with Generics in Low- and Middle- Income Countries Are Significant

- Generic substitution for 4 commonly used drugs translated into a saving in excess of US $800 million in India every year.

- In one small retrospective study and one small prospective registry, efficacy and safety of commonly used drugs was equivalent with generic or originator drug in India.

Compulsory Licensing

Compulsory Licenses for Cancer Drugs: Does Circumventing Patent Rights Improve Access to Oncology Medications?

- WTO – TRIPS Agreement went into effect in January 1995.
- Allows countries to produce/import generics while medications are still protected by patent on grounds of public interest.
- Widely used for AIDS medications.
- Occasionally used for cancer medications.
- The US threatened its use to create stockpiles of ciprofloxacin during Anthrax scare.

Bognar CLFB et al. J Glob Oncol. 2016; 2(5):292-301.

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Compulsory Licensing: Challenges

- Decrease in investment
  - In Egypt, Pfizer pulled out of a new planned factory.

- Office of the US Trade Representative withdrew duty-free status of 3 Thai products.

G Lopes MD, University of Miami, Florida, USA. WCLC 2022. ES17-Cost and Accessibility to Lung Cancer Drugs - Pathways to Improvement.

Price Discrimination [including Access Programs]

- Important concept in Economics and Business.
- Companies charge different prices in different markets or segments, increasing number of consumers able to afford a product or service.
- Widely used outside of health care.

  [Think of discounts and rebates in electronics, for instance]

Price Discrimination [including Access Programs]

- Many pilot projects have led to an increase in access and, in some cases, revenue.
- Some companies now have specific policies to provide medications at a different cost in low- and middle- income countries.

The Access to Oncology Medicines (ATOM) Coalition

- Low and lower-middle income countries (LLMICs) represent 3,6 billion or over 45% of the world's population, yet the majority have limited access to cancer treatment and care.
- The Union for International Cancer Control (UICC), the Medicines Patent Pool (MPP), the American Society for Clinical Pathology (ASCP), and Project ECHO (Extension for Community Healthcare Outcomes) are therefore establishing a new global coalition not only to increase access to essential cancer medicines in LLMICs but also combine it with an increase in the capacity for the proper handling, treatment and supply monitoring of these medicines.

The Access to Oncology Medicines (ATOM) Coalition

- The Access to Oncology Medicines (ATOM) Coalition brings together public and private sector partners with expertise in implementing cancer-focused access programs.
- Priority will be placed on medicines currently on the EML or those likely to be included in the future that treat cancers with the highest incidence-to-mortality in LLMICs (lung, colorectal, breast, cervical, prostate and childhood cancers).

https://www.uicc.org/who-we-work/networks/access-oncology-medicines-atom-coalition

One Example of Thousands Issues for Access to Cancer Care…

Lung Cancer Screening

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Latin America Facts

570 million inhabitants

208 million living in Brazil

(20-30% private health care)

320 million (54%) have no health-care coverage in LA

Goss P, et al. Lancet Oncol, 2013, 14:391

- **Factors behind exclusion from health care:**

  Cultural obstacles, unemployment, underemployment, geographic isolation, low education levels, etc.

- **For the poorest populations**:

  Even in the context of free health care, low access

  -inability to pay cost of medications, lack of affordable transportation, inconvenient clinic operation and long waiting times.

Barriers to LCS

Selection of eligibles	Participant factors	Program features
- Low involvement primary care: lack of awareness of benefits, eligibility criteria, hesitant about impact on their patients and workload - Unreliable smoking history documentation impeding selection of target population	Lower LCS uptake associated with: - Lower SES (socioeconomic and geographic barriers, reduced health literacy) - Smoking status - Female sex	- Low attendance to community-based or academic screening settings outside clinical trials

https://www.ilcn.org/increasing-adherence-to-ct-lung-cancer-screening-programs

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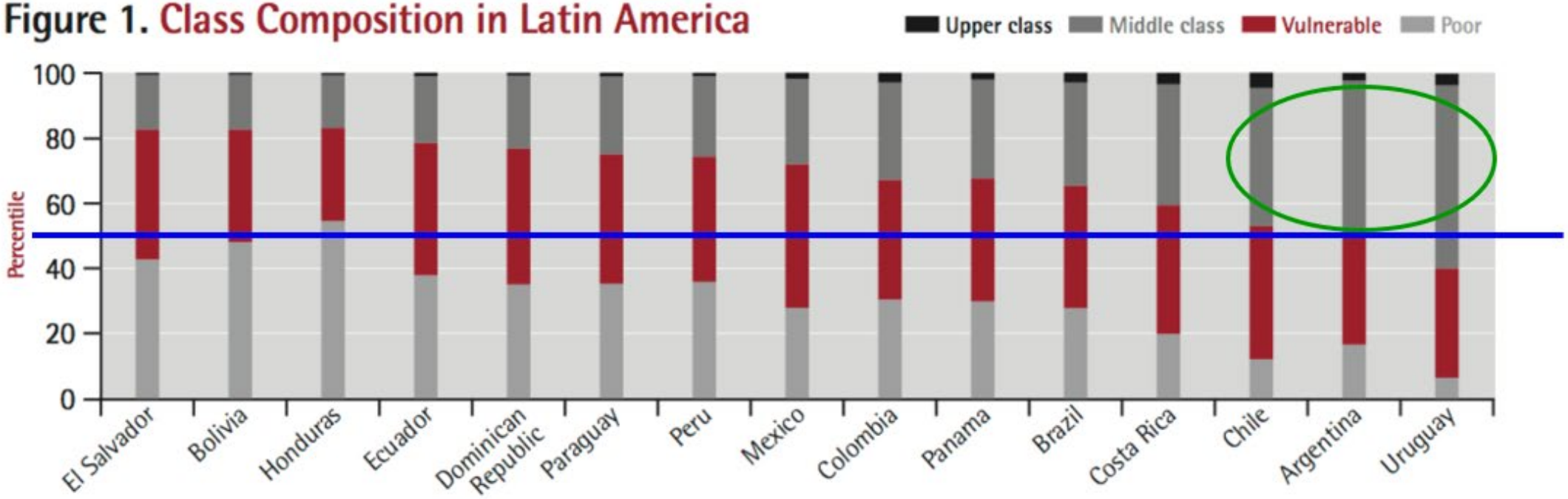
Health care access in Latin America

Figure 1. Class Composition in Latin America



Ferreira, Francisco H. G., Julian Messina, Jamele Rigolini, Luis-Felipe López-Calva, Maria Ana Lugo, and Renos Vakis. 2013. Economic Mobility and the Rise of the Latin American Middle Class. Washington, DC: World Bank. doi: 10.1596/978-0-8213-9634-6. License: Creative Commons Attribution CC BY 3.0

BRASIL Lung Cancer – COST BY STAGE

Table 2: Direct lung-cancer costs in Brazil by stage, public and private sectors, 2016 (US$)

Stage of lung cancer	Patients diagnosed per stage	Cases per stage	Cost per stage per patient	Total costs per stage, all patients
Public sector				
Stage I & II	15%	3,820	5,564	21,257,654
Stage III	39%	9,933	9,587	95,224,887
Stage IV	46%	11,716	11,417	113,751,641
Total	**100%**	**25,469**	**9,825***	**250,234,182**
Private sector				
Stage I & II	15%	1,274	7,239	9,218,352
Stage III	39%	3,311	86,132	285,178,132
Stage IV	46%	3,905	71,354	278,652,826
Total	**100%**	**8,490**	**67,497***	**573,049,309**

Note: * denotes the weighted average (obtained by dividing total costs by tal number o ases).
Source: The Economist Intelligence Unit

- Brasil shares with most of Latin America a high proportion of *late lung-cancer diagnosis:*
- In Brasil 85% are found at stages III or IV.
- Such patients not only have a worse prognosis, they cost more to treat.
- Late stage treatment:
  -2 to 10x more expensive

LUNG CT SCREENING SHOULD BE MANDATORY

review article

Challenges in Lung Cancer Screening in Latin America

abstract

Lung cancer is the deadliest cancer worldwide and is of particular concern for Latin America. Its rising incidence in this area of the world poses myriad challenges for the region's economies, which are already struggling with limited resources to meet the health care needs of low- and middle-income populations. In this environment, we are concerned that regional governments are relatively unaware of the pressing need to implement effective strategies for the near future. Low-dose chest computed tomography (LDCT) for screening, and routine use of minimally invasive techniques for diagnosis and staging remain uncommon. According to results of the National Lung Screening Trial, LDCT lung cancer screening provided a 20% relative reduction in mortality rates among at-risk individuals. Nevertheless, this issue is still a matter of debate, particularly in developing countries, and it is not fully embraced in developing countries. The aim of this article is to provide an overview of what the standard of care is for lung cancer computed tomography screening around the world and to aid understanding of the challenges and potential solutions that can help with the implementation of LDCT in Latin America.

J Glob Oncol 4.

Luis E. Raez, Amanda Nogueira, **Edgardo S. Santos**, Ricardo Sales dos Santos, Juliana Franceschini, David Arias Ron, Mark Block, Nise Yamaguchi, and Christian Rolfo.

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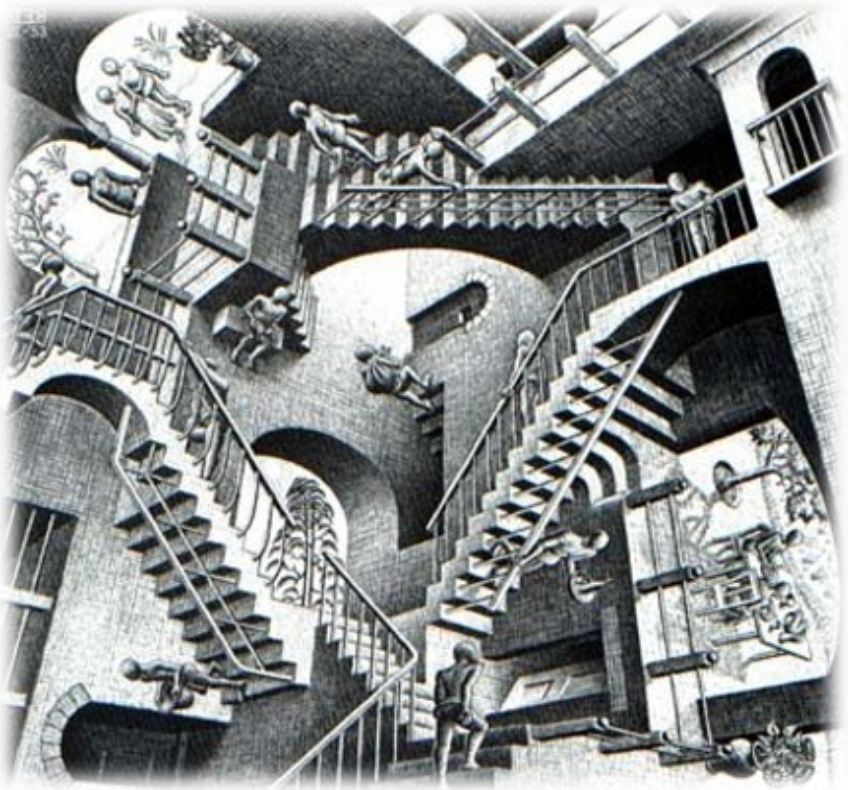
How to Face the Challenges ?



STEPS 1 to 3 of the Program

STEP 1 – Community Outreach

STEP 2 – Triage

- Screening interview:
  - Inclusion and exclusion criteria are checked

- Individuals deemed ineligible due to severe clinical symptoms:
  - Advised to seek medical assistance at health care centers

Ricardo Sales dos Santos MD PhD . 2022 WCLC. LATAM Workshop, August 6, 2022.

STEP 2 – Triage

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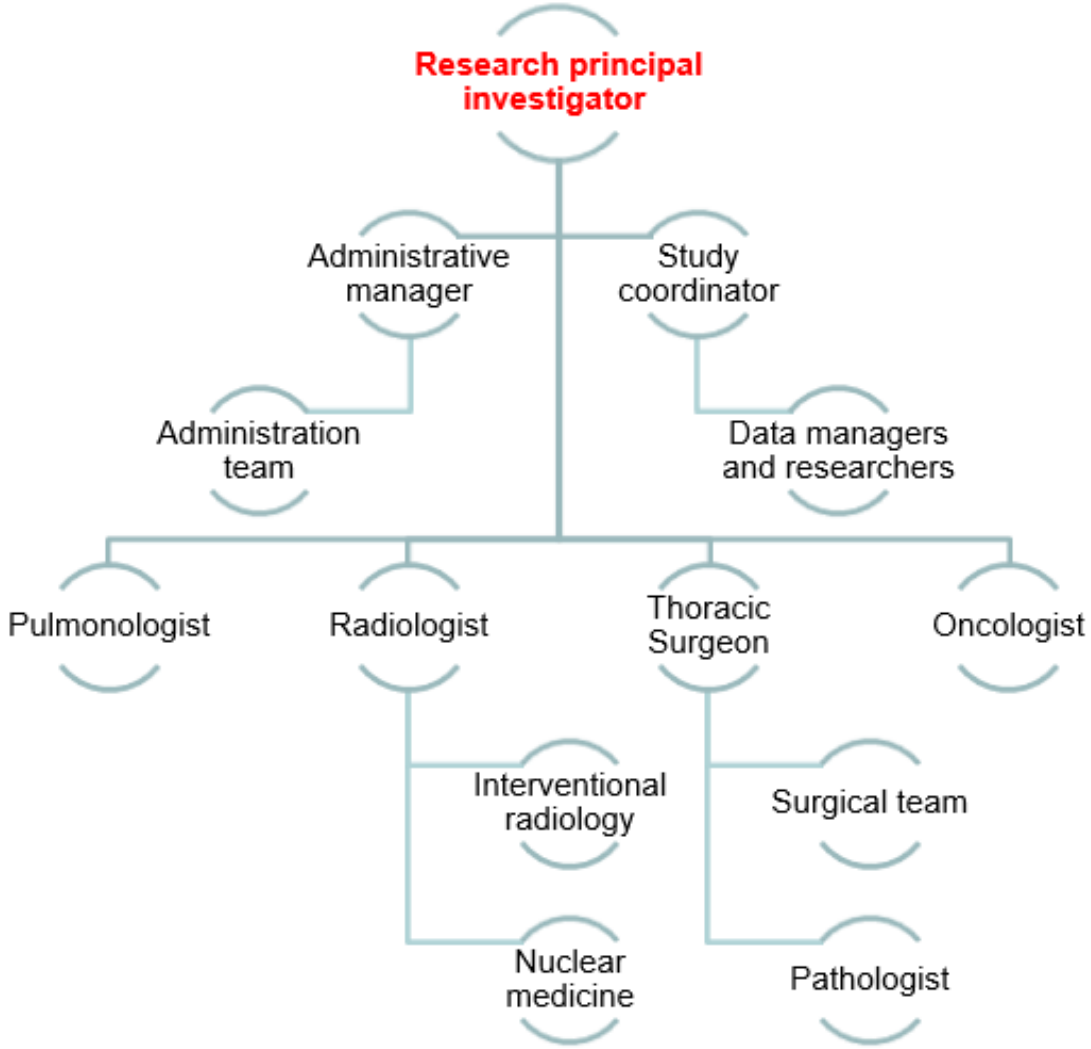
Multi-disciplinary Working Team



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Screening of Lung Cancer in Brazil

Table 3. Overview of LDCT Screening Trials

Study/ Reference	Participants Examined with LDCT	Positivity Rate n (%)	Biopsies n (%)	Lung Cancer n (%)
NLST [7]	26,722	7,191 (27)	758 (2.8)	270 (1.0)
ELCAP [8]	1,000	233 (23)	28 (2.8)	27 (2.7)
PLuSS [9]	3,642	1,477 (41)	90 (2.5)	36 (1.0)
DLCST [10]	2,052	594 (29)	25 (1.2)	17 (0.8)
LUSI [11]	2,029	540 (27)	31 (1.5)	22 (1.1)
DANTE [12]	1,276	199 (15)	52 (4.1)	28 (2.2)
ITALUNG [13]	1,406	426 (30)	22 (1.6)	21 (1.5)
LSS [14]	1,586	325 (21)	57 (3.6)	30 (1.9)
DEPISCAN [15]	336	152 (45.2)	. . .	8 (2.4)
NELSON [16]	7,582	493 (6.5)	. . .	200 (2.6)
(Estimated Σ)	40,049	11,630 (29)	1,063 (2.7)	659 (1.6)
BRELT1	790	312 (39.5)	25 (3.1)	10 (1.3)

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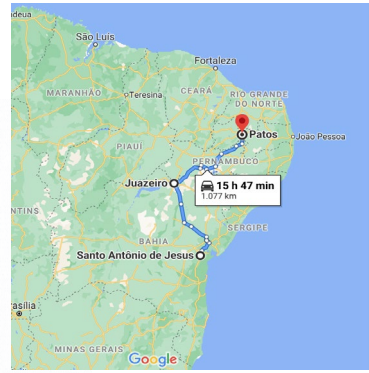
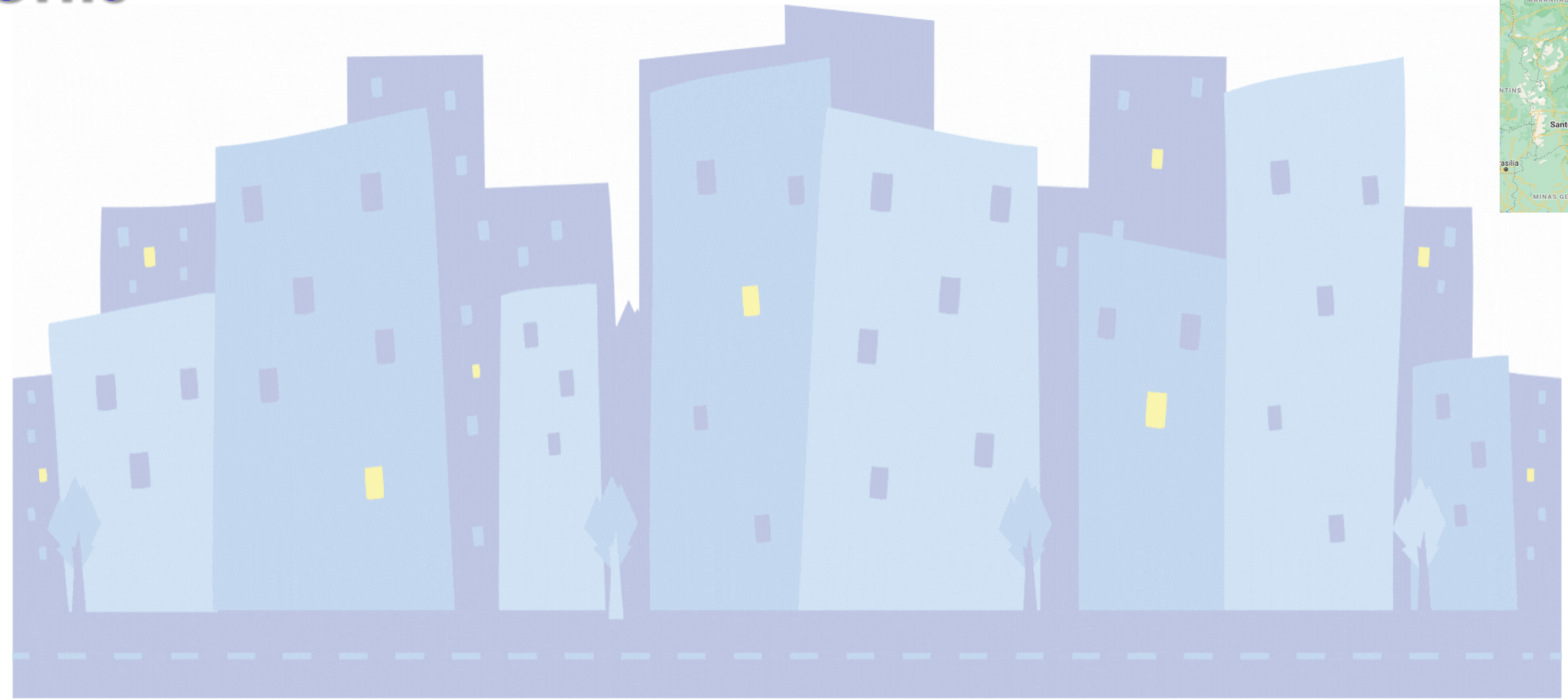
Innovation: Go to the Underserved Areas… Look for the Patients→





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Conclusion

- Global health equity requires a tremendous effort from all sectors of the global ecosystem.
- Socioeconomical factors are a major component to make inequity prevalent and vicious.
- In Cancer Care, we need to tackle all steps from the cancer continuum; prevention will pay off down the line and will increase cost-effectiveness in cancer care.
- We have made significant improvements in lung cancer treatments; but access to drugs are not equal for LMICs.
- Need to continue developing multisectoral, multi-stakeholder initiatives to address these disparities.