

Public Private Partnerships to Bring Cancer Therapies to Patients in Resource-Constrained Settings

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October 2023



Disclosures

- Research funding from the Breast Cancer Research Foundation
- No other relevant disclosures or conflicts of interest

Resource-Constrained Settings

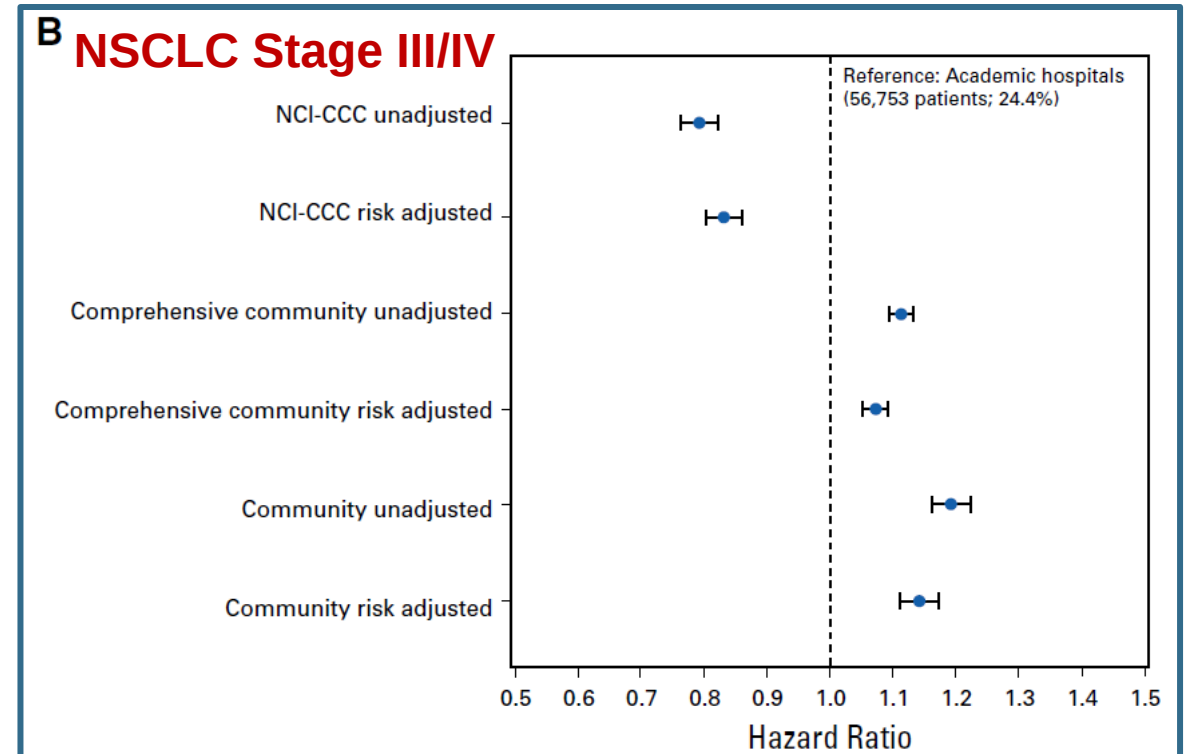
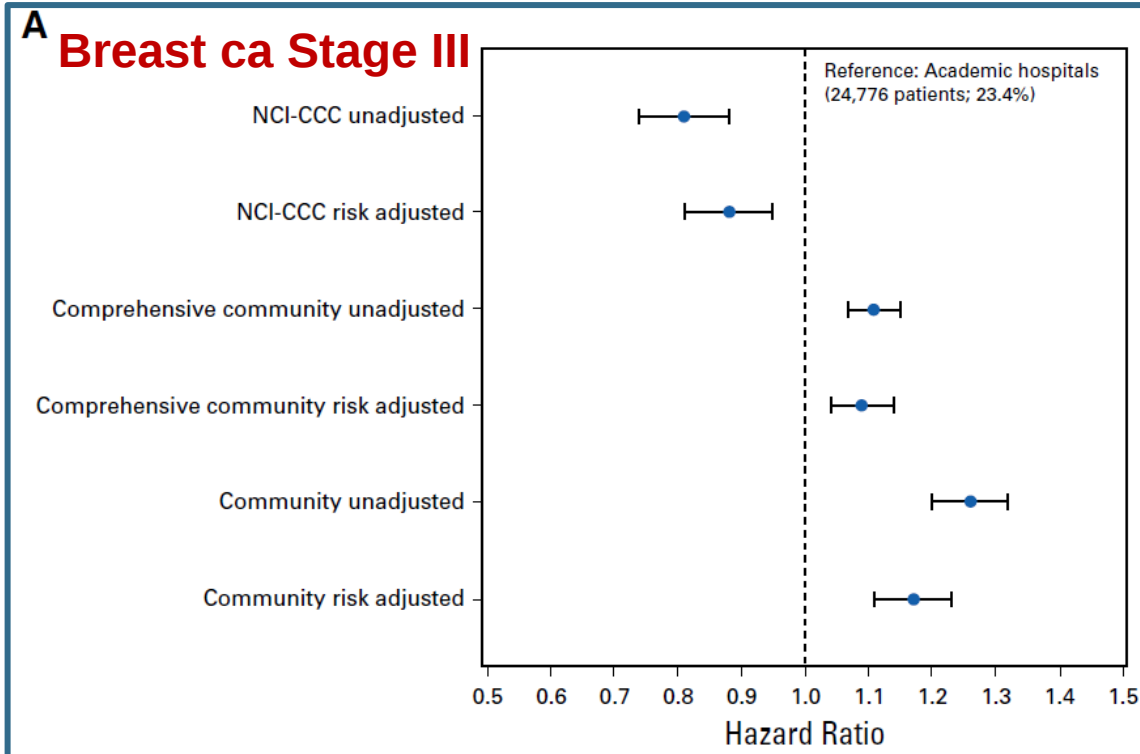
- The majority of the world's cancer patients reside in resource-constrained settings – U.S. and globally
- Poverty and geography
- Lack of access to quality cancer care and treatment options (including surgery, medicines and radiation)
- Bringing quality cancer care to these populations would have a huge impact on global cancer mortality

Efforts....and Barriers...in the US and Globally

- Efforts:
 - Patient assistance programs in the US
 - Partnerships to bring drugs to patients outside the US – The Max Foundation
- Barriers:
 - Access to diagnostics
 - Access to drugs
 - Access to quality cancer care delivery infrastructure to safely administer drugs and manage toxicity

Survival As a Quality Metric of Cancer Care: Use of the National Cancer Data Base to Assess Hospital Performance

Lawrence N. Shulman, Bryan E. Palis, Ryan McCabe, Kathy Mallin, Ashley Loomis, David Winchester, and Daniel McKellar



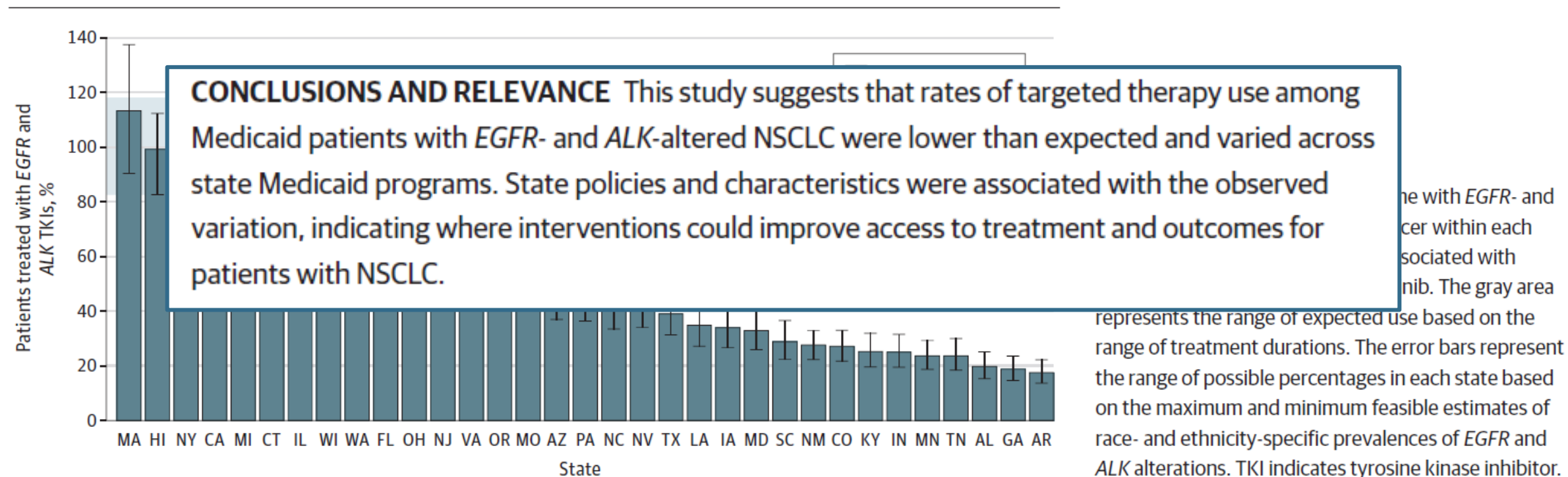
Rurality and Cancer Outcomes

- 65% of US cancer patients cared for in community programs (not all rural)
- While there is a trend towards associations between academic cancer programs and community programs, many are not aligned
- Community and rural programs are often staffed by oncology generalists and have low participation in clinical trials, therefore less experience with new therapies
- Patients in community programs are older with more co-morbidities

Variation in Use of Lung Cancer Targeted Therapies Across State Medicaid Programs, 2020-2021

Thomas J. Roberts, MD, MBA; Aaron S. Kesselheim, MD, JD, MPH; Jerry Avorn, MD

Figure 1. Osimertinib or Alectinib Use by State Medicaid Programs, Compared With Expected Levels of Use, 2020-2021

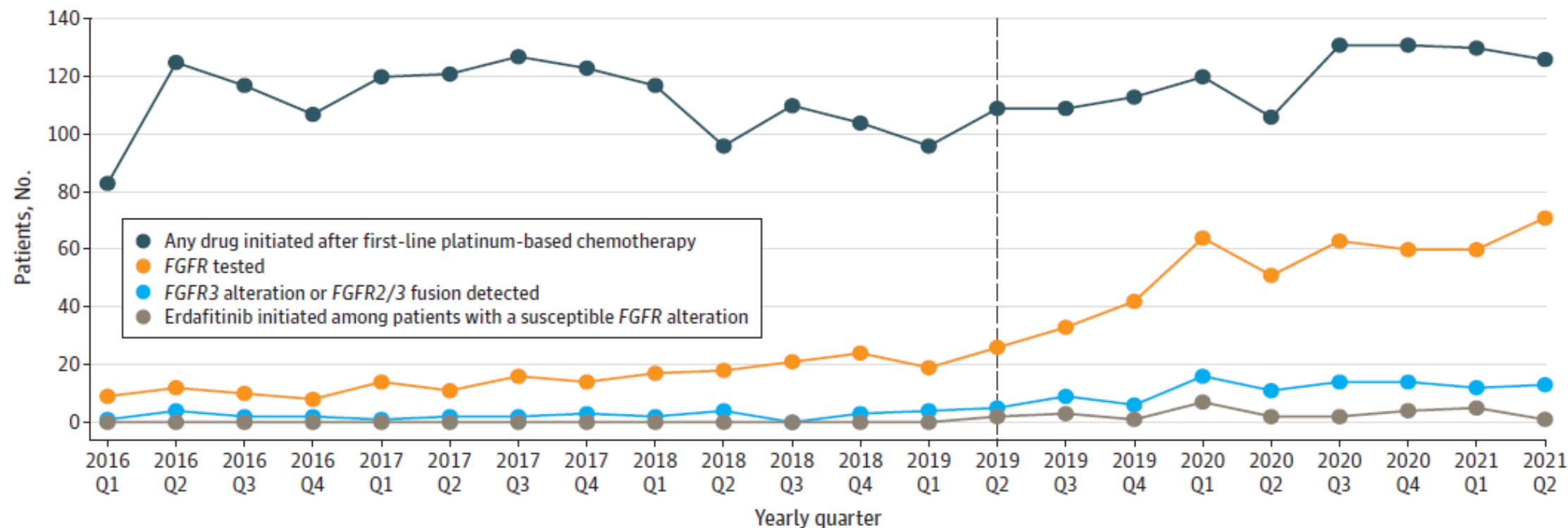


Biomarker Testing, Treatment Uptake, and Survival Among Patients with Urothelial Cancer Receiving Gene-Targeted Therapy

– Flatiron Health Database – Mamtani – JAMA Oncology 2022

Figure 1. Real-world Use of Pan-Fibroblast Growth Factor Receptor (FGFR) Testing and Rate of Erdafitinib Uptake

A FGFR testing and erdafitinib initiation



What is the vision for global cancer care?

- ▶ Patients should expect accessible, high-quality cancer care for treatable and preventable cancers
- ▶ Care should be affordable – poverty should not be a barrier to care – for many in the world this will mean care must be free
- ▶ Efforts should aim to develop and strengthen in-country capacity for all aspects of cancer care and for the full spectrum of cancer specialists

MEDICINE AND SOCIETY

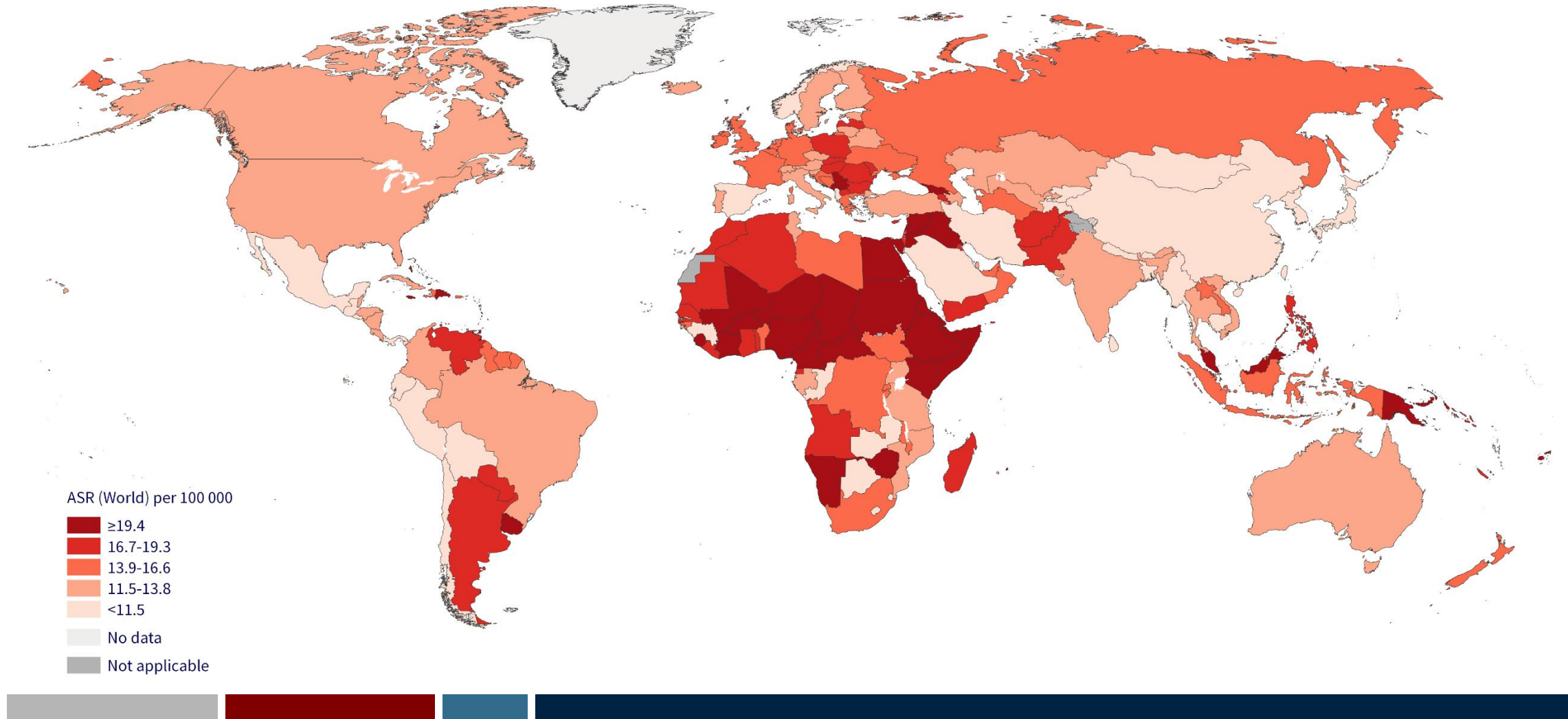
Debra Malina, Ph.D., *Editor*

**Unclouded Judgment — Global Health
and the Moral Clarity of Paul Farmer**



- ▶ “There was no trying in Paul’s world...only doing.” (Louise Ivers)
- ▶ “He believed that if we all could just do a little bit, we would be in a better place.” (Heidi Behforouz)
- ▶ “Economists say that people optimize subject to constraints. One of the many things that made Paul special is he didn’t accept constraints – he was in essence solving a different optimization problem than others.” (Kevin Volpp)

Age-Standardized Mortality Rates, 2020, Breast (all ages)



Affordability of Cancer Drugs in Sub-Saharan Africa

Effects of Pricing on Needless Loss of Life

“Giving out free cancer drugs would not help the poorest parts of Africa.” He added that training doctors, not the cost of drugs, was the biggest issue in the world’s poorest countries. While his position in part reflects real challenges that exist in resource-constrained settings, it overlooks what is possible and what has been done. Above all it perpetuates the fallacy that it is impossible to treat cancer in Africa. We believe the counterfactual choice – what would happen if we give free cancer drugs to some parts of Africa where safe and effective cancer treatment centers exist? – should be emphasized.

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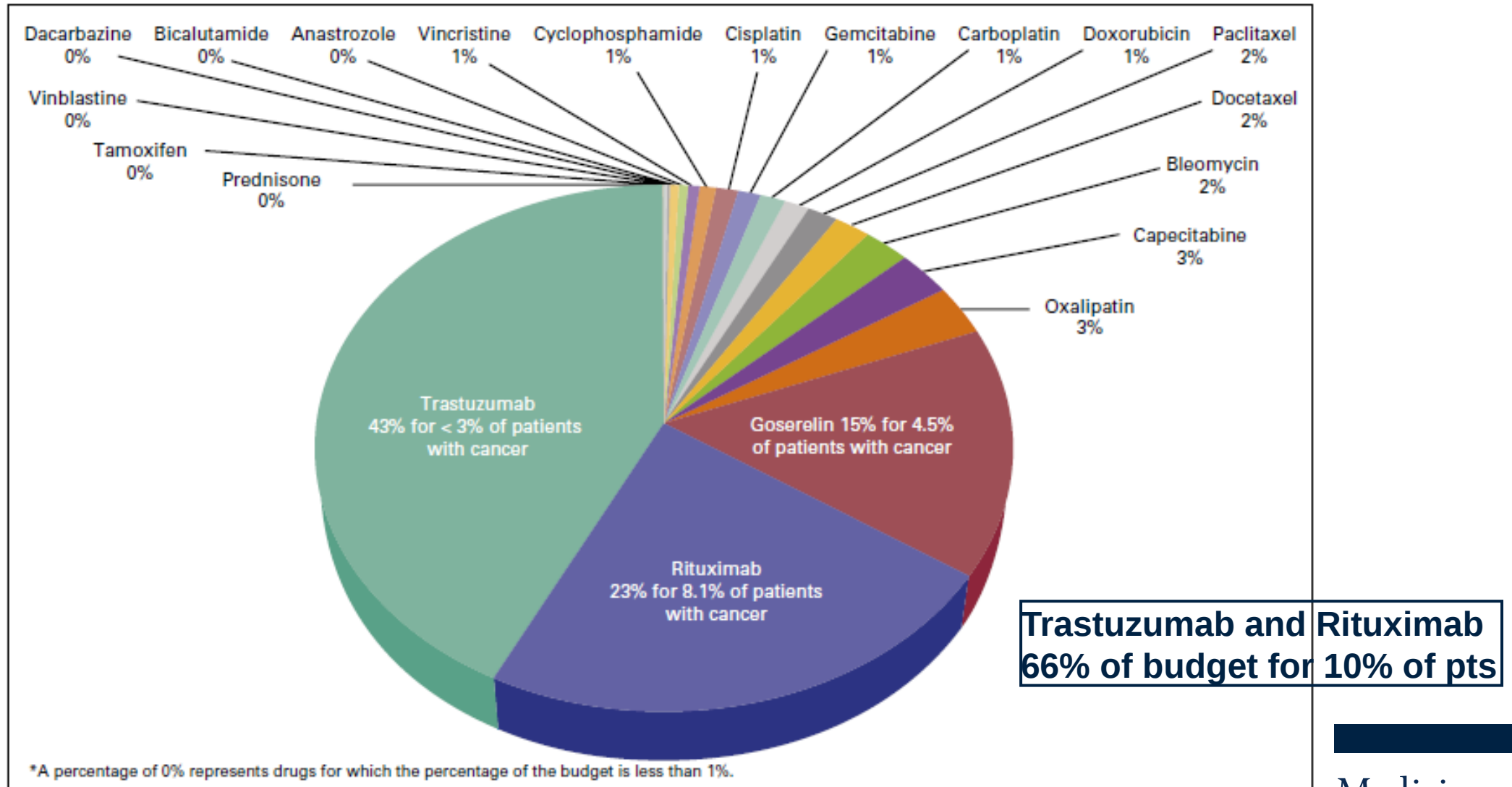
ters exist?—should be emphasized.

The revolution in cancer therapy, derived from a better understanding of basic cancer biology, has led to the introduction of new highly effective therapies. In some cases, such as imatinib for treatment of chronic my-

eloid leukemia, prescribe appropriate doses of imatinib, and follow patients. At a median follow-up of 2 years, overall survival was 94.7%. On the other hand, trastuzumab is not available for patients at Butaro due to its high cost, and this undoubtedly results in need-

Methodology to Forecast Volume and Cost of Cancer Drugs in Low- and Middle-Income Countries

Botswana - Martei, JGO 2018



Chronic Myeloid Leukemia

Diagnosed in: 2012

Age at diagnosis: 34

At intake:

WBC: 326

Hemoglobin: 16

Platelets: 56

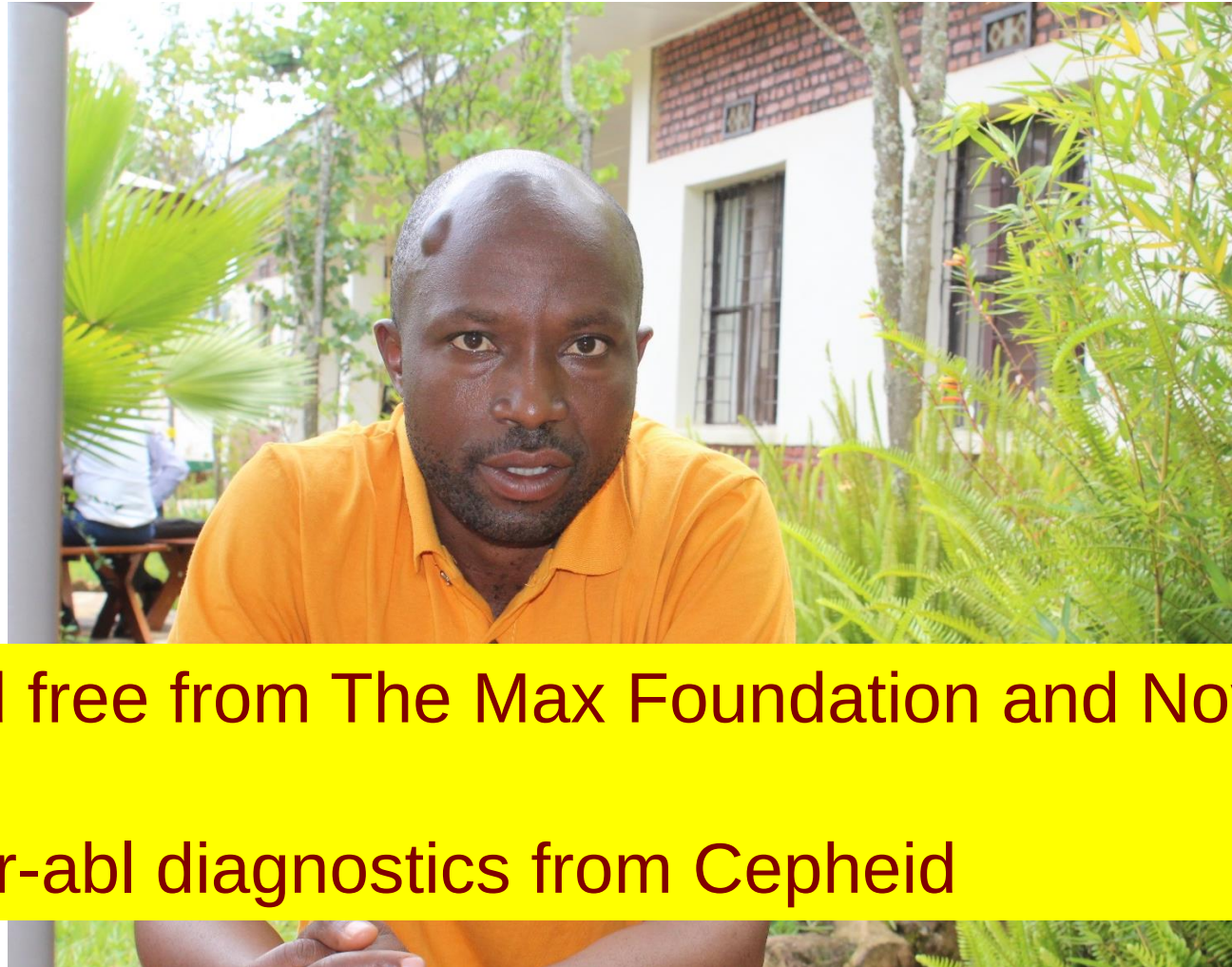
% BCR-ABL: 93

Time in CHR

Last WBC: 5

Last hemoglo

Last platelets: 137



Imatinib supplied free from The Max Foundation and Novartis

bcr-abl diagnostics from Cepheid

Treatment of Chronic Myeloid Leukemia in Rural Rwanda: Promising Early Outcomes

abstract

Purpose The burden of cancer is rising in low- and middle-income countries, yet cancer treatment requires resources that are often not available in these settings. Although management of chronic myeloid leukemia (CML) has been described in low- and middle-income countries, few programs involve patients treated in rural settings. We describe characteristics and early outcomes of patients treated for CML at rural district

“The importance of model public-private partnerships as a strategy to bring high-cost, life-saving treatment to people who do not have the ability to pay is also highlighted.”

public insurance scheme. The imatinib dose was reduced for 16 patients and discontinued for five. Thirty-two of the 43 patients continued to have normal blood counts at last follow-up. Four patients have died and four are lost to follow-up.

Conclusion Our experience indicates that CML can be effectively managed in a resource-constrained rural setting, despite limited availability of on-site diagnostic resources or specialty oncology personnel. The importance of model public-private partnerships as a strategy to bring high-cost, life-saving treatment to people who do not have the ability to pay is also highlighted.

Neo Tapela

Ignace Nzayisenga

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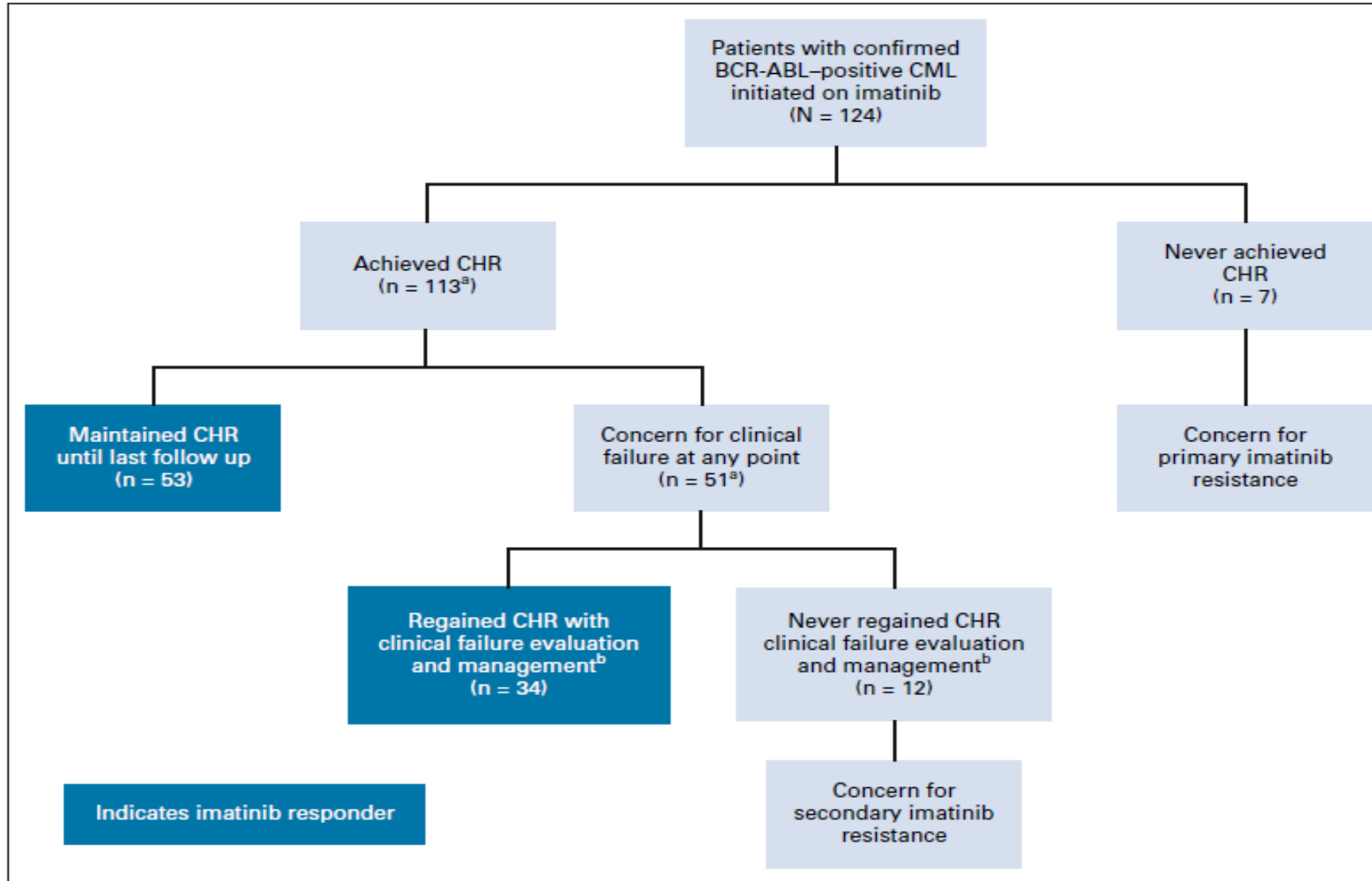
A Ten-Year Experience of Treating Chronic Myeloid Leukemia in Rural Rwanda: Outcomes and Insights for a Changing Landscape

Jennifer Morgan, MD¹; Rebecca J. DeBoer, MD, MA²; Jean Bosco Bigirimana, BSN³; Cam Nguyen, MSPH⁴; Deogratias Ruhangaza, MD⁵; Alan Paciorek, BS²; Fred Mugabo, MD⁵; Chandler Villaverde, MD⁶; Nicaise Nsabimana, MD³; Pascal Bihizimana, MD³; Aline Umwizerwa, RN³; Leslie E. Lehmann, MD⁷; Lawrence N. Shulman, MD⁸; and Cyprien Shyirambere, MD³

CONCLUSION Coupling molecular diagnostics with affordable access to imatinib within a comprehensive cancer care delivery program is a successful long-term strategy to treat CML in resource-constrained settings. Our patients are younger and have higher rates of imatinib resistance compared with historic cohorts in high-income countries. High imatinib resistance rates highlight the need for access to molecular monitoring, resistance testing, and second-generation tyrosine kinase inhibitors, as well as systems to support drug adherence. Hematologic response is an accurate resource-adapted predictor of survival in this setting. Local diagnostic capacity development has allowed for continuous, timely CML care delivery in Rwanda.

JCO Global Oncol 8:e2200131. © 2022 by American Society of Clinical Oncology

CML at the Butaro Cancer Center of Excellence



87 of 124 patients remain in CHR

Treatment Failures

Current Research focused on:

Drug adherence

Resistance mutations

The Max Foundation – Imatinib for CML

- ▶ Total Number of CML Patients Treated 78,791
- ▶ Total Number of CML Patients on Treatment 28,572
- ▶ Number of CML Patients on treatment for 5 years or more 19,856
- ▶ Number of Countries receiving Imatinib for CML 68

From The Max Foundation 2001 thru 10/2023



VIEWPOINT

Reconceptualizing Risk-Benefit Assessment of Novel Cancer Therapies to Expand Global Access and Reduce Worldwide Mortality

“We must reinterpret “do no harm” to include the harm of avoidable suffering and death caused by denying access to effective therapies rather than the far easier focus on avoiding toxicity. A pragmatic approach to weighing risks and benefits is a key element of expanding affordable access to effective cancer therapies in LMICs.”

Implementation Science for Global Oncology: The
Imperative to Evaluate the Safety and Efficacy of Cancer

**For both U.S. and global sites we need to be able to
assess safety and quality of care along with patient
outcomes.**

To do so we need data and quality research.

Journal of Clinical Oncology 2015

Implementation Science – Resource-Constrained Settings

What have we accomplished in treatment of cancer and where are our opportunities to improve?

- Can we effectively and safely treat cancer patients?
- Will patients' cancers respond in a similar way to treatment as compared to US patients? – Differences in somatic mutations?
- Will toxicities be the same? – Differences in germline polymorphisms

Shared Goals.....

- ▶ Strengthening cancer care infrastructure
- ▶ Increasing access to life-extending cancer therapies
- ▶ Increasing appropriate usage of life-extending cancer therapies
- ▶ Improving patient outcomes

Changing paradigm - 2023 going forward

- The private sector is progressively investing in building cancer care delivery infrastructure globally
 - infrastructure and care delivery models
 - diagnostics
 - systemic therapies
- Collaborators on the receiving end and must use these investments well
 - accountability
 - purposeful and sustainable infrastructure strengthening
 - continue research on measurements of the quality of care and patient outcomes

